Automotive Devices and Computing

Intelligent Automation, Seamless Integration

- Automation Software
- Intelligent HMI
- Industrial Communication
- Intelligent Systems
- Open Embedded Controllers
- Data Acquisition and Control
- Distributed I/O Modules
- Programmable Automation Controllers
- Machine Automation
- Power & Energy Automation
- WebAccess+ Solutions
- Applied Specialized Solutions
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About Advantech

Advantech: Partnering for Smart City & IoT Solutions

Founded in 1983, Advantech is a leader in providing trusted innovative embedded and automation products and solutions. Advantech offers comprehensive system integration, hardware, software, customer-centric design services, and global logistics support; all backed by industry-leading front and back office e-business solutions. Advantech has always been an innovator in the development and manufacture of high-quality, high-performance computing platforms. We cooperate closely with our partners to help provide complete solutions for a wide array of applications across a diverse range of industries. To realize our corporate vision of Enabling an Intelligent Planet, Advantech will continue collaborating and Partnering for Smart city & IoT Solutions.

Advantech’s Good-to-Great 3-Circle Principle

The Advantech 3-Circle Principle is based on the book “Good to Great,” by Jim Collins. According to the book, a company looking for long-term success should clearly address these three fundamental principles, and commit to their continuing, solid execution. Advantech is fully committed to this approach and has defined the Advantech “Good to Great 3-Circle Principle” as a means of adhering to it.

Advantech Corporate Structure and Growth Engines

• Networks & Communications DMS
Advantech’s integrated DMS “StarFleet” Model provides OEMs and premier key accounts with customer-focused Design and Manufacturing Services (DMS), winning together through worldwide partnership and collaboration. DMS provides hardware and software integrated solutions. For the telecom and networking markets, Advantech provides mission-critical hardware to the leading equipment manufacturers. Advantech’s standard and customized products are embedded in OEM equipment that the world’s communications infrastructure depends upon. Through Advantech’s premier Design & Manufacturing Services our customers get reliable, open-standard solutions from the leading innovator in network platform development and manufacturing – plus dedicated resources and support to back them up.

• Applied Computing DMS
Advantech is a leading industrial computer systems manufacturer and customized solutions provider. Under Design & Manufacturing Services (DMS), our applied computing professionals develop vertically-driven, application-specific platforms and service-ready solutions for use in many sectors: gaming computing, eHealthcare computing, portable computing, and embedded systems. We specialize in designing and manufacturing the widest range of high quality and high performance industrial grade hardware and dedicated software tailored to the exact needs of each industry field. With a dedicated research & development team, a full range of customization capabilities, and a global sales/service organization, the Advantech DMS applied computing team has what it takes to fulfill customers’ time-to-market requirements.
World-Class Recognition
Advantech is an authorized alliance partner of both Intel® and Microsoft®. Our customers find the technologies we use inside our products to be widely compatible with other products in the global marketplace. In 2011, Interbrand, the world renowned brand consulting firm, once again recognized Advantech as one of the Top 10 Taiwanese Global Brands. Advantech appreciates this recognition of our efforts to build a trusted, global brand; it also symbolizes a promise we give to our business partners, which is to keep building a trustworthy brand that is recognized everywhere and improves the lives of all.

Model Corporate Citizen
Advantech is committed to being a model corporate citizen by helping to preserve the environment and by giving back to society. Our environmental program focuses on reducing, reusing, and recycling materials used in our manufacturing operations. Advantech’s environmental compliance effort includes the following:
• ISO 9001 Certification
• ISO 14001 Certification
• ISO 13485 Certification
• OHSAS 18001 Certification
• TL9000 Quality Management System
• RoHS Directive Compliance
• WEEE Directive Compliance
• Authorized Sony Green Partner

Timely Support at Your Convenience
Advantech has over 12 regional toll-free hotlines, and offices throughout 71 cities in 21 countries, with over 5,000 employees to provide efficient, professional services for customer care, product selection, technical support, and order handling. Through our call centers and online stores, customers worldwide enjoy the convenience of Advantech’s multi-service channels to reduce business turnaround time. Together with over ten customer service centers in Taiwan, China, Japan, Korea, Singapore, Brazil, the Netherlands, Poland, and the United States, our global service network offers an extensive spectrum of services that includes warehousing, logistics, peripheral certification, sourcing and purchasing, and RMA and support services.

• Embedded Core Computing
Embedded Core Computing Group provides a full range of edge computing solutions that are developed with a focus on vertical markets. Our products include Industrial Ethernet Switches, Industrial Wireless AP/CPE, Media Converters, Serial Device Servers, Cellular IP Gateways, and Modbus Gateways. They are also capable of securely transmitting critical and sensitive information, remotely monitoring and controlling networked devices, and emphasizing high communication capabilities for industrial applications. These reliable and robust industrial grade communication products feature different applications including transportation, automation, oil & gas, and semiconductor and the mission is to simplify the way you connect.

• iConnectivity
Advantech’s iConnectivity group offers a full range of Industrial Communication products including wired and wireless communication solutions (3G, GPRS, and WLAN) for mission critical applications. These products include: Industrial Ethernet Switches, Industrial Wireless AP/CPE, Media Converters, Serial Device Servers, Cellular IP Gateways, and Modbus Gateways. They are also capable of securely transmitting critical and sensitive information, remotely monitoring and controlling networked devices, and emphasizing high communication capabilities for industrial applications. These reliable and robust industrial grade communication products fit different applications including transportation, automation, oil & gas, and semiconductor and the mission is to simplify the way you connect.

• Embedded Systems & Intelligent Platforms
With innovative technologies from cloud computing (industrial server, video server), edge computing (fanless, slim & portable devices), to high performance embedded systems (blade computing, network processor platforms, DSP processing), Advantech transforms embedded systems into intelligent systems with smart, secure, energy-saving features, built with Industrial Cloud Services and professional System Design-To-Order Services (System DTOs). Advantech’s intelligent systems are designed to target vertical markets in transportation, industry (machine automation, equipment/machine building), digital signage, and video applications (video infrastructure and video surveillance).

• Service Automation
Advantech’s Service Automation & Applied Computing Group invests in developing vertical-driven, application-specific platforms and service-ready solutions for use in many sectors: industrial portable computing; digital logistics & fleet management; digital healthcare & medical computing; smart room & scenario control for home and office; and digital signage & self-service computing for retail, hospitality, enterprise, education, and public spaces. Service Automation & Applied Computing Group lets you enjoy the convenience, safety, and efficiency that smart applications deliver, and experience the best in interactive and innovative technologies and services.

• Industrial Automation
With the theme of Intelligent Automation, Seamless Integration, the Industrial Automation Group (IAG) of Advantech Corporation is a pioneer in intelligent automation technology. By combining connectivity, flexibility, ruggedness and leading-edge "Internet of Things" technology, IAG offers product offerings for intelligent HMI platforms, the industrial Ethernet, wireless communications, automation controllers, automation software, embedded automation computers, distributed I/O modules, wireless sensor network solutions, motion I/O and plug-in I/O modules for a wide array of industries. With more than 20 years of experience in providing a full range of products to different vertical markets, IAG is a leading global automation product and services provider.

• Model Corporate Citizen

• Timely Support at Your Convenience

• Embedded Core Computing

• iConnectivity

• Embedded Systems & Intelligent Platforms

• Service Automation

• Industrial Automation
About Industrial Automation Group

Advantech, a Pioneer in Intelligent Automation Technology

Industrial automation accelerates the transformation of traditional industries, and improves their overall quality, then upgrades the industrial structure. In this industry, Advantech is a pioneer of intelligent industrial automation. By combining connectivity, flexibility, ruggedness and being at the leading-edge of IoT (Internet of Things) technology, Advantech Industrial Automation Group supplies products such as Intelligent HMI Platforms, Industrial Ethernet, Wireless Communication, Automation Controllers, Automation Software, Embedded Automation Computers, Distributed I/O Modules, Wireless Sensor Network Solutions, Plug-in I/O, and Industrial Communication solutions for a wide array of industries. With more than 30 years experience in providing a full range of products to different vertical markets, the Industrial Automation Group is a leading global Automation Product and Services provider.

The Future of Industrial Automation

IoT is a massive new trend, capable of reshaping the industrial automation industry. The essence of IoT is that everything, including all devices and equipment, can connect to each other through the Internet. In order to make this happen, sensors and intelligence are needed for a variety of devices and physical objects on the device.

Traditional industrial automation and control systems mainly consist of three layers: device, control, and information. This three-layer structure also applies to the DCM (Device, Connect, and Manage) layers of the Internet of Things. Each level has evolved from the original features: devices are enhanced to become smart objects that users can use to identify or retrieve various data. The connection layer is about reliable delivery: by expanding the existing wired network to integrate with a variety of wireless networks. The management layer involves the original management functions and moves them towards intelligent processing, captured data processing and the presentation of more intelligence.
Intelligent Automation, Seamless Integration

Echoing the new opportunities brought about by the Internet of Things, Advantech’s industrial automation group has a new mission statement of “Intelligent Automation, Seamless Integration” thereby outlining the vision of promoting an intelligent world.

Intelligent Automation

Use of smart technology is the inevitable development of the automation industry. Advantech, takes the lead and proposes the best solution. The new architecture is a substantial evolution of traditional industrial automation. With it, traditional equipment is capable of identifying or retrieving various data; data transmission now covers cable and a variety of wireless networks; management functions cover a range of data captured from the original management capabilities to progress to the intelligent processing, and rapid analysis with the correct response for remote monitoring purposes.

Seamless Integration

Seamless integration is one of the key success factor of our customers’ projects. In order to achieve this goal, we have dedicated organizations to focus on vertical peak sectors such as Machine Automation and Power and Energy to form a global integrated team for each of them.

Regarding the Machine Automation sector, we completed our deployment of three major application areas: Machine Control, Industrial Robots, and Machine Automation Open Platforms. As well as the Softmotion solution & Vision/Motor partnership, Advantech is now able to penetrate the traditional Machine & CNC Control market and develop iRobot opportunities globally. As for the Power & Energy sector, in addition to the new products developed by our China R&D team, we will also be cooperating with key partners in Europe, the United States and other major markets to optimize our product portfolio.

Meanwhile, we will also continue our effort with the WebAccess Alliance plus model and cooperate with our solution partners for solution ready platforms. By integrating Intelligent I/O, Control & Communication, and WebAccess Solutions, we will address heavily in intelligent agriculture and environmental related IoT markets.
Intelligent Automation, Seamless Integration
Global Certified Partner Network

Since 1983, Advantech has formed strong and lasting partnerships with many well-established channel partners and solution partners to deliver prompt and reliable local services for our customers. Currently, Advantech has over 600 partners in more than 70 countries worldwide to provide certified services and products anytime, anywhere.

Certified Professionals Guarantee Outstanding Quality Services

Through rigorous training and validation, our partners are certified annually, guaranteeing a high standard of quality & service. With these dedicated and well-trained sales and technical support teams, Advantech customers can enjoy outstanding quality services and early access to latest industrial computing solutions.

- Value-added services: Many of our partners are distributors, value-added resellers, focused channels, system integrators, or independent software vendors specialized in specific industry segments or applications with years of experience in developing application ready platforms. Their profound knowledge in integrating Advantech’s hardware platforms with peripherals and software can speed up your time-to-market.

- Quality technical support: All the partners have dedicated application engineers to provide pre-sales and post-sales technical support. Within Advantech, there’s a group of hotline and field application engineers to back up our partners, ensuring the service level.

- Fast delivery with flexible global supply chain: With over 600 partners and 4 regional service centers worldwide, Advantech offers fast delivery and after-sales support to our customers.
Strategic Focus Makes the Difference

As industrial and embedded computing applications become more diversified, customers are demanding to get solutions tailored for vertical applications and high-quality local support.

To fulfill such needs, Advantech strives to develop its global partner network with a strategic focus. We only partner with distributors, VARs, and system integrators who value quality services as we do and pride themselves with profound industry know-how and technical competency. Through our comprehensive training and certification programs, Advantech partners are expert consultants in our rich portfolio of product offerings and applications for various vertical segments.

Currently, Advantech has partners in the following categories:

- **Channel Partners**

  Advantech iAutomation Channel Partners (CPs) are focus on industrial automation, embedded systems and general computing platform markets. With local inventory, logistic services, technical support and other add-on value services, our partners can provide professional services and prompt delivery of system components for system integrators’ control and automation applications. Aligned with our regional sales offices and service centers, Advantech CPs have formed a strong service network to offer professional pre-sales and post-sales worldwide. Advantech also identified the Channel Partners, focus on specific vertical segments, to provide local value-added services for our customers, such as application development, technical consultation, design service, integration & installation, on-site services, technical training and project management. These CPs are certified value-added resellers with expertise in application development and system integration for each segment.

- **Solution Partners**

  Solution Partners are 3rd parties who integrate Advantech products and value-added software and peripherals to provide turn-key solutions. Advantech’s Solution Partners offer our customers a full range of field proven integrated solutions in Medical, Telecom, Transportation, Gaming, Power & Energy, Building & Home Automation, Factory & Machine Automation, Environmental Monitoring & Facility Management, Retail, Hospitality & Self-service, and many more. Their solutions are validated with Advantech products for compatibility, quality, and service.

- **Business Alliance Partners**

  Advantech is the global premier partner of Intel Embedded Alliance and gold partner of Microsoft Windows Embedded. All the business alliance partners have been carefully selected and closely cooperated to improve the service Advantech provide to customers, helping them add value whilst meeting stringent requirements in a wide array of industries. These partnerships aim to enable an intelligent planet by offering hardware or software that empower the connected eWorld.
Enabling an Intelligent Planet

To provide fast and convenient services to our customers and users, Advantech provides several easily-accessible web portals, including: the Advantech.com website, Buy.Advantech.com and an Online Support Portal to serve different requirements. To supplement our electronic contacts, we’ve also built up regional call centers to take care of customers who prefer human contact. These methods allow us to deliver our services by live chat, phone line and email anytime and anywhere.

29 Teams in 27 Cities Serve Global Inquiries
Advantech.com Website

Through www.advantech.com, we not only offer comprehensive products, but also real-time updated information to our customers. In addition to product information, you also can find case studies of proven applications from diverse sectors. Furthermore, registered MyAdvantech members, can access the RMA service center, updated price lists, and various promotion programs.

Online Store

**Buy.Advantech.com**

To extend Advantech’s services, we launched the Buy.Advantech online store which offers one-stop shopping for Human Machine Interfaces, Industrial Ethernet networking, Controller & I/O products, plus computing platforms. This eStore offers comprehensive product information to build systems easily, with live expert support to solve problems, online configurations providing easy system customization options, instant quotations, an extensive library of FAQs and all the latest up-to-date downloads and firmware.

Personal Web Service

MyAdvantech is a quick access portal to your account information where you can view Advantech product and order information, order online, download data, and also a resource center keeping the viewed video, webcast, and much more materials you’ve been reached through Advantech portals. Login to begin enjoying your personalized Advantech portal and increase your ordering efficiency.

Online Support

Providing superior self-support mechanisms is one of the most essential parts of being a top-tier automation company, and we take pride in the outstanding level of service that we offer. To best support our customers, we’ve created a suite of useful interactive online tools, including:

- **Technical Documents**: Manuals, datasheets, updated drivers and utilities all available for download through the Support Portal
- **3D Product Models**: Simulated products in 3D format to provide detailed outlook for customer evaluation
- **Online Training**: Self-training documents and videos to provide trainees with integrated information
- **Online Catalog**: Comprehensive online catalogs to provide customers with extensive product information

Call Center

To effectively respond to customers’ questions, our regional call centers support inquiries about: purchasing, shipping, technical, and RMA issues among lots of general accounts. Contact your regional call center to get the support you need today.

**Global Hotlines**

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Advantech iPlanet Care

Manufacturing
Our dual, world-class manufacturing centers in Taiwan and China maintain precise quality control, and offer a full range of production in a timely and cost-effective manner. To maximize the efficiency of operational procedures, we have implemented a cluster manufacturing system within our segmented manufacturing service units. This unique approach enables a direct, simplified, and highly streamlined design-to-manufacturing process.

- In-house board, chassis, and system production
- Dual world-class manufacturing centers minimize business risks
- Advanced production capabilities and customizable processes
- Rigid quality assurance system
- Most complete ISO standard coverage

Configure To Order Services
Advantech’s Configure To Order Services (CTOS) makes industrial computing solutions more accessible by offering web-based configuration tools, comprehensive, complex assembly services with high-mix, low-volume box build and customized assembly, modification, system integration and functional testing services.

- Local customized configuration services
- 2 year global warranty covering system & peripherals integrated

Certified Quality Assurance System
Advantech has been designing and manufacturing industrial PCs according to our 3C Quality Statement:

- Always strive for overall customer satisfaction
- Continuous improvement
- Apply closed-loop mechanisms to resolve problems

At Advantech, quality is our main priority. A complete line of safety, EMC and reliability measures such as ESD, vibration, drop testing, temperature, humidity and HALT chambers are available to ensure our products meet the strictest standards. All facilities are at least ISO 9001 and 14001 certified while others hold additional certifications such as ISO 13485, 17025, TL9000 and OHSAS18001. An environmental program that focuses on reducing, reusing and recycling of materials throughout the manufacturing process is also applied at Advantech. All our products are 100% RoHS compliant and Environmental Management Systems such as QC080000 are applied to meet worldwide environmental requests. Advantech’s efforts towards environmental protection have been recognized by Sony since 2004 (Sony Green Partner).

- Complete ISO coverage
- Green policies
- Constant quality and reliability monitoring
- Ease of access to quality contacts
**One-Stop Global Services**

Advantech iPlanet Care combines exceptional business expertise, powerful design capacities, and a thorough global service network to provide one-stop global services and total solutions. Our broad range of global support packages adds maximum flexibility and efficiency to your projects.

**Global Logistics Services**

With strong integrated ERP and SAP supply chain solutions, our worldwide logistics network offers a wide range of options for different delivery models including local and global solutions that meet your unique needs and budget requirements. Advantech’s Logistics Service gives you the flexibility to simplify your logistical networks, bring your products to market on time, and enjoy a timely return on your investment.

- Optimized and flexible shipping solutions
- Integrated ERP and SAP supply chain solution with global distribution network
- Centralized plants with local delivery

**Global Peripheral Procurement Services**

Advantech global peripheral procurement network consists of local teams that leverage strong, worldwide supplier relationships and strict vendor and product management to offer quality-guaranteed, compatible peripherals with short lead times and competitive prices.

- Localized procurement with worldwide network support
- Global standardization management; 100% compatible peripherals
- Trusted quality with revision control
- Short lead time and competitive price

**Global Customer Support Services**

Our global presence provides localized reliable customer support services. We can create an optimized maintenance and support plan, leveraging the full power of our service portfolio to help reduce costs and proactively mitigate business risks to best meet your needs. In addition to our complete technical and repair support, we provide a variety of customizable after-sales services, including extended warranty, advance replacement, upgrade, fast repair, etc. With our knowledgeable local support groups, we enable a consistent support experience around the world and help keep your investment at peak performance and within your budget.

- 24/7 technical support: hotline AE & online chat support
- Global deployment with local full-line repair capability
- Easy-to-use web-based repair and tracking system (eRMA)
- Various value-added, after-sales service packages

**Non-Stop technical support**

- Hotline Call
- Online Chat
- Email
- Intelligent Support Portal
- Web-based Logistics and RMA Info System

**Onsite Service**
- Warranty
- Pick-up Service
- Extended Warranty Service

**Fast Repair Service**
- Advanced Replacement Service
- Upgrade Service
- Technology Update Service
- Preventive Maintenance Service
- Health Checkup Service
Automation Software

Shorten Programming Time and Optimize Performance at the Same Time

Advantech’s automation software lineup includes SCADA software, SoftLogic programming tools, OPC Server, and other user-friendly programming tools and utilities. Advantech’s WebAccess browser-based HMI/SCADA software is a shining example, helping customers view, control, configure systems remotely through the Internet and even through smart phones. Besides, the innovative DiagAnywhere software assists users to achieve complex remote maintenance tasks such as remote monitoring and control, remote screen snapshots and recording, and file uploading & downloading. The complete solutions that Advantech software and hardware products provide empower automation professionals to develop integrated automation system efficiently.

**Advantech WebAccess**
Browser-based HMI/SCADA Software
- View, control, configure systems through a web browser
- Redundant SCADA and COM ports
- Supports dynamic DNS and acts as OPC server & client
- Supports LoniWorks LNS and BACnet IP
- Multi-touch gesture support
- Web-enabled video, audio, and Google Maps and GPS Location Tracking
- WebAccess Express - The Auto-Configuration Tool

**Advantech WebAccess Option**
Real Time Database (RTDB)
- Super fast data access and storage
- Supports redundancy for WebAccess
- Fully integrated with WebAccess
- Archive and delete obsolete data with automatic maintenance schedules
- API for 3rd party programs to Read/Write/Modify

**WebOP Designer/Panel Express**
HMI Runtime Development Software
- Provides password protection of designs, macros and upload/download operations
- Index registers for modifying device addresses at runtime
- Collects data from many devices with various methods
- Supports over 350 industrial communication protocols

**DAQNavi**
Software Development Package for Advantech DAQ Products
- Rapid Application Design (RAD) helps developers to build a program in the shortest time
- Thread-Safety design to ensure high reliability under multi-thread environment
- Intuitive utility Navigator integrates configuration tools, testing panel, manual, tutorial, and example codes

**Advantech Data Logger**
Data Logging Application Software
- Online and offline monitor acquired signal
- Exports recorded data to txt, excel and TDMS file for post analysis
- Flexible display with customized plot, title, cursor and axis
- Shows alarm and event display

**OPC Server**
OPC Server for ADAM & Modbus Devices
- Supports Microsoft Windows XP/2000/7/8/8.1
- Supports Advantech ASCII, Modbus RTU, and Modbus/TCP protocol
- Compliant with the latest OPC Data Access 1.0, 2.04 and 3.0 standards
- Compliant with the latest OPC Alarm and Events 1.0 and 1.2 standards

**KW MULTIPROG**
IEC-61131-3 SoftLogic Control Software
- Crossing-compiling: FBD, LD, and IL can be cross compiled to each other
- Multi-user functionality shortens programming time
- Powerful debugging tools
- Advantech batch control FBs support
- Advantech auto-tuning PID FB support

**SUSIAccess**
Remote Device Management Software
- Device monitoring and automatic alerts by Email/SMS
- Quick access to remote control for device diagnostics and repair
- Complete protection from cyber threats (powered by McAfee Application Control technology)
- Simplicity of all backup and recovery (powered by Acronis Backup and Recovery technology)

**DiagAnywhere**
Remote Maintenance Software
- Remote screen snapshot & recording
- File transfer function
- Windows-based authentication
- Health check of CPU/memory/temperature/voltage
- Remote monitor up to 24 target devices
- Remote control shutdown and wake up
Intelligent HMI
Leading the Evolution of Intelligent Operator and Panel PCs

As a leading provider of human machine interfaces, Advantech's HMI products are designed for a wide ranges of applications which can be applied in different industries. We provide an integrated and comprehensive range of HMI products including Intelligent Operator Panels (WebOP), Automation Panel PCs (TPC and PPC), Stationary Panel Computers (SPC) and Industrial Monitors (FPM) for automation markets, near automation markets and domain focused markets such as oil and gas and sunlight readable requirements. In addition, we offer an integrated I/O and control features with HMI/SCADA software which allows efficient integration and opens a new era of automation.

Wide Screen, Multi Touch Panels

TPC-1840WP/2140WP
18.5” WXGA/21.5” Full HD TFT LCD Multi-Touch Panel Computer with AMD Dual-Core processor
- AMD dual-core T6600 1.86GHz with integrated GPU, advanced graphical performance
- 16:9 wide screen with PCT multi-touch and IP66 protection
- Built-in i-key and home-key for an intuitive UI
- Front LED indicator to show operating status
- -20 ~ 60°C wide operating temperature
- DDR3 memory and multiple I/O support
- Serial port & DI/DO isolation protection
- Built-in digital input/output module
- Battery backup 1MB SRAM
- Expandable system IO, digital IO, fieldbus and communication by iDoor Technology
- Supports USB 3.0 and external 2.5” SATA HDD and iDoor kit

TPC-1581WP/1881WP
15.6” HD/18.5” WXGA TFT LCD Multi-Touch Panel Computer with Intel® 4th Generation Core™ i3 processor
- Intel® 4th generation core™ i3/i7 processor with 4GB DDR3L memory
- 16:9 wide screen with PCT multi-touch and IP66 protection
- Built-in i-key and home-key for an intuitive UI
- Expandable system IO, digital IO, fieldbus control and communication by Door Technology
- Supports USB 3.0 x 2 and HDMI for independent display
- Supports Advantech SUSIAccess remote device management software

SPC-1840WP/2140WP
18.5” WXGA/21.5” Full HD TFT LCD Stationary Multi-Touch Panel Computer with AMD Dual-core processor
- AMD dual-core 1.6GHz processor with independent GPU, advanced graphical performance
- All around IP66 protection with waterproof M12 connector
- Built-in i-key and home-key for an intuitive UI
- TH hardness glass for scratch & chemical resistance
- Supports Mini-PCIe expansion slot
- Front LED indicator to show operating status
- Multi-Touch Panel Computer with AMD Dual-core 1.6GHz processor
- Stationary Multi-Touch Panel Computer
- Dual-core D525 Automation Control Panels
- Dual-Core E3827 Thin Client Panel Computer
- Dual-Core D525 Automation Control Panels
- 4th Generation Core™ i3/ i7 Touch Panel Computer
- 4th Generation Core™ i3/ i7 Processor
- 4th Gen Core™ i3/ i7 1.7GHz with 4GB DDR3L SDRAM
- Expandable system IO, digital IO, fieldbus and communication by iDoor Technology
- Supports Advantech SUSIAccess remote device management software

Automation Control Panels

TPC-671H
6.5” VGA TFT LED LCD Intel® Atom™ Dual-Core D525 Automation Control Panels
- Mini-PCIe expansion for industrial wireless and fieldbus control
- Serial port isolation protection
- Automatic data flow control RS-485
- Supports Microsoft® Windows® XP/ XPe/ CE
- Energy Star approved
- Supports 2.5” SATA HDD kit

TPC-1071H/1271H/1571H/1771H
10.4” 12.1” SVGA/ 15” XGA/ 17” SXGA TFT LED LCD Intel® Atom™ Dual-Core D525 Automation Control Panels
- DDR3 memory and multiple I/O support
- PCIe & Mini-PCIe expansion for Industrial wireless and fieldbus control
- Built-in digital input/output module
- Serial port & DI/DO isolation protection
- Battery backup 1MB SRAM
- Full Flat 5-wire Resistive Touch Panel
- All around IP66 protection with waterproof M12 connector
- Communication by iDoor Technology

TPC-1582H/1782H
15” XGA/17” SXGA TFT LCD Intel® 4th Generation Core™ i3/i7 Touch Panel Computer
- Intel® 4th Gen Core™ i3/i7 1.7GHz with 4GB DDR3L SDRAM
- Expandable system IO, digital IO, fieldbus and communication by iDoor Technology
- Supports Advantech SUSIAccess remote device management software

Thin Client Panels

TPC-650H/1250H/1550H/1750H
5.7” VGA/12.1” SVGA/15” XGA SXGA/17” SXGA TFT LED LCD Thin Client Panel Computers
- Intel® Atom™ N270 1.6GHz processor
- IP65 compliant front panel
- Supports Microsoft® Windows XP/ XPe/ CE
- Energy Star approved
- Supports external 2.5” SATA HDD kit

TPC-651H/1251H/1551H
5.7” VGA/12.1” SVGA/15” XGA TFT LED LCD Intel® Atom™ Thin Client Panel Computers
- Intel® Atom™ Z520 1.33 GHz processor
- -20 ~ 60°C wide operating temperature
- Isolation protection for serial ports
- Energy Star approved
- Supports external 2.5” SATA HDD kit

TPC-1251T/1551T
12.1” XGA/15” XGA TFT LED LCD Intel® Atom™ Dual-Core E3827 Thin Client Panel Computer
- Intel® Atom™ E3827 1.75 GHz processor
- -20 ~ 60°C wide operating temperature
- Compact with essential requirement and low power consumption
- IP66 front panel and true-flat 5-wire resistive touch
- Supports USB 3.0 and external 2.5” SATA HDD and iDoor kit
**Operator Panels**

**WebOP-2040T/ 2050T/ 2070T/ 2100T**
4.3” WVGA/ 5.6” QVGA/ 7” WVGA/8” SVG/ 10.1” WSVGA Operator Panel
- 65,536 colors TFT LCD, ARM9-based CPUs
- Front panel flat-sealed with IP66 compliance
- 10W low power consumption
- Supports over 300 PLC communication protocols
- Communicates with up to four types of devices
- Flexible runtime download and maintenance

**WebOP-3120T**
12” XGA Cortex™-A8 Operator Panel with Wide Operating Temperatures
- Microsoft® Windows CE 6.0
- Backup memory FRAM in 128KB (64 words) without battery
- Front panel flat-sealed with IP66 compliance
- -20ºC ~ 60ºC wide operating temperature
- Front panel flat-sealed with IP66 compliance

**WebOP-2121V**
12.1” SVG Operator Panel
- 12.1” SVG 65,536 colors TFT LCD, ARM9-based CPUs
- Front panel flat-sealed with IP66 compliance
- Supports wide operating temperatures for 12”, 15” and 17”
- Front panel flat-sealed with IP66 compliance

**WebOP-3070T**
7” WVGA Cortex™-A8 Operator Panel with Wide Operating Temperatures
- Microsoft® Windows CE 6.0
- Backup memory FRAM in 128KB (64 words) without battery
- Power & Terminal I/O ports isolation protection
- -20°C ~ 60°C wide operating temperature
- Front panel flat-sealed with IP66 compliance

**WebOP-3100T**
10.1” WSVGA Cortex™-A8 Operator Panel with Wide Operating Temperatures
- Microsoft® Windows CE 6.0
- Backup memory FRAM in 128KB (64 words) without battery
- Power & Terminal I/O ports isolation protection
- -20°C ~ 60°C wide operating temperature
- Front panel flat-sealed with IP66 compliance

**Industrial Monitors**

**FPM-2120G/ 2150G/ 2170G**
12” SVG/ 15” XGA/ 17” SXGA Industrial Monitor with Resistive Touchscreen and Direct-VGA Port
- TFT LCD with 50,000 hours LED backlight life time
- Robust design with IP65 aluminum front panel
- Anti-glare screen with tempered glass
- Supports Panel, Wall, Desktop, Rack or VESA arm mounting
- Front panel flat-sealed with IP66 compliance

**FPM-3121G/ 3151G/ 3171G/ 3191G**
12”SVG/ 15” XGA/ 17” SXGA/ 19” SXGA Industrial Monitor with Resistive Touchscreen, Direct-VGA and DVI Ports
- Robust design with stainless steel chassis and aluminum front panel
- Lockable OSD control pad on front panel
- Supports industrial 24Vdc power input
- Supports panel, wall, desktop, rack or VESA arm mounting
- Magnesium alloy front panel
- Supports wide operating temperatures for 12”, 15” and 17”

**FPM-5152G/ 5172G/ 5192G**
15” XGA/ 17” SXGA/ 19” SXGA Industrial Monitors with Resistive Touchscreens, Lockable Display Port
- Lockable display port input interface
- Lockable OSD keys with 2 user-defined contrast/brightness settings
- Robust design with IP65 certified aluminum diecast front panel
- Front accessible USB connector
- Front panel flat-sealed with IP66 compliance

**FPM-7151W/ 7181W/ 7211W**
15.6”/ 18.5”/ 21.5” Industrial Monitor with Projected Capacitive Touchscreen, Direct-VGA+DVI or VGA+HDMI ports
- WXGA/FHD LED backlight LCD with true-flat multi-touch screen
- 16:9 wide screen display with 7H hardness glass for scratch & chemical resistance
- Supports 10 points multi-touch via USB interface in Windows 7/ 8
- Slim type design for panel mount easy installation
- Robust design with SECC chassis and IP66
- Magnesium alloy front panel

**TPC-311T/ 61T**
3.5”/ 5.7” QVGA TI AM3157 600MHz RISC+ based Touch Panel Computers
- Microsoft® Windows CE 6.0
- 1 x SD card slot for storage
- Front panel IP66 compliant
- Super slim and compact design with plastic housing
- Automatic data flow control RS-485
Star Product Highlights

**Fanless Panel PCs**

**PPC-L62T**
6.5” Fanless Panel PC with Intel® Atom™ N455 Processor
- 6.5" TFT VGA LCD (LED Backlight)
- System memory up to 2GB DDR3 SDRAM
- Aluminum front bezel
- Dual Gigabit LAN support
- One CFast socket
- Adjust RS-232/422/485 through BIOS

**PPC-3100/3120**
10.4”/12” Fanless Panel PC with Intel® Atom™ D2550 Processor
- 10.4”/12” XGA LED Panel with resistive touchscreen
- Supports one internal SATA 2.5” HDD and 1 x mSATA socket
- Adjust RS-232/422/485 through BIOS
- LED backlight Auto dimming
- Optional PCI/PCIe x1 expansion kit (PPC-3120 only)

**PPC-L158T**
15” Fanless Panel PC with Intel® Atom™ Dual-Core Processor
- 15” TFT XGA LCD with optional resistive touchscreen
- Embedded Intel® Atom™ processor, dual-core D525 1.8G
- System memory up to 2 x DDR3 800 MHz SODIMMs
- Supports one internal SATA 2.5” HDD
- Supports One Mini PCIe socket, Dual Gigabit Ethernet
- Either PCIe/PCIe x1 expansion kit

**Multi Function Panel PCs**

**PPC-157/177**
15”/17” Panel PC with Intel® Core™ 2 Duo Processor
- Intel® Core™ 2 Duo processor up to 2.16 GHz
- System memory up to 4 GB 667 MHz DDR2 SODIMM
- One PCIe expansion slot (PCI is available as an option)
- One RS-232/422/485 (Auto-flow control, selected by BIOS)
- One GPIO (8 channels, TTL level)

**PPC-6120**
12” Panel PC with 4th Generation Intel® Core™ i / Celeron® Processor
- System memory supports dual channel DDR3/DDR3L up to 16 GB
- Supports 2 x Mini PCIe sockets, one is included mSATA function.
- Optional one PCI/PCIe x1 expansion kit
- Supports one isolated RS422/RS485, 8 x TTL level programmable DIO, 1 x VGA and 1 x Display port
- Dual GbE, supports Intel AMT8.0
- LED backlight Auto dimming

**PPC-6150/6170**
15”/17” Panel PC with Intel® Core™ i3/i5/Celeron® Processor
- Intel® Core™ i3/i5 and Celeron® E1400 processor
- Multiple expansion slots either one PCIe x4 or one PCI + one PCIe x1
- Optional second HDD, supports Intel RAID
- One isolated RS-232/422/485 port (Auto-flow control, selected by BIOS)
- One GPIO (8 channels, TTL) and Dual GbE, supports Intel® AMT8.0

**Industrial Panel Computers**

**IPPC-4001D**
5.7” VGA TFT LCD 4U 19”/19” Half-size Rack Industrial Panel PCs
- Slim keyboard & mouse pad drawer with kickable clip
- Supports high performance Intel® Core 2 Duo processors
- Offers 14/8 expansion slots for 2 PICMG, 10 PCI, 2 ISA/1 CPU PCI, 3 PCI, 4 SPCI
- Membrane function keys (F1-F5) for varied application access
- Front accessible USB is friendly to plug-in versatile USB devices

**IPPC-6192A/6172A/6152A**
15” XGA/17”/19” SXGA Core™ i7/i5/i3 Industrial Panel PC
- 15” XGA/17” SXGA/19” SXGA TFT LCD with touchscreen
- Supports Intel® Core™ i7/i5/i3 processor with Q87 chipset (up to 3.1GHz)
- Offers two expansion slots (PCI riser card optional) for PCI/PCIe add-on cards
- SATA 2.0 or SATA 3.0 HDDs and RAID 0,1 compatibility
- Front USB access and system reset function and front panel is IP65 compliant

**IPPC-9151G/9171G**
15” XGA/17” SXGA Core™ i7/i5/i3/Celeron® Industrial Panel PCs
- 15” XGA/17” SXGA LED backlit LCD with front access USB connector
- Intel® Core™ i7/i5/Celeron® μFC-PGA988 processor with Intel® GM67 chipset
- Supports 1xPCIe x1 or 4x Gen2 PCI (PCI optional)
- Heavy-duty stainless steel chassis with aluminum front panel of IP65 compliant
- Supports 1 x 2.5” SATA II or SATA III HDD and 1 x CFast

**Wide Screen Panel PCs**

**PPC-4150W**
15.6” Fanless Wide Screen Panel PC with Intel® Atom™ Dual-Core Processor
- 15.6” TFT WXGA LED entirely flat panel with Projected capacitive touchscreen
- Fanless design and low power consumption
- Supports one internal SATA 2.5” HDD and 1 x mSATA socket
- PCI or PCIe expansion support
- Adjust RS-232/422/485 through BIOS

**PPC-4151W/4211W**
15.6”/21.5” Fanless Wide Screen Panel PC with Intel® 4th Gen Core™ i5 Celeron Processor
- 15.6” WXGA/21.5 FHD LED entirely flat panel with Projected capacitive touchscreen
- Fanless design with Intel® 4th Gen Core™ i5 Celeron Processor
- Supports 3 independent displays (LVDS/DP/VGA)
- PCI or PCIe x1 expansion support
- Adjust RS-422/485 through BIOS

**Configure-to-order Panel PC**

**PPC-8150/8170**
15”/17” Panel PC with Mini-iTX AIB Motherboard supported
- 15”/17” TFT LED Panel, resolution up to 1280 x 1024
- Multiple choices of Intel® or AMD platform choice as mini-iTX AIB motherboard supported
- Supports one expansion slot of PCIe x8 or PCIe x16
- Four optional additional extended COM ports
- Supports iManager, SUSIAccess and Embedded Software APIs
Industrial Communication

Simplify the Way You Connect

Advantech’s Industrial Communication products draw on over 20 years of experience to provide reliable wired and wireless communication (3G, GPRS, and WLAN) for mission critical applications. These products include: Industrial Ethernet Switches, Industrial Wireless AP/CPE, Media Converters, Serial Device Servers, Cellular IP Gateways, and Modbus Gateways. They are also capable of securely transmitting critical and sensitive information, remotely monitoring and controlling networked devices and emphasizing high communication capabilities for industrial applications.

Industrial Wireless AP/ CPE

**EKI-6340 Series**
IEEE 802.11 a/ b/ g/ n Outdoor Single to Triple Radio Wi-Fi Mesh AP
- Ultra-fast roaming (hand-over switch time < 20 ms) provides mobile connectivity
- High throughput multiple hopping (≥ 100 Mbps @ 10 hops) saves devices & deployment cost
- Mesh capability (self-healing < 20 ms) offers scalable and flexible wireless infrastructure deployment
- EN50155 compliant

**EKI-6310GN**
IEEE 802.11 b/ g/ n Wireless Access Point/Client Bridge
- With N-type connector for antenna connector
- High output power 27dBm
- Standard 802.3af PoE PD
- WEP/ WPA/ WPA2/ IEEE 802.1 x authentication support

**EKI-6311GN**
IEEE 802.11 b/ g/ n Wireless Access Point/Client Bridge
- Embedded 8dBi directional antenna with external N-type connector for optional antenna
- High output power 26dBm
- Spanning Tree and IGMP snooping protocol support

**EKI-6331AN**
IEEE 802.11 a/ n Wireless Access Point/Client Bridge
- MIMO 2 x 2 11n
- Embedded 16dBi dual-polarity directional antenna with external R-SMA connector for optional antenna
- High output power 24 dBm
- IGMP snooping protocol support

WLAN Device Servers

**EKI-1361/ 1362**
1/2-port RS232/ 422/ 485 to 802.11b/ g/ n WLAN Serial Device Servers
- Links any serial device to an IEEE 802.11b/ g/ n network
- Provides 1/2 x RS-232/ 422/ 485 port
- Secures data access with WEP, WPA, and WPA2
- Supports WLAN Ad-Hoc and Infrastructure modes

**EKI-1351/ 1352**
1/2-port RS232/ 422/ 485 to 802.11b/ g WLAN Serial Device Servers
- Links any serial device to an IEEE 802.11b/ g network
- Provides 1/2 x RS-232/ 422/ 485 port
- Secures data access with WEP, WPA, and WPA2
- Supports WLAN Ad-Hoc and Infrastructure modes

Cellular IP Gateways

**EKI-1321/ 1322**
1/2-port RS-232/ 422/ 485 to GPRS IP Gateways
- Universal quad-band GSM/GPRS 850/ 900/ 1800/ 1900 MHz
- Dual SIM slots for connection redundancy
- Extra SD slot for data buffering and auto recovery
- Provides NAT and VPN
**Industrial Ethernet Managed Switches**

- **EKI-7758F**
  - 4G+4 SFP Gigabit Managed Redundant Industrial Ethernet Switch
  - All Gigabit Ethernet ports for 4 copper and 4 SFP
  - SFP sockets for easy and flexible fiber expansion
  - Redundancy: X-Ring Pro (recovery time < 20ms)
  - IPv6 support

- **EKI-7656C**
  - 16+2G Combo Port Gigabit Managed Redundant Industrial Ethernet Switch
  - 16 Fast Ethernet ports, plus 2 Gigabit combo ports
  - SFP socket for easy and flexible fiber expansion
  - Redundancy: X-Ring Pro (recovery time < 20ms)
  - IPv6 support

- **EKI-7659C**
  - 8+2G Combo Port Gigabit Managed Redundant Industrial Ethernet Switch
  - 8 Fast Ethernet ports, plus 2 Gigabit combo ports
  - SFP socket for easy and flexible fiber expansion
  - Redundancy: X-Ring Pro (recovery time < 20ms)
  - IPv6 support

**Industrial PoE Switches**

- **EKI-7659CPI**
  - 8+2G Port Gigabit Managed Industrial PoE Switch w/ Wide Temperature
  - 8 Fast Ethernet ports with PoE injector function, plus 2 Gigabit Copper/SFP combo ports
  - IEEE802.3at compliant, provides 15.4Watts per port.
  - Redundancy: X-Ring Pro (recovery time < 20ms)
  - IPv6 support

- **EKI-2726FHPi**
  - 4G+2 SFP W/ 4 IEEE 802.3at/af PoE Industrial Wide Temperature Switch
  - All Gigabit Ethernet ports for 4 Copper and 2 SFP
  - IEEE802.3at/af compliant, provides 30Watts per port.
  - Dual 48 V, power input and 1 relay output
  - UL508 compliant
  - Supports operating temperatures from -40 ~ 75°C

**Industrial Ethernet Un-managed Switches**

- **EKI-3728/ 3725/ 3528/ 3525**
  - 8-port/ 5-port Fast and Gigabit Unmanaged Industrial Ethernet Switch
  - Supports IEEE 802.3az, Energy Efficient Ethernet
  - Super compact IP40 protection
  - Supports redundant 12 ~ 48 VDC dual power input and P-Fail relay
  - In Loop detection

- **EKI-3525M/ 3525S**
  - 4-port 10/ 100Mbps + 1-port 100FX Multi-Mode/ Single-Mode Unmanaged Industrial Ethernet Switch
  - Supports IEEE 802.3az, Energy Efficient Ethernet
  - Super compact IP40 protection
  - Supports redundant 12 ~ 48 VDC dual power input and P-Fail relay
  - In Loop detection

**Media Converters**

- **EKI-3541M/ 3541S**
  - 1-port/ 2-port/ 4-port RS-232/ 422/ 485 Serial Device Server
  - 2 x 10/100 Mbps Ethernet ports for LAN redundancy
  - Supports up to 921.6 kbps, and any baud rate setting
  - Supports RS-485 data flow control

**Serial Device Server**

- **EKI-1521/ 1522/ 1524**
  - 1-port/ 2-port/ 4-port RS-232/ 422/ 485 Serial Device Server
  - 2 x 10/100 Mbps Ethernet ports for LAN redundancy
  - Supports up to 921.6 kbps, and any baud rate setting
  - Automatic RS-485 data flow control

**Modbus Gateways**

- **EKI-1221/ 1222/ 1224**
  - 1-port/ 2-port/ 4-port Modbus Gateway
  - 2 x 10/100 Mbps Ethernet ports for LAN redundancy
  - Supports up to 921.6 kbps, and any baud rate setting
  - Automatic RS-485 data flow control

- **EKI-1221D/ 1222D**
  - 1-port/ 2-port Modbus Gateway with Integrated Ethernet Cascading
  - 2 x 10/100 Mbps Ethernet ports for Daisy Chain connectivity
  - Supports Ethernet auto-bypass function
  - Auto searching Modbus slave ID over configuration utility
Star Product Highlights

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ACP-4D00BP
4U dual-node chassis dedicated for machine Automation application
• Easy maintenance dual-node design
• Supports half-sized slot SBC and 6-slot backplane
• Maximum 3 available slots for 260mm length add-on cards
• Standard 4U height, ultra short depth of 350mm
• Self-diagnostics functions of system fan and temperature alarm

ACP-4020
Compact 4U Rackmount Chassis for Half-size SBC or ATX/ MicroATX Motherboard
• Compact 4U rackmount chassis, with only 350mm depth
• Supports ATX/ MicroATX motherboards or backplanes up to 15 slots for half-size SBC
• One Internal 2.5" and two external 3.5" drive bays support up to five 2.5" HDD/ SSDs (via optional kit IDT-3102E)
• Supports 80 plus single power supply up to 700W
• Smart fan speed control for system fans

HPC-7442
4U Rackmount Chassis for EATX/ ATX Motherboard with Up to 8 SAS/ SATA HDD Trays
• Shock-resistant disk drive bay holds four hot-swap 3.5" and 2.5" SAS/ SATA disk trays, one slim optical disk drive, and one 3.5" internal drive
• With installation of optional storage upgrade kit, eight hot-swap HDD trays provide high storage capacity
• Supports 80 Plus certified single and redundant power supply
• Front-accessible system fan
• LED indicators and audible alarm notification for system fault detection

Industrial Computers

Intelligent Systems
Transforming the Industrial Cloud Era
With innovative technologies for cloud computing applications and services (industrial and video servers), edge computing applications (fanless, slim & portable devices), to high performance embedded systems (blade computing, network processor platforms, and DSP processing), Advantech is devoted to transforming our embedded systems into intelligent systems with smart, secured, energy-saving features. Designed by our Industrial Cloud Built-in Services and professional System Design-To-Order Services (System DTOS) teams, Advantech’s intelligent systems are designed to target multiple vertical markets in transportation, industrial automation (machine automation, equipment/builders), digital signage, and also video applications (video infrastructure and video surveillance).

Server-grade IPCs

ASMB-584
Intel® Xeon® E3 V3 Micro ATX Server Board
• Supports LGA 1150 Intel® Xeon® E3 V3 processors
• Two PCIe x 16 slots (x 8 link), one PCIe x 4 and one PCI slots
• DDR3 1600 MHz ECC UDIMM up to 32GB
• Rackmount optimized placement with positive air flow design
• Supports iAMT 9.0 or IPMI (optional) and Embedded software APIs and utilities

ASMB-764
Intel® Xeon® E3 V3 ATX Server Board
• Supports LGA-1150 Intel® Xeon® E3 V3 processors
• One Gen 3.0 PCIe x 16 or two PCIe x 16 slots with x 8 link, two PCIe x 1 and three PCI slots
• DDR3 1600 MHz ECC UDIMM up to 32GB
• Rackmount optimized placement with positive air flow design
• Supports iAMT 9.0 or IPMI (optional) and Embedded software APIs and utilities

ASMB-8221
Intel Xeon® E5 ATX Server Board USB 3.0, IPMI
• ATX Server Board with Intel Xeon® E5-2600 (v2) processor
• DDR3 1333 MHz RDIMM up to 96 GB
• 5 x Gen 3.0 PCIe x 16 slots
• 0 ~ 60°C ambient operating temperature range
Vision System

**AIIS-1240**
PoE Control Box, Supports Intel® Core™ i7/i5/i3 CPU, 4-CH GbE PoE
- Intel® 3rd/2nd Gen Core™ i7/i5/i3 CPU (LGA1155)
- 4-CH GbE PoE (Power over Ethernet), IEEE 802.3af compliant
- Powered device auto detection and classification
- Supports IEEE 1588 & GigE Vision device
- Volume less than 3 Liters

Network Appliance

**FWA-2320**
1U Network Appliance with Intel® Atom™ C2000 System On Chip
- Enhances scalability, security and reliability for cost sensitive enterprise applications
- 2 x DDR3/DDR3L Memory DIMMs up to 1600 MHz
- 6 x GbE ports, 1 x internal 25/5/3.5" SATA HDD, 2 x USB
- 1 x PCIe extension slot (optional)

**NCP-3110**
1U Packetarium™ Network Processor Platform
- Supports Cavium CN6880 32-core 1.2GHz processor
- 2 x 2.5" SATA HDD/ SSD bays, 2 x 10GbE SFP+ and 8 x 1GbE RJ45 ports
- 4 x metallic/LAN bypass pairs
- TurboDPI Support (optional)

**Multimedia Processing Cards**

**DSPC-8662**
Full-length PCI Express Card with 8 TI 8-core DSPs
- On-board 8 TI TMS320C6678 DSPs with PCIe Gen 3 x 8 interface
- 8 TMS320C66x DSP Core Subsystems @ 1.0/1.25 GHz per DSP
- 2 GB DDR-1333 memory per DSP
- Supports 4-channel SDI video + audio inputs up to Full HD 60 fps
- Supports H.264/MJPEG/RAW HW decoding
- 4-channel HDMI video/ audio outputs up to 1920 x 1080
- Powered by quad TI TMS320DM8168 SoC
- 4-ch 3G-SDI inputs and SDK
- 4-ch HDMI PCIe Video Decoder Card with 8TI TMS320DM8168 SoC
- Supports 9 ~ 36V wide range DC input
- 4GB DDR3 memory per channel

**CompactPCI® Platforms**

**MIC-3328**
3U CompactPCI PlusIO Intel® 3rd Generation Core™ Processor Blade
- Supports 3rd generation Intel® Core™ processor and QM77 PCH
- 4 GB DDR3 1600 soldered SDRAM with ECC (max 8GB)
- 1 x 2.5" SATA-III SSD, CFast, XMC, SATA NAND Flash on board (optional)
- Triple independent display support

**MIC-3396**
6U CompactPCI 4th Generation Intel® Core™ i3/i5/i7 Processor Blade
- Supports 4th Generation Intel® Core™ i3/i5/i7 processors 2 x SATA ports, 1 x USB 3.0, 4 x USB 2.0, 2 x DVI ports, 2 x RS-232 ports, 1 x PS/2 connector and PCIe x 8 interface to RTM
- Optimized single-slot SBC with 2.5" SATA-III HDD/ CFast socket/ on-board flash (optional)
- 2 x SATA ports, 1 x USB 3.0, 4 x USB 2.0, 2 x DVI ports, 2 x RS-232 ports, 1 x PS/2 connector

**CPCI-8220**
6U CompactPCI Freescale QorIQ P2040 Ruggedized Processor Blade
- Supports Freescale QoriQ™ P2040 at 1.2 GHz
- Up to 4GB DDR3 with ECC support
- Supports extended operating temperature range -40°C ~ 85°C (optional)
- Supports WR VxWorks 6.9 or WR Linux 4.3

**Transportation Systems**

**ITA-1610**
Intel® Atom™ DS25 Compact System with Dual GigaLAN and Dual Display
- Supports 9 - 36 V wide range DC input
- Supports up to 2 x GbE, 6 x USB 2.0, 6 x COM ports
- Supports RS-232/422/485 with serial ports automatic flow control
- Onboard DDR3 memory up to 2 GB and optional NVRAM
- Supports 1x 2.5" HDD

**ITA-5710**
EN 50155 Certified Compact Fanless System with Intel® Atom™ D525 Processor
- Satisfies temp. standard:EN 50155 TX (-40 ~ 70°C) and IEC 61373 body mount class B
- Compliant with EN 50121-3-2 EMC test standard
- Ruggedized connectors (M12) used for communication and power ports
- Optional PCI/miniPCIe slots for expansion
- Supports easy-swap HDD/SSD/CF module

**ITA-5730**
EN 50155 Certified Compact Fanless System with Intel® 3rd Generation Core™ i Processor
- Satisfies temp. standard: EN 50155 TX (-40 ~ 70°C) and IEC 61373 body mount class B
- Compliant with EN 50121-3-2 EMC test standard
- Ruggedized connectors (M12) used for communication and power ports
- Optional PCI/miniPCIe slots for expansion
- Supports easy-swap HDD/SSD/CF module
As a leading industrial automation provider, Advantech is dedicated to providing fanless, industrial-proven and application ready control platforms. With a robust design, they include built-in industrial I/O functions, isolated chassis grounds, multiple expansion solutions and multiple mounting methods. Advantech’s UNO-2000 series of fanless highly ruggedized embedded automation computers include Advantech iDoor technology which supports automation feature extensions such as industry FieldBus communication, Wi-Fi/3G, digital I/O, including palm, small, and regular-size form-factors with indicated market segments in terms of entry, value and performance product positioning, which can fulfill a diverse range of requirements.

### Din-rail Embedded Controller

#### UNO-1483G
Intel® 4th Gen Core™ i3 DIN-Rail controller with DIO, iDoor, PCIe, 4GbE
- Dual Power Inputs reducing down time
- 4 x GbE support IEEE 1588, 2 x USB 3.0 super-speed ports
- 4 x DI, 4 x DO, 1 x RS-232, 2 x RS-422/485
- DP + VGA dual display outputs
- 2 x mPCIe, 1 x PCIeExpress, 1 x mSATA, 1 x SATA

#### UNO-1110
TI Cortex A8 DIN-rail controller with 2 x LAN, 5 x COM and DIO
- TI Cortex A8 AM3505 600MHz CPU
- 2 x LAN, 1 x RS-485, 4 x RS-232/422/485
- 4 x DI and 2 x DO for event handling
- Dual power inputs and wide temperature (-10 ~ 70 °C)

#### UNO-1172A/ AE
Intel® Atom™ D510 DIN-rail Controller with 3 x GbE, 4 x COM, and System Diagonostic
- System diagnosis function with event trigger
- 3 x GbE for both teaming function & up/down stream networks
- Mini PCIe and PC/104+ expansion
- 1 MB battery- backup SRAM

### Compact Embedded Controller

#### UNO-2272G
Intel® Atom™ E3825 Automation Controller with HDMI, 3 x USB, 1 x GbE and 2 x Mini PCIe
- Intel® Atom™ E3825 1.33GHz processor
- 1 x RS-232, 1 x GbE, 1 x HDMI and 3 x USB (1x USB 3.0), 1 x mSATA
- 2 x MiniPCIe with SIM card support for WLAN/3G solution
- iDoor technology support

#### UNO-2362G
AMD® Dual Core T40E Small-Size Automation Computer with 1 x GbE, 1 x mPCIe, HDMI/DP
- AMG G-Series T40E 1.0GHz processor
- 1 x RS-232, 1 x RS-485, 1 x GbE, 1 x DisplayPort, 1 x HDMI, 1 x mSATA, 1 x SATA (optional)
- 1 x MiniPCIe with SIM card support for WLAN/3G solution
- iDoor technology support

#### UNO-2483G
Intel® Core™ i7/ i3/ Celeron Regular-Size Automation Computer with 4 x GbE, 2 x mPCIe, HDMI/VGA
- Intel® Core™ i7-4650U 1.7GHz/i3-4010U 1.7GHz/ Celeron 2980U 1.6GHz processor
- 2 x RS-232, 2 x RS-422/485, 4 x GbE, 1 x HDMI, 1 x VGA, 4 x USB (2 x USB 3.0), 1 x mSATA, 2 x SATA
- 2 x MiniPCIe
- iDoor technology support
**Wallmount Automation Computers**

**UNO-3072A/ 3074A**
Intel® Atom™™ Automation Computers with 2/4 x PCI, 2 x GbE, RAID and FireWire
-  Intel® Atom™™ D510 1.66 GHz CPU
-  IEEE-1394 and GbE for vision
-  Dual SATA HDD support RAID 0/1 and additional eSATA
-  512 KB battery-backup SRAM

**UNO-3082/ UNO-3084**
Intel® Core2 Duo Automation Computers with Dual DVI, 2 x PCI/ PCIe + 3 x PCI
-  Intel® Core 2 Duo L7500 1.6 GHz CPU
-  Dual DVI-I for triple displays and IEEE-1394 for vision
-  Teaming function support on 2 x redundant GbE
-  Dual SATA HDD support RAID 0/1 and additional eSATA

**UNO-3073GL**
Intel® Celeron 807UE 1GHz Automation Controllers with 2 x GbE, 2 x COM and 3/5-slot Expansion
-  2 x GbE, 2 x COM, 8 x USB and internal USB for dongle
-  DVI-I/ HDMI with dual independent display
-  UART with 128-byte FIFOs standard
-  Operating systems supported: Windows 2000/XP/Vista/7, and Linux 2.4/2.6

**UNO-3073G/ 3075G**
Intel® Celeron™ 847E Dual-core 1.1GHz Automation Controllers with 2 x GbE, 2 x COM and 3/5-slot Expansion
-  2 x GbE, 2 x COM, 8 x USB and internal USB for dongle
-  DVI-I/ HDMI with dual independent display
-  UART with 128-byte FIFOs standard
-  Operating systems supported: Windows 2000/XP/Vista/7, and Linux 2.4/2.6

**UNO-3083G**
Intel® Core™ i7-3555LE Dual-core 2.5GHz Automation controller with 2x GbE, 2xCOM, 4xUSB3.0, 5xUSB2.0 (1 for internal) and 3-slot expansion
-  2 x GbE, 2 x COM, 8 x USB and internal USB for dongle
-  DVI-I/ HDMI with dual independent display
-  UART with 128-byte FIFOs standard
-  Operating systems supported: Windows 2000/XP/Vista/7, and Linux 2.4/2.6

**UNO-3085G**
Intel® Core™ i7-3555LE Dual-core 2.5GHz Automation controller with 2x GbE, 2xCOM, 4xUSB3.0, 5xUSB2.0 (1 for internal) and 5-slot expansion
-  2 x GbE, 2 x COM, 8 x USB and internal USB for dongle
-  DVI-I/ HDMI with dual independent display
-  UART with 128-byte FIFOs standard
-  Operating systems supported: Windows 2000/XP/Vista/7, and Linux 2.4/2.6

**Mini PCIe Expansion Kit for iDoor Technology**

**PCM-261DPB**
PROFIBUS MiniPCIe Card
-  Advantech standard iDoor technology
-  PCI Express® mini card specification revision 1.2 compliant
-  Supports Hilscher profibus protocol library
-  High speed transmission up to 12 Mbps
-  I/O address automatically assigned by PCIe plug & play

**PCM-26D2CA**
2-Ports Isolated CANBus mPCIe, CANOpen, DB9
-  Advantech standard iDoor technology
-  PCI Express® mini card specification revision 1.2 compliant
-  Supports Advantech CANopen protocol library
-  Operates two separate CAN networks simultaneously
-  High speed transmission up to 1 Mbps
-  I/O address automatically assigned by PCIe plug & play

**PCM-24D2R2/ PCM-24D2R4**
2-Ports Isolated RS-232, RS-422/485 mPCIe, DB9
-  Advantech standard iDoor technology
-  Speeds up to 921.6 kbps for extremely fast data transmission (PCM-24D2R4)
-  Supports any baud rate setting
-  Supports isolated protection with 2 ports RS-232/422/485
-  Operating systems supported: Windows 2000/XP/Vista/7, and Linux 2.4/2.6

**PCM-2300MR**
2MB industrial MRAM Mini PCIe card Storage
-  Supports Microsoft® Windows CE/C6E6 driver
-  Supports Microsoft® Windows enterprise server 2008 / WES (Windows Embedded Standard)™/WES2009/
  Win7/Win7® 32 and 64-bit
-  Supports Linux Intel x86 hardware platform

**PCM-27D24DI**
24-Channels Isolated Digital I/O with counter mPCIe, DB37
-  Advantech standard iDoor technology
-  Supports wide-input/ output voltage (0-30 VDC/5-40 VDC)
-  Supports Hilscher profibus protocol library
-  High over-voltage-protection (70 VDC) and voltage isolation (2.5KVDC)
-  Easy configuration & efficient programming by Advantech DAQNavi
Data Acquisition and Control

A Broad Selection of Form Factors to Satisfy All Your DAQ Needs

Advantech offers a wide range of industrial data acquisition and control devices with various interfaces and functions. Based on PC technology, from ISA to PCI Express, and signal conditioning to graphical software tools, Advantech’s industrial I/O products are reliable, accurate, affordable, and suitable for many industrial automation applications, such as test & measurement, laboratory applications, machine automation, and production testing. Moreover, its brand new I/O driver DAQNavi supports Windows 7 and 8, helping customers seamlessly integrate Advantech’s data acquisition cards to latest platforms, improve performance, and reduce development time.

### PCI Express DAQ Cards

**PCIE-1730**
32-ch TTL and 32-ch Isolated DI/O PCI Express Card
- 16-ch TTL DI and 16-ch TTL DO with 5 V compatibility
- 16-ch isolated DI and 16-ch isolated DO with 24 V compatibility
- High-voltage isolation on all isolated DI/DO channels (2,500 VDC)

**PCIE-1752/1754/1756**
64-ch Isolated Digital I/O PCI Express Card
- PCIE-1752: 64-ch DO
- PCIE-1754: 64-ch DI
- PCIE-1756: 32-ch DI, 32-ch DO
- High-voltage isolation on all channels (2,500 VDC)
- Keep the output setting and value after system hot reset
- Interrupt handling capacity

**PCIE-1760**
8-ch Relay and 8-ch Isolated DI PCI Express Card
- 8-ch isolated DI with programmable digital filter
- High-voltage isolation on input channels (2,500 VDC)
- Keep the output setting and value after system hot reset
- Interrupt handling capacity

**PCIE-1706/1714**
Simultaneous Analog Input PCI Card
- Each channel has dedicated A/D converter
- PCI-1706: 16-bit, 250 kS/s, 8-ch differential AI
- PCI-1714: 12-bit, 30 MS/s, 4-ch single-ended AI
- 30 VDC over-voltage protection

**PCIE-1810**
12-bit 16-ch AI Multifunction PCI Express Card
- PCI-1810: 500 kS/s
- Analog Trigger and Digital Trigger
- Waveform Generator for AO
- 24 programmable digital I/O lines
- Two 32-bit programmable counter/ timers

**PCIE-1816/1816H**
16-bit 16-ch AI Multifunction PCI Express Card
- PCIE-1816: 500 kS/s
- PCIE-1816H: 1 Mks/s
- Analog Trigger and Digital Trigger
- Waveform Generator for AO
- 24 programmable digital I/O lines
- Two 32-bit programmable counter/ timers

**PCIE-1840/1802**
125 MS/s, 16-bit, 4-ch Simultaneous PCI Card
- 4 analog inputs, up to 125 MHz, 16-bit resolution
- 500 MHz Time Interleaved Sampling
- Non-stop data streaming capable
- 2 GB on-board memory
- 1M or 50 Ohm selectable input impedance
- On-Board tunable anti-aliasing filter AC/DC Coupling

### PCI DAQ Cards

**PCI-1706/1714**
Simultaneous Analog Input PCI Card
- Each channel has dedicated A/D converter
- PCI-1706: 16-bit, 250 kS/s, 8-ch differential AI
- PCI-1714: 12-bit, 30 MS/s, 4-ch single-ended AI
- 30 VDC over-voltage protection

**PCI-1716/L**
250 KS/s, 16-bit, 16-ch Multifunction PCI Card
- 16 single-ended or 8 differential or a combination of analog inputs
- 16-bit A/D converter, with up to 250 kHz sampling rate
- Auto-calibration
- 16-ch digital input and 16-ch digital output
- 2 analog output channels (PCI-1716 only)

**PCI-1730U/1756**
32-ch/64-ch Isolated Digital I/O Universal PCI Card
- High-voltage isolation on output channels (2,500 VDC)
- Wide output range (5 – 40 VDC)
- High-sink current for isolated output channels (80 mA max./Channel)
- Current protection for each port
Star Product Highlights

PC/104 & PCI-104 DAQ Modules

PCM-3813I
100 kS/s, 12-bit, 32-ch Isolated Analog Input PCI-104 Module
- Software selectable wiring: single-ended or differential
- Programmable gain for each input channel
- Onboard ring buffer (1,024 samples)
- 2500 V_{DC} isolation protection

PCM-3753I
96-ch Digital I/O PCI-104 Module
- 5V/ TTL compatible DIO channels
- Supports both dry contact and wet contact
- Keeps the last output value after system hot reset
- Interrupt capacity for faster reading and reduce CPU loading

PCM-3730I
32-ch Isolated Digital I/O PCI-104 Module
- 16 isolated DI and 16 isolated DO channels
- Keeps the last output value after system hot reset
- Interrupt capacity for faster reading and reduce CPU loading
- 2500 V_{DC} isolation protection

USB DAQ Modules

USB-4711/4716
150 kS/s, 12-bit / 200 kS/s, 16-bit
16-ch Multifunction USB Module
- 2 analog output channels
- 5V/TTL compatible DIO (8 inputs, 8 outputs)
- 1 counter for event counting, frequency measurement and PWM output
- Lockable USB cable for secure connection

USB-4750
32-ch Isolated Digital I/O USB Module
- 16 isolated DI and 16 isolated DO channels
- Keeps the last output value after system hot reset
- 2500 V_{DC} isolation protection

USB-4761
8-ch Relay and 8-ch Isolated Digital Input USB Module
- 8 Form C (SPDT) relay channels
- Relay contact rating: 0.25 A @ 250 V_{AC}, 2 A @ 30 V_{DC}
- LED indicators to show activated relay
- 2500 V_{DC} isolation protection

PCI/PCIE Communication Cards

PCI-1620/1622
8-port PCI Express Serial Communication Card with Surge Protection
- PCI-1620: RS-232
- PCI-1622: RS-232/422/485
- 2,500 VDC surge protection
- DMA mastering to reduce CPU loading
- 128-byte FIFOs with advanced management

PCIE-1620/1622
8-port PCI Express Serial Communication Card with Surge Protection
- PCIE-1620: RS-232
- PCIE-1622: RS-232/422/485
- 2,500 VDC surge protection
- DMA mastering to reduce CPU loading
- 128-byte FIFOs with advanced management

PCIE-1672PC/1674PC
4/8-port PCI Express Power-over-Ethernet Communication Card
- Onboard DSP to reduce CPU loading
- 2250 V_{DC} isolation protection
- Supports Jumbo frame (9,500 byte) and link aggregation
- Supports IEEE-1588 and IEEE-802.1 AS timing and synchronization

CompactPCI System

MIC-3110
3U CompactPCI Supports 7 Peripheral Slot
- Choose between high performance or low power consuming CPUs
- Lockable power on/off switch prevents accidental access
- 40dB ultra low system noise for working environments
- Easy-accessible cooling fan and air filter for system maintenance
- Robust design, Anti-Vibration up to 2G with SSD

MIC-3106
3U CompactPCI Supports 2 Peripheral Slot
- Choose between high performance or low power consuming CPUs
- Lockable power on/off switch prevents accidental access
- 40dB ultra low system noise for working environments
- Easy-accessible cooling fan and air filter for system maintenance
- Robust design, Anti-Vibration up to 2G with SSD
Distributed I/O Modules

Providing Remote I/O Connectivity from RS-485, Ethernet to Wireless Sensor Networks

As the “Internet of Things” is rapidly becoming a reality, customers can take advantage of Advantech’s machine-to-machine I/O modules: ADAM-2000 series, RS-485 based ADAM-4000 & ADAM-4100 series and Ethernet-based ADAM-6000 & ADAM-6200 to monitor and manage field sites easily because the field site status can be identified, tracked, and eventually altered remotely. Remote data acquisition can build up a reliable and stable network for a variety of applications, such as industrial automation, environmental and facility management, intelligent transportation system, and so on.

Daisy-chain Ethernet I/O Module

**ADAM-6217**
8-ch Isolated Analog Input Modbus TCP Module
- Daisy chain connection with auto-bypass protection
- Digital input calibration
- Web language support: HTML 5, JavaScript, XML
- Supports GCL and Peer-to-Peer
- Group configuration capability for multiple module setup

**ADAM-6260 / 6266**
6-ch Relay Output Modbus TCP Module/4-ch Relay Output Modbus TCP Module with 4-ch DI
- Daisy chain connection with auto-bypass protection
- DI/O LED Indication
- Web language support: HTML 5, JavaScript, XML
- Supports GCL and Peer-to-Peer
- Group configuration capability for multiple module setup

Smart Ethernet I/O Modules

**ADAM-6017**
8-ch Isolated Analog Input Real-time Ethernet Module
- 2-ch DO for all trigger applications
- Modbus RTU, TCP/IP, UDP and HTTP protocol
- Embedded web server
- Supports data stream and event trigger
- Supports GCL and Peer-to-Peer

**ADAM-6050**
18-ch Isolated Digital I/O Modbus TCP Module
- Modbus RTU, TCP/IP, UDP, DHCP and HTTP protocol
- 12-ch digital input and 6-ch digital output
- Embedded web server
- Supports data stream and event trigger
- Supports GCL and Peer-to-Peer

**ADAM-6060 / 6066**
6-ch Digital Input and 6-ch Relay Modbus TCP Module/6-ch Digital Input and 6-ch Power Relay Modbus TCP Module
- Modbus RTU, TCP/IP, UDP, DHCP and HTTP protocol
- Embedded web server
- Supports data stream and event trigger
- Supports GCL and Peer-to-Peer
Star Product Highlights

Real-time Ethernet I/O Modules

**ADAM-6117**
8-ch Isolated Analog Input Real-time Ethernet Module
- ADAM-6117EI: EtherNet/IP protocol
- ADAM-6117PN: PROFINET protocol
- High common mode voltage 200 V_{DC}
- Isolation Protection: 2,500 V_{DC}
- Built-in 2-port switch for Daisy-chain connection

**ADAM-6150**
15-ch Isolated Digital I/O Real-time Ethernet Module
- ADAM-6150EI: EtherNet/IP protocol
- ADAM-6150PN: PROFINET protocol
- 8-ch digital input and 7-ch digital output (sink)
- Normal output current: 51 mA (per channel)
- Built-in 2-port switch for Daisy-chain connection

**ADAM-6160**
6-ch Relay Output Real-time Ethernet Module
- ADAM-6160EI: EtherNet/IP protocol
- ADAM-6160PN: PROFINET protocol
- 5-ch Form C and 1-ch Form A/B (selectable) relay
- Breakdown voltage: 500 V_{AC}, 50/60 Hz
- Built-in 2-port switch for Daisy-chain connection
- Contact Rating: 5 A @ 250 V_{DC}, 5 A @ 30 V_{DC}

M2M (Machine to Machine) I/O Modules

**ADAM-2520Z**
Wireless Modbus RTU Gateway
- 2.4 GHz IEEE 802.15.4 compliant RF
- Outdoor range up to 1,000 m
- Supports battery input with 2 x AA alkaline batteries
- Supports Modbus RTU protocol
- Network capacity with 32 nodes (routers & end devices)

**ADAM-2031Z**
Wireless Temperature & Humidity Sensor Node
- 2.4 GHz IEEE 802.15.4 compliant RF
- Outdoor range up to 110 m
- Supports battery input with 2 x AA alkaline batteries
- Built-in temperature / humidity sensor input

**ADAM-2051PZ**
Wireless 8-ch Digital Input Nods with Power Amplifier
- 2.4 GHz IEEE 802.15.4 compliant RF
- Outdoor range up to 1,000 m
- Supports battery input with 2 x AA alkaline batteries
- 10K Ω input resistance

Robust RS-485 I/O Modules

**ADAM-4117/ 4118**
Robust 8-ch Analog Input Module with Modbus/
Robust 8-ch Thermocouple Input Module with Modbus
- Modbus RTU protocol
- Wide operating temperature -40 ~ 85ºC (-40 ~ 185ºF)
- 8 differential and independent configuration channels
- High common mode voltage 200 V_{DC}
- 1 kV surge, 3 kV EFT and 8 kV ESD protection

**ADAM-4150**
Robust 15-ch Digital I/O Module with Modbus
- Modbus RTU protocol
- Wide operating temperature -40 ~ 85ºC (-40 ~ 185ºF)
- 7-ch digital input and 8-ch digital output
- 1 kV surge, 3 kV EFT and 8 kV ESD protection
- Broader power input range (10 ~ 48 V_{DC})

**ADAM-4168**
Robust 8-ch Relay Output Module with Modbus
- Modbus RTU protocol
- Wide operating temperature -40 ~ 85ºC (-40 ~ 185ºF)
- 8-ch Form A relay output
- 1 kV surge, 3 kV EFT and 8 kV ESD protection
- Broader power input range (10 ~ 48 V_{DC})

RS-485 I/O Modules

**ADAM-4017+/ 4018+**
8-ch Analog Input Module with Modbus/
8-ch Thermocouple Input Module with Modbus
- Modbus RTU protocol
- 8-ch AI /8-ch Thermocouple Input
- Over Voltage Protection: ±35 V_{DC}
- Built-in TVS/ESD protection
- Isolation Voltage: 3,000 V_{DC}

**ADAM-4051/ 4055**
16-ch Isolated Digital Input Module with Modbus/
16-ch Isolated Digital I/O Module with Modbus
- Modbus RTU protocol
- ADAM-4051: 16-ch DI; ADAM-4055: 8-ch DI & 8-ch DO
- Dry/ wet contact digital input level
- Isolation Voltage: 2,500 V_{DC}
- Over Voltage Protection: 70 V_{DC}

**ADAM-4068**
8-ch Relay Output Module with Modbus
- Modbus RTU protocol
- 8-ch relay output
- Contact Rating: 0.5 A @ 120 V_{AC}; 0.25 A @ 240 V_{AC}
- 1 A @ 30 V_{DC}; 0.3 A @ 110 V_{DC}
- Switch Time: relay on time (typical): 3 msec, relay off time (typical): 4 msec
Programmable Automation Controller

**New Generation of Programmable Automation Controller**

Advantech’s Programmable Automation Controller is a PC-based controller which leverages embedded computing technology to achieve the same level of ruggedness as a PLC. With open architecture and scalable I/O Modules, the APAX series is more flexible in order to implement various modern control strategies. It also inherits an excellent communication capability to collaborate with other industrial devices. Not only does it have superb reliability, but the APAX series is also equipped with DSP to handle the APAX bus to provide backup and redundancy functionality to enhance the total availability.

### Controllers

**APAX-5620**
PAC with Xscale CPU and CANBus Master
- Compact controller with Redundant Capability
- C/C++, .NET and KW Softlogic programming
- CompactFlash card slot for data logging

**APAX-6572**
PAC with Intel Atom CPU
- High performance Intel Atom D510 CPU
- C/C++, .NET and KW Softlogic programming
- Equipped with high-speed slots (PCI) for communication module expansion

**APAX-5522PE/5017PE/5040PE/5060PE**
IEC-61850-3 Compliant PAC
- Flexible I/O expansion: up to 32 modules
- IEC-61850-3 compliant
- Time stamp function support

### Couplers

**APAX-5070**
Modbus/ TCP Communication Coupler
- Flexible I/O expansion to minimum used couplers
- Flexible Modbus mapping table
- Support UDP Data Streaming function and Event Alarm

**APAX-5071**
PROFINET Communication Coupler
- Flexible I/O expansion to minimum used couplers
- Compliance to PROFINET International (PI) certification
- Easy integration with 3rd party PLCs

**APAX-5072**
EtherNet/ IP Communication Coupler
- Flexible I/O expansion to minimum used couplers
- Compliance to EtherNet/ IP ODVA International (PI) certification
- Easy integration with 3rd party PLCs

### I/O Modules

**APAX-5046SO**
20-ch Source Type Digital Output Module
- Voltage range: 10 ~ 35 VDC @ 1A per channel
- Provides short circuit protection, thermal shutdown protection, fail safe protection
- 2500VDC isolation between channel to backplane

**APAX-5017H**
12-ch High Speed Analog Input Module
- Voltage and current inputs including ± 10 V and 4 ~ 20 mA
- Each channel can be configured with different input type and range
- 1000 samples/second per channel

**APAX-5080**
4/8-ch High Speed Counter Module
- 5 counter: Up, Up/ Down, Pulse/ Direction, A/ B phase, Frequency
- 4 DI channels for counter gate inputs
- 4 DO channels for alarm outputs
Machine Automation

Integrated Soft Computing to Enable Intelligent Machines

Supporting Advantech’s PCI-1245/1265/1285/1245E/1285E/1245L series, SoftMotion is an important core technology in the machine automation field. Advantech independently developed its own SoftMotion control technology and uses the FPGA (Field Programmable Gate Array) and DSP (Digital Signal Processing) as the core-computing hardware platform. Meanwhile, based on the three motion control architectures - centralized, distributed, embedded, Advantech’s comprehensive product offering helps our customers to continuously progress their technologies and optimize customer’s devices control to minimize their programming needs.

Motion Control PCI Cards

**PCI-1245E/ 1285E**
Economic SoftMotion 4/ 8-axis Stepping and Servo Motor Control PCI Card
- Softmotion on DSP
- T&S-curve speed profile, Prog. Acc and Dec
- Jog Move, P to P move, Home Move
- 2-axis Linear interpolation, E-Gear
- Single axis Position/ Speed override

**PCI-1245/ 1265/ 1285**
DSP-based SoftMotion 4/6/8-axis Stepping and Servo Motor Control PCI Card
- Functions supported by Economic version
- 2 axis circular move, Helical Move
- Path table, Tangential move, Look Ahead
- Superimposed Move, E-CAM, Tigger/ Latch
- Group position/ Speed override
- 16V/ 8DO/ 2AI (PCI-1265)

**PCI-1245L**
FPGA SoftMotion 4-axis Stepping and Servo Motor Control PCI Card
- SoftMotion on FPGA
- Single end pulse output for stepping motor
- T&S-curve speed profile, Prog. Acc and Dec
- Jog Move, P to P move, Home Move
- 2-axis Linear interpolation
- Single axis positions/ Speed override

AMONet Slave Modules

**AMAX-1220**
Economic 2-axis AMONet Motion Slave Module
- Maximum transmission (baud rate) can be up to 20Mbps with master card
- Maximum pulse train output up to 6.5 MHz & equipped with encoder input
- 2-axis point-to-point & linear interpolation
- Compact design & easy wiring by transfer cable to Servo drives

**AMAX-1240**
High-performance 4-axis AMONet Motion Slave Module
- Maximum transmission (baud rate) can be up to 20Mbps with master card
- Maximum pulse train output up to 6.5 MHz & equipped with encoder input
- 2-axis point-to-point, linear & circular interpolation
- On-board DSP to carry application-level function library support (ex: high-speed triggering)

**AMAX-1752/ 1754/ 1756**
Compact 32-ch Isolated Digital Input/ Output Slave Module
- Maximum transmission (baud rate) can be up to 20 Mbps with master card
- On-board terminal for direct wiring & LED indicators
- 2,500 Vrms isolation voltage
- Compact design for horizontal placement

AMONet Master Solutions

**PCI-1202U**
2-port AMONet RS-485 PCI Master Card
- Up to 64 slave AMAX modules per ring
- Transmission (baud rate) can be up to 20Mbps
- Communication distance is up to 100 M @ 10Mbps
- Programmable digital input to notify events
- Easy installation with RJ45 phone jack and LED diagnostic

**PCM-3202P**
2-Port AMONet RS-485 PC/104+ Master Module
- Up to 64 slave AMAX modules per ring
- Transmission (baud rate) can be up to 20Mbps
- Communication distance is up to 100 M @ 10Mbps
- Programmable digital input for event notification events

**PEC-3240**
Intel® Celeron® M 1.0 GHz 4-axis Embedded Motion Controller with 32-ch Digital I/O
- Onboard Intel® Celeron® M 1.0 GHz CPU
- 16-ch isolated DI and 16-ch isolated DO
- Independent 4-axis motion control
Power & Energy Automation

Ensure Reliable P&E Automation with IEC 61850-3 and IEEE 1613 Compliant Products

Advantech provides Power and Energy computers, controllers, and data acquisition module with rugged, cableless designs for harsh environments in Smart Substation and Green Energy applications. The UNO-4600 series and ECU-4000 series are compliant with the hardware requirements of IEC 61850-3, which defines the international standards of network and system communications in smart substation. Advantech also provides the ideal power and energy controllers (ECU-1000) for transformer and GIS switches, IED (Intelligent Electronic Devices) applications.

P&E Automation Computer

UNO-4671A
Intel® Atom™ D510/ D525 Substation Computers for Power Automation Applications
- Intel® Atom™ D510 1.66GHz/ D525 1.8GHz CPU
- 2 x RS-232 isolated ports, 4 x RS-422/ 485 isolated ports, 4 x RS-485 isolated ports
- 6 x 10/ 100Base-T RJ-45 connector
- 1 x internal CF card and 1 x 2.5"SATA HDD

ECU-4674
Intel® Atom™ N2600 Substation Computers for Power Automation Applications
- Intel® Atom™ N2600 1.6GHz CPU
- 2 x RS-232 isolated ports, 16 x RS-232/ 485 isolated ports
- 2 x 10/ 100/ 1000 Base-T, and 6 x 10/ 100 Base-T RJ-45 connector
- iCDManager : intelligent Connectivity Diagnose Manager

UNO-4673A/4683
Intel® Atom™ D510/ Core™ i7 Substation Computers for Power Automation Applications
- Intel® Atom™ D510 1.66GHz CPU (UNO-4673A)/ Intel® Core™ i7 2.0GHz CPU (UNO-4683)
- Fiber optic, IRIG-B, 6 x LAN, and 2 x COM
- PCI, Mini PCI, Mini PCIe, and PCI-104 expansions

P&E Automation Controller

ECU-1871
Intel® Atom™ D510 Modular Power & Energy Controller
- Intel® Atom™ D510 1.66GHz CPU
- 1 x RS-232 port, 2 x RS-485 isolated ports
- 2 x 10/100Base-T RJ-45 connector
- Windows® CE 6.0, WES 2009, and Linux ready solution
- 2 x PCI-104 extension slots

ECU-1911
Xscale @ PXA-270 520MHz All-in-one Open RTU
- Xscale @ PXA-270 520 MHz CPU
- 1 x RS-232 port, 3 x RS-485 isolated ports, 1 x VGA
- 2 x 10/100Base-T RJ-45 connector
- 8-ch 16-bit differential Analog Input
- 32-ch isolated Digital Input/Output

ECU-1710A
Intel® Atom™ D510 Automation Controller Combined with Embedded Computer and DAQ Cards
- Intel® Atom™ D510 1.66GHz CPU
- 2 x RS-232 ports
- 2 x 10/100Base-T RJ-45 ports
- 16-ch AI/ 4-ch AO/ 16-ch DI/ 1-ch Counter
- Integrated PCI-1710UL & PCI-1720U modules

P&E Automation Extension Cards

ECU-P1706/ ECU-P1300
Simultaneous AI Card Combined with Vibration Signal Modulate Card for ECU-1871
- Simultaneous 8-ch AI with PCI-104
- 250KHz/S, 16-bit, 8K Samples On-board FIFO
- 2-ch, 32-bit Timer/ Counter
- 0.1Hz-25Hz adjustable low pass filter (ECU-P1300)

UNOP-1618D/ 1628D
8-port Isolated RS-232/ 422/ 485 with/ without Port-to-port Isolation for UNO-4673A/ 4683
- 8 x COM
- Selectable RS-232/ 422/ 485 port
- Isolation 2500VDC (UNOP-1628D)
- Automation RS-485 data flow control

UNOP-1514C/ RE/ PE
4-port Fiber Optic LAN Card for UNO-4673A/ 4683
- LAN 100 Base-FX
- Distance: Up to 2km
- IEEE 802.3, 802.3u, 802.3x
- Wavelength : 1310nm
- 4 x SC type Multi-mode Fiber
WebAccess+ Solutions

Get into focused markets by WebAccess+ Solution Ready Packages

Integrated solutions, focused vertical markets, and strong partnership are three essential factors to grasp business growth opportunities in the new era of the Internet of Things. Advantech’s WebAccess+ Alliance is an innovative cooperation platform with a base of the IoT solution software - WebAccess - to link with hardware, partners’ strength and strategic co-marketing to get into focused vertical markets, such as oil & gas management, building automation, factory automation, and renewable energy management. Furthermore, Advantech also provides several powerful WebAccess bundled products to speed up your project implementation time and reduce managerial resources.

Advantech WebAccess Software

Advantech WebAccess
Browser-based HMI/SCADA Software
- View, control, configure systems through a web browser
- Redundant SCADA and COM ports
- Supports dynamic DNS and acts as OPC server & client
- Supports LonWorks LNS and BACnet IP
- Multi-touch gesture support
- Web-enabled video, audio, and Google Maps and GPS Location Tracking
- WebAccess Express - The Auto-Configuration Tool

HTML 5 Cross Platform Dashboard
- Supports Dashboard functionality via HTML5-compliant web browsers
- Built-in widgets to create the suitable information page by analysis charts and diagrams
- Supports HTML5 capable browsers, like Safari, Chrome, and Firefox
- Supports Dynamic thin clients access for a seamless viewing experience across PCs, Macs, tablets and smartphones

WebAccess Bundled Products

WA-TPC1771
17” Touch Panel Computer with 600/5,000 Tags WebAccess
- Built-in Windows 7 Embedded with Advantech WebAccess 600/5,000 Tags
- Intel® Atom™ D525 1.8 GHz CPU
- 8 DI/O and backup SRAM support

WA-UNO2178A
Compact SCADA Server with 600/5,000 tags WebAccess
- Built-in Windows 7 Embedded with Advantech WebAccess 600/5,000 Tags
- Intel® Atom™ D510 1.67 GHz CPU
- 2 x GbE, 8 x COM, 6 x USB 3.0 and 2 x MiniPCIe

BEMG-4221/4222
Energy Data Concentrator with 6 x USB, 4x COM/8 x COM, 128 Devices
- Built-in Windows CE with Advantech WinCE WebAccess
- Web-server function support customer with remote configuration, remote operation, remote maintenance
- Combines Advantech BEMS and power meter for energy saving solution

WebAccess+ Alliance

WebAccess+ Alliance
For Building Collaborative Partner Relationships
- Dedicated WA+ website
- Co-marketing with Advantech
- Technical summit for partners
- Dedicated solutions for vertical application
- WebAccess Alliance Partner Program (WAPP)
Application Specialized Solutions

Meet Industry Standards to Fit Specific Application Needs

To meet a range of diverse requirements and certification needs, Advantech provides application specialized solutions. Our industrial certified products meet special requirements in a wide range of demanding applications such as in Class I, Division 2 certification for oil & gas, IEC 61850-3/IEEE 1613 for power substation automation applications, EN50155 certification for railway automation. In addition, we have IP66 grade protection products and sunlight readable platforms for outdoor applications. Also, Advantech provides a series of Fieldbus products, including Ethernet/IP, PROFINET, PROFIBUS and CANopen protocols, for factory and production automation applications.

Class I, Division 2 (CID2) Certified Products for Oil & Gas Applications

UNO-1100 Series
Intel® Atom™ D510 DIN-rail PC with Class I, Division 2 Certification
- Class I, Division 2 certification
- System diagnosis function with event trigger
- UNO-1150G/1150GHE/1172AH
- -10 ~ 60°C operating temperature range with IP40 rating

ADAM-4000 Series
Robust RS-485 I/O Modules
- Modbus RTU protocol
- Wide operating temperature range: -40 ~ 85°C
- (-40 ~ 185°F)
- Broader power input range (10 ~ 48 VDC)

ADAM-6000 Series
Smart Ethernet I/O Modules
- Modbus RTU, TCP/IP, UDP and HTTP protocol
- Supports data stream and event trigger
- Supports GCL and Peer-to-Peer

EKI-2000/ EKI-7000 Series
Managed/ Unmanaged Ethernet Switches
- EKI-7758F
- EKI-2728/2725/2528/2525, EKI-2541S/2541M
- Operating temperature: -10~60 °C
- Dual 12 ~ 48 VDC power input and 1 relay output

EKI-1200/EKI-1500 Series
Device Servers, and Modbus Gateway
- EKI-1521/1522/1524
- EKI-1221/1222/1224 and EKI-1221DF/1222D
- Operating temperature: -10~60 °C
- 12 ~ 48 VDC redundant dual inputs

IEC 61850-3/ IEEE 1613 Compliant Products for Power & Energy Applications

UNO-4673A/4683
IEC 61850-3 and IEEE 1613 Certified Substation computers with 6 x LAN, 2 x COM, and 3 x Expansion Slots
- Intel® Atom™ D510 1.66 GHz CPU/ Intel® Core™ i7 260LE 2.0 GHz CPU
- Supports fiber optic, IRIG-B, LAN, and COM
- Supports PCI, Mini PCI, Mini PCIe, and PCI-104 expansions

ECU-1871
Intel® Atom™ D510 Modular Power & Energy Controller
- Intel® Atom™ D510 CPU
- 1 x RS-232 port/ 2 x RS-485 isolated ports
- 2 x 10/100Base-T RJ-45 connector
- Windows® CE 6.0, WES 2009, and Linux ready solution
- Support 2 x PCI-104 extension slots

APAX-5522PE/5017PE
5040PE/5060PE
IEC 61850-3 Compliant PAC
- Flexible I/O expansion: up to 32 modules
- IEC 61850-3 compliant
- Time stamp function support
EN50155 Certified Products for Railway Automation

TPC-8100TR
10.4” EN50155 Railway Panel Computer
- 10.4” SVGA 800x600 with 400 nits LED display
- Fanless with Dual core 1.6 GHz processor
- Alternative keypad control in front bezel
- Motherboard / daughter board with coating for weather proof
- All around IP65 with waterproof M12 connector

WebOP-2000T Series
4.3” to 15” WQVGA Operator Panel
- 4.3” to 15” WQVGA 65,536 colors TFT LCD
- Front panel flat-sealed with IP66 compliance
- 10W low power consumption
- Supports up to four types of devices
- 10.4” EN50155 Railway Panel Computer
- 4.3” to 15” WQVGA Operator Panel

Fieldbus Controllers and I/Os

UNO-2362G
AMD® Dual Core T40E Small-Size Automation Computer with 1 x GbE, 1 x mPCIe, HDMI/DP
- AMG G-Series T40E 1.0GHz processor
- 1 x RS-232, 1 x RS-485, 1 x GbE, 1 x DisplayPort, 1 x mHCI
- 1 x mSATA, 1 x SATA (optional)
- 1 x MiniPCIe with SIM card support for WLAN/3G solution
- iDoor technology support

PC-62D2CA/ PC-62D1PB
2-Ports Isolated CANBus mPCIe, CANOpen, DI/DO/PROFIBUS MiniPCIe card
- Supports Advantech CANOpen protocol library/PROFIBUS MiniPCIe card
- Operates two separate CAN networks simultaneously (PC62D2CA)
- Front LED indicator to show operating status

阳光可读性平台

APAX-5071/ 5072/ 5073
PROFINET/ Ethernet/IP/ PROFIBUS Communication Coupler
- Flexible I/O expansion to minimum used couplers
- Easy to Integrate with 3rd party PLCs
- Versatile APAX I/O Modules

TPC-1251SR/ 1551SR
12.1” SVGA/ 15” XGA High Brightness LCD
- 12.1” SVGA/ 15” XGA high brightness LED backlight
- -20 – 60 °C wide operating temperature range
- Optical bonding enhances reflectance rate of under 0.2%
- IP65 compliant front panel
- Energy Star certified

FPM-3151SR
15” XGA High Brightness Industrial Monitor with Resistive Touch screen Touchscreen, Direct-VGA and DVI Ports
- 15” XGA high brightness LED backlight
- -20 – 60 °C wide operating temperature range
- Direct-VGA and DVI port input interface
- Optical bonding enhances reflectance rate of under 0.2%
- IP65 compliant front panel
- Energy Star certified
Enabling an Intelligent Planet

Advancements in technology have paved the way for modern civilization; allowing us to interconnect human lives in a way never before thought possible. Advantech, a global industrial computing and automation manufacturer, continues to explore what technology can bring into our lives. With over three decades of proven experience, we combine information, automation and communication technology with efficiency, energy conservation, minimized risk, cost-effectiveness, and environmental protection to create solutions to enable an intelligent planet.
**Factory Automation**
- Facility Automation
- Factory Energy Management
- Equipment Automation
- Production Automation

**Machine Automation**
- Electronics Manufacturing
- Robotics
- Machinery
- Machine Tools

**Intelligent Transportation**
- Railway Stations
- Onboard Train and Rolling Stock
- Railway Wayside
- Road Traffic

**Intelligent Building**
- Web-enabled Building Solutions
- HVAC System Management
- Energy Management Systems
- Integrated Facility Management Systems

**Power & Energy**
- Power Generation
- Smart Substations
- Renewable Energy
- Electric Car Charging Stations

**Oil, Gas and Water**
- Water & Wastewater Treatment
- Pipeline Monitoring
- Pumping Station Monitoring & Control
- River Disaster Monitoring

**Intelligent Agriculture**
- Plant Cultivated Clod Process Control
- Plant Factory Environment Control & Monitoring
- Intelligent Greenhouse Facility Control & Monitoring
- Remote Management with Web-enabled SCADA Software
Advantech offers complete solutions for Factory Automation applications, from software to a full range of data acquisition products then extending to the terminal human machine interface. These solutions are aimed at satisfying the demanding requirements of industrial applications. Our worldwide customers have utilized these devices and their software to implement factory facility monitoring and production automation systems for a wide range of industries. In addition, Advantech’s industrial grade devices ensure stable signal acquisition and seamless information delivery in harsh environments in factories. Our high performance Industrial PC and Panel PC series also enable the whole system a great deal of stability and efficiency in the manufacturing process. Consequently, Advantech’s goal is to help our customers to increase their production capacity and product yield rate and also to reduce management costs and solve the problem of human error.

Product Solutions

- **HMI**
  - PPC-6150/6170
  - *15”/17” Multi-Functional Panel PC*

- **Software**
  - Advantech WebAccess
  - Browser-based HMI/SCADA Software

- **Communication**
  - EKI-1322
  - RS-232/422/485 to GPRS IP Gateway
  - EKI-3000
  - Unmanaged Industrial Ethernet Switch

- **Controller**
  - UNO-2000
  - Embedded Automation Controller

- **I/O**
  - ADAM-2000
  - Wireless I/O Modules
  - ADAM-4000
  - RS-485 I/O Modules

- **Facility Automation**
  - Stand-alone or group configuration
  - Scalable system for easy flexibility reduces initial investment
  - Remote client-server architecture

- **Factory Energy Management**
  - Full range of hardware and software products, for rapid integration and lower implementation costs
  - Intuitive UI design to quickly identify abnormal power consumption

- **Equipment Automation**
  - Integrated interfaces reduce integration time
  - Automatic device parameter acquisition with HTTP functionality enabled
  - Real-time equipment monitoring optimizes production procedure and equipment utilization

- **Production Automation**
  - Backs-up real-time information for further analysis
  - Diversified statement analysis improves plant productivity
  - Integrated accident alarms delivered through various ways shorten troubleshooting time
Machine Automation

Intelligent Machine Automation and Robotic Solutions

In the intelligent machine automation segment, Advantech focus on Electronics Manufacturing, Machinery, Machine Tools, and Robotic applications. Providing the solution to resolve the labor shortage issue, and to improve the throughput and the quality of production line, Advantech not only develops critical motion control technology for dedicated industries, but provides professional consulting services to help its suitable customers develop a variety of different applications. By various Platforms integrated with Motion and Machine Vision solution, Advantech fulfills different value-added provider’s needs to develop PC – based projects and also positions itself to provide different cost – effective system architectures with centralized and distributed topologies.

Electronics Manufacturing
• Versatile platforms including IPC, HMI, Embedded system
• 4-8 axis motion cards, distributed motion modules, APAC controller
• Motion/IO, Machine Vision software & Computing integrated system

Robotics
• Cartesian, SCARA, 6 DOF robot controller
• Vision solution for Vision Guided robot
• Loader/unloader integration with machine tool controller

Machinery
• Pipe bending solution ready platform
• Glass cutting, Glass Grinding, Polishing controller
• Laser/Plasm/waterjet cutting controller

Machine Tools
• Lathe, Milling controller
• Injection molding machine controller
• Punching, Press, forming controller

Product Solutions

HMI
TPC-1582H/1782H 15/17” Embedded Panel Computers with Expansion

Controller
UNO-3084 Wallmount Automation Computer

Motion Control
AMAX-1240 High-performance AMONet Motion Slave Module
AMAX-1752 Compact Isolated Digital Input / Output Slave Module

Motion Card
PCI-1285 Motion Control Universal PCI Card

I/O
PCI-1716 Multifunction PCI Card
PCIE-1744 Simultaneous Analog Input PCI Express Card
Intelligent Transportation Systems

Solutions for Transportation Automation and Infrastructure

Transportation systems aim at providing communications and technology that allow safe, convenient, comfortable, efficient, and environmentally friendly travel for all commuters. Many cities worldwide are in the midst of improving their transportation system infrastructures, and Advantech is there to provide a helping hand, offering advanced product solutions for the transportation market. Advantech offers cost-effective solutions for traffic monitoring system for railway (station, onboard train, wayside control), freeway (dynamic weighing, tunnel monitoring, passenger information display, entrance control, electronic payment), and other transportation applications.

Railway Stations
• Ethernet switch and PAC for fire alarm system (FAS)
• Trusted automatic fare collection (AFC) by using communication cards and data acquisition cards

Onboard Train and Rolling Stock
• EN50155 Ethernet switches for backbone communication
• Train-to-ground wireless communication
• Display panel for subway trains

Railway Wayside
• Non-stop operation with redundant Ethernet managed switches
• Rail civil structural monitoring with ADAM modules and UNO controllers

Road Traffic
• PoE switches for video surveillance
• PAC distributed control system for tunnel monitoring
• Controllers and device servers for LED traffic information display

Product Solutions

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<td>PEC-3710 Integrated I/O Controller</td>
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Intelligent Building Solutions

Increase Energy Efficiency with Open and Web-enabled Technologies

Integrated facility management systems are becoming more popular as they help make building operations run more efficiently through advanced control and connectivity. In addition to integrated facility management, video surveillance systems offer advanced security for facility managers. Advantech’s Building Automation and Energy Management Solutions offer browser-based software and comprehensive hardware packages for a variety of applications, including Advantech WebAccess, remote I/O modules, energy data concentrators, and power meters. It enables engineers, system integrators and equipment manufacturers to maintain and upgrade their systems remotely.

Web-enabled Building Solutions
- Browser-based HMI/SCADA software
- Web-enabled DDC controller
- View, control and configure remotely

HVAC System Management
- Variable speed pumping system
- HVAC domain calculation function
- Time schedule and auto tune PID

Energy Management Systems
- Multiple charts to monitor energy consumption status
- Various analysis reports for advanced improvement strategies
- Supports WebGIS, geographic information system function

Integrated Facility Management Systems
- Open protocol, OPC, BACnet, Modbus
- Third party integration, PLC, Lighting, NVR
- Redundant SCADA & COM ports

Product Solutions

Software
- Advantech WebAccess
- Advantech BEMS

Industrial PCs
- WA-TPC1771 17” Touch Panel Computer with 600/5,000 Tags WebAccess
- IPC-610 4U 14-Slot Rackmount Chassis

Controller
- BAS-3520 20-ch Web-enabled DDC Controller
- BAS-3018/24 BAS-3050/51 Modbus 1/O Modules

I/O
- BAS-3018/24 BAS-3050/51 Modbus 1/O Modules

Gateway
- ADAM-2000 Wireless I/O Modules
- BEMG-4110/4220 Energy Data Concentrator
Build Reliable Power Automation Solutions with Trusted System Components

Power supply and demand is becoming more and more critical. Substation automation, T&D grid automation, renewable energy, power generation & transmissions, energy management systems and maintenance-free power backup systems with IEC 61850-3 compliance are the big trends in today’s applications. Power Automation improves energy efficiency and intelligence while also implementing important environment protection and green powered features. Advantech is proud to develop reliable HMI, Embedded Automation Computers, Industrial Managed Switches and Programmable Automation Controllers to serve this market.

**Power Generation**
- Redundant Programmable Automation Controller architecture
- Simultaneous high-speed data acquisition modules
- Multi-port managed Ethernet switches

**Smart Substations**
- IEC 61850-3/IEEE 1613 compliant computing platforms, I/O modules and Ethernet switches
- Reliable redundant X-Ring networking communications

**Renewable Energy**
- Reliable Programmable Automation Controllers with an open system
- Fiber optic managed switches for redundant X-ring networking topology
- Powerful SCADA software support

**Electric Car Charging Stations**
- User friendly touch panel computers
- Multiple communication I/O modules to support real-time data acquisition and transmission

**Product Solutions**

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<td>B+Z SC-type Fiber Optic Managed Ethernet Switches</td>
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- **Power Generation**
- **Smart Substations**
- **Renewable Energy**
- **Electric Car Charging Stations**
Oil, Gas and Water

Develop Your Environmental Monitoring / Facility Management System with Advantech’s Total Solutions

Advantech has been dedicated to developing Environmental Monitoring & Facility Management Systems for many years, especially in dealing with the unique requirements for the oil, gas and water industry. Advantech’s value-added systems and solutions through high-volume SCADA and advanced web-based technology allow users to monitor and operate processes anytime, anywhere. Moreover, Advantech continues to provide vertical market-oriented product solutions to fulfill various application needs. These systems are built with redundant topologies that can be reliably operated over a long distances and easily integrated with other GPRS systems.

Product Solutions

- **Software**
  - Advantech WebAccess: Browser-based HMI/SCADA Software
- **Communication**
  - EKI-1322: RS-232/422 to GPRS IP Gateway
  - EKI-7758F: Gigabit Managed Switch
- **Controller**
  - APAX-5620: PAC with Marvel XScale® CPU and CAN
- **Computer Platform**
  - TPC-2140WP: 21.5” Multi-Touch Panel Computer
- **I/O**
  - ADAM-6000: Ethernet I/O Modules
  - ADAM-4000: RS-485 I/O Modules
Intelligent Agriculture

Providing Reliable Control and Remote Monitoring Solutions

The IoT is beginning to play an important role in intelligent agriculture. Computerized plants and managerial information can be fulfilled by modern information technology. To satisfy the versatile needs of fields from fertilization and irrigation, plant tissue culture labs, plant factories, green houses and safe transportation process monitoring and control, Advantech provides reliable and web-enabled SCADA control and monitoring systems, including compact embedded PC, trusted communication modules, remote data acquisition modules and web-based HMI/SCADA software - WebAccess. Through the use of IoT technology, farm owners can get real-time information from each of the fields to help them make the necessary decisions.

Product Solutions

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<td>18.5” Multi-Touch Panel Computer</td>
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<td>PAC with Marvel XScale CPU, CAN, KW</td>
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WebAccess+ Solutions

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To view all of Advantech’s WebAccess+ Solutions, please visit http://webaccess.advantech.com/.
WebAccess in Advantech iAutomation Framework

Advantech WebAccess is the first full browser-based software package for human-machine interfaces (HMI) and supervisory control and data acquisition (SCADA). It is the core of Advantech Intelligent Automation Solution to seamlessly integrate all devices in terms of Intelligent Infrastructure and Smart Manufacturing which structure the automation IoT framework.

Build a Win-Win Partnership by Joining Advantech’s WebAccess+ Alliance

In the new era of the IoT (Internet of Things), there are three essential factors to grab business opportunities, they are Strong Partnerships, Integrated Solutions, and Focused Vertical Markets. Advantech’s WebAccess+ Alliance is an innovative cooperation platform base on the IoT Solution software - WebAccess - to link with hardware, partners’ strength and strategic co-marketing to get into focused vertical markets, such as water, oil & gas, intelligent buildings, factory automation, and renewable energy.

Through the WebAccess+ Alliance, our partners can leverage each other’s resources and domain knowhow to develop vertical solutions, to share their experiences, and to have co-marketing opportunities with Advantech.

Based on main philosophy of “Direct Engagement, Indirect Sale” and to benefit others (LITA), all partners committed to use WebAccess and Advantech devices to join develop vertical markets and to create more business opportunities.

To strengthen the WA+ alliance, Advantech will not only keep on promoting this concept to ally more partners, but also introduce Advantech’s resources to the alliance to help the most significant partners in each vertical market. Our target is to accelerate the alliance to cultivate each vertical market and to develop more and more Solution Ready Packages (SRP) for each vertical application.

WA+ Solution Offerings

In the WebAccess+ Alliance, there are 3 major solution offerings to our partners to help increase their project profit and solution completeness.

WebAccess Partner Program (WAPP)

The WebAccess Partner Program (WAPP) is a Software Program, aim to offer SIs or WebAccess+ alliance partners a number of WebAccess packages with very attractive price. The number of WebAccess packages and annual fee can be customized design according to SIs’ and partners’ demand. All the Benefits of WA+ can be applied to this program and there are also obligations partners have to follow.

WebAccess+ Bundled Program

In addition to WAPP program, WebAccess+ alliance provides bundled program to offer bundled products of Advantech devices and WebAccess to our partners.

We also provide customized bundled products according to customers’ requirement with minimum quantity.

WebAccess+ Solution Ready Package (SRP)

The third offering of WebAccess+ is SRP, Solution Ready Package. The cooperation model of SRP is WebAccess+ partner provides vertical application and HMI design of the SRP based on WebAccess and Advantech devices, and Advantech provides required H/W and WebAccess of the SRP. The main spirit of SRP is to help partners to transfer from Project Based operation model to Solution Based operation model.

Why WebAccess+ Alliance

Being WebAccess+ Alliance Partners, your company can get as many advantages from Advantech, such as more business opportunities, more market exposure, premier WebAccess+ package and co-developed solution ready package. Make your business grow by attending the WebAccess+ Alliance. Contact your local Advantech Office immediately or drop an email to HYPERLINK ia@advantech.com.tw.

WebAccess+ Alliance Partners can gain:

- More Business Opportunities
- Co-marketing opportunities with Advantech
- More Market Exposure

Co-developed Solution Ready Packages

- Special WebAccess+ Packages

* Please contact your sales representative about joining the WebAccess+ Alliance.
Advantech’s BEMS energy management solution provides all the software and hardware needed, including digital power meters, intelligent energy data collecting gateways, industrial computers, energy management software (WebAccess/ BEMS ), and SQL Server. These components integrate an energy management system in one single package.

System Features
- Intuitive, user friendly, and simple operation.
- Enables customers to make energy saving plans by comparison energy uses among different buildings and projects.
- EUI & PUE settings help customers detect energy wastage.
- With a geographic information system, all the information is under surveillance and control.

Application Scenarios
- Building complex
  - Franchised restaurants, shopping malls, furniture stores, shoe stores, supermarkets, book stores, and convenience stores.
  - Financial groups, shopping centers, campuses, and telecommunication stations.

Through data collection in the sensing layer and data communication in networking layer, WebAccess plays the integration role. Advantech’s oil & gas solution helps oil & gas companies establish IoT systems which cover all the production, transmission, storage, and sales processes.

System Features
- Real-time data collection and processing comes with analysis tools and data storage.
- Remote access capabilities make it easier for remote maintenance and multi-seat development. Suitable for oil & gas industry located in a wide range of areas.
- An open platform for connecting applications and management software based on B/S internet technology. Builds up a cost effective giant system rapidly and features flexible expansion abilities for future development.

Application Scenarios
- WebAccess is utilized to collect and manage data transferred from RTU. Once the data has been transferred to a certain data pool, WebAccess is able to create an analysis tool and monitor the operating status of oil wells.
- For pipeline monitoring, the gateway software, WebAccess is running in each of the gateway devices converting each system to a standard protocol and sending them to a control center.
- Communicating with intelligent devices, WebAccess acts as remote control software for monitoring and controlling devices in the field.
WebAccess+ Solutions

Introduction

Facility Monitoring and Control System

Advantech Facility Monitoring and Control System constructs an internal network in the plant based on Client/Server structure with a monitoring host, data acquisition controllers and software suites provided by Advantech, which realizes operational simplicity, information security and high scalability. The software installed on the host provides default screen images to facilitate system integrators to map out their applications while programming software installed in the controllers provide logistic and arithmetic calculations to fulfill control demands. To meet the requirements of the high-tech plants for 24/7 operations, a redundant architecture is also provided: which will shift the job to a backup system if the main system suffers a power outage or communication interruption.

System Features
- Provides specialized programming tools with default screen images to save time for engineering.
- Preinstalled configuration software to save engineering time.
- Realizes operational simplicity via Client/Server networking structure and remote maintenance capability.
- System scalability to accommodate factory expansion with optimal investment scale.
- Supports thin clients and wireless LAN to enable mobility.
- Expandable from a single host to a redundant system.
- Able to integrate with CIM and MES via real time data interfaces.

Application Scenarios
- Water system: raw water supply, ultra pure water supply, waste water treatment, and reclamation.
- Electric system: 220/110 KV high voltage power monitoring, emergent power generator, dynamic/static uninterruptible power supply, electric bus, high voltage switch gear, and low voltage power meter.
- Gas system: toxic gases detection, gas cabinet operation, valve box operation, and general gases.
- HVAC system: clean room operation, acid exhaust, process cooling water, and general air-conditioning.

Water Treatment Solution

Advantech Water Treatment System provides solutions for constructing control and communication platforms with soft-and-hardware products including programmable automation controllers (PAC), Ethernet switches, and HIM/SCADA software. The solutions target water industry applications. The applications cover an extensive range from water resource distribution systems, raw water collection and distribution systems, water supply pumping systems, tap water monitoring control systems, booster pump stations monitoring control systems, urban pipeline monitoring control systems, sewage pump station monitoring control systems to sewage treatment monitoring control systems, and more.

System Features
- Integrated with 3D graphics to provide understanding of geographical space.
- DDNS functions to solve communication problems in a dynamic IP network.
- Animated Adobe® Flash® presentation of water resource allocation.
- SMS functions to provide real time facility alerts via mobile phones.
- Incorporating video monitoring to enable remote overseeing over onsite situations.
- Incorporated WebGIS to enable data lookups via geographic index.

Application Scenarios
- Water resource distribution system.
- Raw water distribution system.
- Large scale water supply pumping system.
- SCADA system for tap water.
- Booster pump station monitoring and control system.
- Urban tap water pipeline monitoring control system.
- City pipeline distribution optimization system.
- Remote management system for city sewage pipelines.
- Monitoring and control system for sewer pump stations.
- SCADA system for large sewage plant.
- Performance management for large sewage plant.
Advantech WebAccess

Features

- View, control and configure system remotely over an intranet or the Internet using standard web browser
- Mobile client supports for iOS and Android
- Support for open standard programming: TCL, JScript and VB script
- Open real-time data connectivity: OPC, Modbus, BACnet, DDE Server
- Open offline data connectivity: SQL Server, Oracle, MySQL, Microsoft Access database
- Full LonWorks LNS and BACnet support
- Distributed SCADA architecture with central database server and Multi-layer inter-operable SCADA nodes
- Redundant SCADA, ports and devices
- SMS alarm notifications, e-mail alarms, reports and messages
- Web-enabled video, audio, and Google Maps and GPS Location Tracking
- Multi-touch gesture support
- WebAccess Express - The Auto-Configuration Tool

Introduction

Advantech WebAccess is a web browser-based software package for human-machine interfaces (HMI) and supervisory control and data acquisition (SCADA). All the features found in conventional HMI and SCADA software including Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in an standard web browser. WebAccess is built around the latest internet technologies. The basic components are:

1. SCADA Node: It communicates in real-time with automation equipment and controls the equipment via serial, Ethernet or proprietary communication via multiple built-in device drivers. Not only does it run local controls and monitoring, but also provides real-time data to all remote clients.
2. Project Node: It is the development platform for WebAccess and is a web server for all clients to connect to the development project or remotely monitor and control the system. All system configuration, project database files and graphics are stored here.
3. Client Node: Through the ActiveX control inside Microsoft Internet Explorer, it monitors and controls the SCADA Node. The client connects to the Project Node and gets the address of the SCADA Node, then communicates directly with the SCADA Node using proprietary communications over a TCP/IP connection. Data is displayed in real-time with dynamically animated graphics along with real-time, historical trending and alarm information. Users can acknowledge alarms and change set-points, status and other data.
4. Mobile Client: The Mobile Client interface is intended for use with smart mobile devices, such as iOS, Android, and Windows mobile devices. In the mobile client users can browse graphics, data-log trends, and tag information in real-time. Set value to tag or acknowledge alarms can also be supported via an intuitive interface.

Feature Details

View and Control from a Remote Web Browser

Using a standard web browser, users can view and control automation equipment used in industrial, manufacturing, process and building automation systems. Field data and alarms are delivered in real-time to remotely browse using animated graphics and sound.

Powerful Remote Diagnose and Maintenance Functionality

The unique feature, which distinguishes WebAccess from the competition, is that all engineering works, such as: database configuration, graphics drawing and system management (download, start and restart remote nodes) is performed using a web browser. If any troubleshooting is needed, no matter where the engineer is, he can use the Internet to operate the system remotely. This can significantly increase the efficiency of maintenance operations and reduce maintenance costs.

Multi-touch Gesture Support

WebAccess supports multi-touch functionality with various pre-set gestures, such as flick to change pages, zooming in and out of the display and 2-handed operation maximizing operating safety, increasing usability and decreasing training time due to the more intuitive handling. In addition, multi-touch also supports multi-finger tap, multi-finger grab, and multi-finger spread gestures to operate pre-defined actions.

Google Maps and GPS Tracking Integration

WebAccess integrates real-time data on each geographical site with Google Maps and GPS location tracking. For remote monitoring, users can intuitively view the current energy consumption on each building, production rate on each field or traffic flow on the highway together with alarm status. By right-clicking on Google Maps or entering the coordinate of the target, users can create a marker for the target and associate the real-time data of 3 sites with a display label. Furthermore, this function also integrates with GPS modules to track the location of the marker in Google Maps and allows it to be used in vehicle systems.
WebAccess Express - The Auto-Configuration Tool

Advantech WebAccess Express is an automated graphical remote control application program with 1-click to bring device information online. It automatically discovers the ADAM and EKI modules on the network and serial ports, generates a database and brings real-time data online with prebuilt monitoring graphics. Express also provides remote monitoring functions and allows users to communicate and exchange data with an SNMP or DiagAnywhere Server and then check the health of the CPU, memory, temperature, and voltage of the target machine as device monitoring platform. With SNMP or DiagAnywhere Driver integration, users can configure the alarm function if any abnormal or suspicious data is detected in WebAccess.

Vector-based Graphics

Regardless of engineer and user computer resolution, WebAccess graphics can be built at any resolution and displayed at any resolution. Vector-based graphics scale infinitely, providing smaller file and data sizes for fast downloading and data updates. WebAccess also has the options to allow users to define the aspect ratio, 16:9, 16:10 or 4:3, to view their graphics to avoid distortion when displaying in certain aspect ratio display.

Wide Ranging Building Automation Support

WebAccess supports all open systems in the building automation industry. LonWorks devices can be accessed through LNS database, iLons and B-Track. BACnet MS/TP and IP are also supported. Modbus protocol for most of power meters is also a standard driver of WebAccess. In WebAccess Scheduler users can schedule on/off, temperature set points, and messages based on time-of-day, day-of-week and holidays.

Open Data Connectivity

Advantech WebAccess exchanges online data with 3rd party software in real-time by supporting OPC UA/DA, DDE, Modbus and BACnet Server/Client. It supports SQL, Oracle, MySQL, and MS Access for offline data sharing.

Data Transfer

The Data Transfer function is used to transfer data from one PLC or automation device to another. Data value can be sent from one tag to another tag, regardless of the communication medias or protocols, with a predefined period in the same equipment or between different equipment.

Distributed Architecture

SCADA nodes run independent of any other node. Each SCADA node communicates to automation equipment using communication drivers supplied with Advantech WebAccess.

Central Database Server

The Project Node is a centralized database server of configuration data. A copy of the database and graphics of all SCADA nodes is kept on the Project Node. The historical data is also stored in the database in project node.

Redundant SCADA, COM Ports and Devices

Advantech WebAccess assures continuous, reliable communication to automation equipment. WebAccess Backup node activates when the primary node is down. WebAccess device drivers communicate with backup ports or devices if the primary connection is lost and automatically restores to the primary item when it becomes available.

Historical and Real-Time Trending, Data Logging and Centralized Logs

12 Tags can be added to a Trend display without losing the history of the other tags. Real-time data, alarms, and operator actions from all SCADA nodes can be logged to a central ODBC database.

Scheduled Reports

A “Fill-in-the-blanks” reporting package gives average, maximum, minimum, last and totals with summary for user-defined shifts, daily, and monthly reports. These reports can be automatically generated and printed or sent to users by e-mail. Users can also query reports from a remote browser anytime, anywhere.

Event Log and Action

An event can trigger data before and after the event to be logged or scripts to be executed.

Enhanced Security

Users can be assigned various privileges to restrict display and data access. WebAccess uses the Area of Responsibility concept to restrict changes to data.

Ample Driver Support

WebAccess supports hundreds of devices. In addition to Advantech I/Os and controllers, WebAccess also supports all major PLCs, controllers and I/Os, like Allen Bradley, Siemens, LonWorks, Mitsubishi, Beckhoff, Yokogawa etc. WebAccess can easily integrate all devices in one SCADA. For a complete listing of WebAccess drivers, refer to WebAccess.advantech.com.
**Browser-based HMI/SCADA Software**

**Ordering Information**

**Professional Versions**
- **WA-PT2-U075E**
  - WebAccess V7.2 Professional Software with 75 tags
- **WA-PT2-U1300E**
  - WebAccess V7.2 Professional Software with 300 tags
- **WA-PT2-U1600E**
  - WebAccess V7.2 Professional Software with 600 tags
- **WA-PT2-U1500E**
  - WebAccess V7.2 Professional Software with 1,500 tags
- **WA-PT2-U5000E**
  - WebAccess V7.2 Professional Software with 5,000 tags
- **WA-PT2-U20000E**
  - WebAccess V7.2 Professional Software with 20,000 tags
- **WA-PT2-U64KE**
  - WebAccess V7.2 Professional Software with Unlimited tags

**Upgrade**
- **WA-PT2-X075E**
  - WebAccess Software License, 75 tags upgrade
- **WA-PT2-X300E**
  - WebAccess Software License, 300 tags upgrade
- **WA-PT2-X600E**
  - WebAccess Software License, 600 tags upgrade
- **WA-PT2-X15HE**
  - WebAccess Software License, 1,500 tags upgrade
- **WA-PT2-X50HE**
  - WebAccess Software License, 5,000 tags upgrade

* Original serial number from WebAccess Professional version is required to purchase WebAccess upgrade. The serial number can be found on the USB dongle.

**WebAccess + Bundled Products**
- **WA-TPC1771-T600E**
  - 17" Touch Panel Computer, 600 tags WebAccess with Traditional Chinese
- **WA-TPC1771-T50HE**
  - 17" Touch Panel Computer, 5,000 tags WebAccess with Traditional Chinese
- **WA-TPC1771-C50HE**
  - 17" Touch Panel Computer, 5,000 tags WebAccess with Simplified Chinese
- **WA-TPC1771-E600E**
  - 17" Touch Panel Computer, 6,000 tags WebAccess with English
- **WA-TPC1771-E50HE**
  - 17" Touch Panel Computer, 5,000 tags WebAccess with English
- **WA-UNO2178-T50HE**
  - Automation Computer, 5,000 tags WebAccess with Traditional Chinese
- **WA-UNO2178-T50HE**
  - Automation Computer, 5,000 tags WebAccess with Simplified Chinese
- **WA-UNO2178-C50HE**
  - Automation Computer, 5,000 tags WebAccess with English
- **WA-UNO2178-E50HE**
  - Automation Computer, 5,000 tags WebAccess with English

**Minimum Requirements**
- **Operating System**
  - Windows XP, Windows 7, Windows 8 Professional, Windows Server 2003 or later
- **Hardware**
  - Celeron or Athlon. Dual Core processors or higher recommended.
  - 1GB minimum, more recommended.
  - 30GB or more disk space
- **Display Resolution**
  - 1024 x 768 or higher (recommended)
- **USB Port**
  - USB port for License Hardkey on SCADA node

**Advantech WebAccess Professional**

- I/O Tag Number
  - 75/300/600/1500/5000/20K/64K
- Internal Tag Number
  - 75/300/600/1500/5000/20K/64K
- Web Client
  - 1024
- Alarm Logs
  - 5000
- Action Logs
  - 5000

**Graphics**

- Number of Graphic Pages
  - Unlimited (limited by H/D size)
- Variables per Graphic Page
  - 4000
- Tag Source
  - Global
- Multi-touch Gesture
  - Yes

**Group Trend Log**

- Number of data logging
  - Number of IO tags license x 2
  - 9999
- Alarm Groups per SCADA
  - 9999

**Receipt**

- Recipes per Project
  - Unlimited (limited by H/D size)
- Unit per Recipe
  - 999
- Item per Unit
  - 999

**Scheduler**

- Holiday Configuration Group
  - 9999
- Time Zone Group
  - 9999
- Device Loop Group
  - 9999
- Equipment Group
  - 9999
- Scheduler Reservation Group
  - 9999

**Web-enabled Integration**

- Video
  - Yes
- Google Maps and GPS Location Tracking
  - Yes

**Open Connectivity**

- Modbus Server
  - Yes
- BACnet Server
  - Yes
- ODBC and SQL Query
  - Yes
- OPC DA/UA Server
  - Yes
- DDE Server
  - Yes

**Others**

- Centralized logs on project
  - Yes
- SCADA Redundancy
  - Yes
- Script language
  - TcScript/VBScript/JScript
- Data Transfer
  - Yes
- ODBC and SQL Query
  - Yes
- Reporting
  - Yes
- Device Redundancy
  - Yes
- Supports IPv6
  - Yes
- WebAccess Express
  - Yes

**Supports IPv6**

WebAccess converts field device data to Modbus, OPC DA, OPC UA or BACnet protocol, so other software, such as ERP and MES can gain access without knowing the field device protocol. WebAccess’ Solution Products, a bundle of WebAccess Professional 7.2 and Windows 7 Embedded built in to Advantech’s robust hardware platform, can be used as a high performance, low cost data gateway solution.

**Web-enabled Video Display**

WebAccess allows operators and users to monitor equipment and facilities directly using web-enabled full-motion video cameras, audio, and web cams. It also supports the use of live video cameras that are IP-enabled via ActiveX control, Windows Media Player, JPEG and other formats supported by Microsoft Internet Explorer 8.0 (or later). The video image appears in the same display area as graphics, alarms and trends displays. Optionally, WebAccess can launch the video in a pop-up window. WebAccess also supports push button key macros to easily call up video cameras and WebAccess scripts can be used to automatically rotate between multiple cameras and send Pan-Tilt-Zoom (PTZ) commands.
**Advantech WebAccess Advanced Features - Demand Control Real-Time Database**

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### Demand Control

**Features**
- Monitor power consumptions and project demand in next demand interval
- Shed the load if consumption approaches warning level
- Release the load when the demand is satisfied
- Two operating modes: Control and monitor only modes
- 6 Priority levels for shedding load group
- Supports minimum release time, minimum shed time and maximum shed time
- Sliding Windows algorithm for projection

**Introduction**

The Advantech WebAccess Demand Control feature helps users save money by limiting the energy usage when the system's demand approaches a predefined warning level. The WebAccess Demand Control System continuously monitors the system's power consumption and projects the demand for the next demand interval. If the projected demand approaches a predefined limit, usually the peak contract demand, the system selectively turns off equipment like lights and fans, adjusts analog set-point to reduce the power consumption or prompts a text message to remind the user to save energy.

**Feature Details**

- **Control Mode and Monitor Only Mode**
  In “Control Mode”, the DC program sheds/reloads the load to manage the energy consumption. “Monitor Only” mode evaluates the power consumption and simulates the shed operation, but it does not send the control signal to the devices. Monitor mode allows users to test and verify their system.

- **Define up to 99 Control Groups**
  In WebAccess Demand Control, users can define up to 99 control groups. In each group, users can define control strategy to limit peak energy usage.

- **Release and Shed the Load**
  By monitoring total energy consumption readings from meters using a sliding-window algorithm the DC program sheds loads as needed to ensure the projected demand does not exceed a specified tariff target. The shedding process is based on user-defined prioritized load groups.

- **Minimum Release Time**
  Minimum shed time and maximum shed time are applied to decide the shed and procedure release.

**System Requirements**
- **OS**
  Windows XP, Windows 7, Windows 8 Professional, Windows Server 2003 or later
- **Software Requirements**
  WebAccess V7.2 Professional

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### Real-Time Database

**Features**
- Super fast data access and storage
- Supports redundancy for WebAccess
- Fully integrated with WebAccess
- Built-in with WebAccess, no extra installation required
- Archive and delete obsolete data with automatic maintenance schedules
- API for 3rd party programs to Read/Write/Modify

**Introduction**

The Advantech WebAccess Real-Time Database (RTDB) feature allows WebAccess to store and retrieve a large amount of data in real-time.

**Feature Details**

- **High Speed and Large Quantity Data Access**
  Unlike generic relational databases, WebAccess RTDB is designed to meet industrial high speed and large quantity data access requirements.

- **Fully Integrated with WebAccess**
  With the fully integrated design, users do not need to learn how to operate the database. Just by enabling the usage of RTDB in WebAccess configuration page, WebAccess SCADA node can then take advantage of this high performance data base. Data from sensors, I/O devices, and RTU or PLC registers are collected by WebAccess and stored to RTDB in very high speed while other users can view or retrieve those data in WebAccess View simultaneously.

- **Support Redundancy for WebAccess**
  With special data compression and access algorithms, WebAccess RTDB can serve data at a rate of millions of records per second. WebAccess database maintenance features automatically archive and delete obsolete data.

**System Requirements**
- **OS**
  Windows XP, Windows 7, Windows 8 Professional, Windows Server 2003 or later
- **Software Requirements**
  WebAccess V7.2 Professional

* Free charge in WebAccess V7.2 Professional Software
Advantech WebAccess Advanced Features -
Alarm Management System
School Scheduler

**Alarm Management System**

**Features**
- Advanced alarm notification management
- Prioritized audio announcement
- Notification group by schedule
- Link multiple receiver group to alarm group

**Introduction**
WebAccess advanced Alarm Management System (AMS) delivers alarm messages via SMS, email or audio announcement to multiple receivers by predefined alarm group, user group, time schedule and priority setting.

**Feature Details**

**Advanced Alarm Notification Management**
In WebAccess Advanced AMS, the system administrator creates, defines, and groups alarms by their characteristics. The administrator also defines users and specifies notification methods, SMS or email information. Users are grouped into work group by time schedule and associated with alarm groups.

**Create Notification Group by Schedule**
When any tag goes into alarm state, AMS finds out the alarm group it belongs to and the work group corresponding to shift schedule it associates with and notify users, whose priority is lower than the alarm’s priority, in the work group with predefined SMS or Email.

**Prioritized Audio Announcement**
It also checks the alarm with the highest priority, repeatedly plays audio announcement until it is acknowledged.

**System Requirements**
- **OS** Windows XP, Windows 7, Windows 8 Professional, Windows Server 2003 or later
- **Software Requirements** WebAccess V7.2 Professional

* Free of charge in WebAccess V7.2 Professional Software

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**School Scheduler**

**Features**
- Set the Setpoints to control lights and equipments
- Classroom Time Periods of the day
- Holiday Schedules
- Reservation function to set the equipment

**Introduction**
WebAccess School Scheduler provides on/off control and setpoint changes based on time-of-day, day of week and the calendar. Users can control lights, temperature and equipment for saving energy during school days. WebAccess School Scheduler allows the definition of up to 17 periods per day and preserved function for setpoint.

**Feature Details**

**"On/Off" and Setpoint Changes**
The "On/Off" can schedule different periods to set the Setpoint, and the Setpoint will follow the schedule setting for saving energy. The "On/Off" also has values specified for each Tag to schedule the Setpoint.

**Flexible Periods of the day**
The Time specifies the Start Time and Stop Time for each period of the day, up to 17 periods, 16 default periods and one undefined period. Users can follow the school time schedule to set the Setpoint. WebAccess School Scheduler also has reserved function to reserve schedule for Setpoint.

**Holiday Schedule**
Holiday schedule is defined to handle exceptions to the 7 days per week schedule. The Holiday is any unusual event or series of events. The Holiday Schedule can be defined, redefined and assigned at any time, but usually is defined first to allow easy assignment to the Time Schedules as the "exception" to the schedule.

**System Requirements**
- **OS** Windows XP, Windows 7, Windows 8 Professional, Windows Server 2003 or later
- **Software Requirements** WebAccess V7.2 Professional

* Free of charge in WebAccess V7.2 Professional Software
Introduction
Advantech WA-TPC1771 is a plug and play HMI/SCADA server. It is built on Advantech solid Touch Panel Computer platform with pre-installed WebAccess SCADA software and pre-configured Windows 7 embedded and IIS environment. Just plug-in the power and network cable, the web enabled browser-based server is ready for user to start configuring his SCADA system from his computer. This HMI/SCADA server enables users to view real-time graphics, alarms, trending and logs, and control the field devices locally with the high quality 17” TFT LCD screen or via a web browser remotely on his desktop or notebook computer. The 1.8 GHz Intel® Atom™ D525 processor is the powerhouse of the server. It provides excellent computing power and balanced with it low power consumption. The fan-less design and spindle-free storage make this SCADA server a durable and reliable platform.

WebAccess Professional version
- I/O Tag Number: 600/5000
- Internal Tag Number: 600/5000
- Web Client: 1024
- Alarm Logs: 5000
- Action Logs: 5000
- Graphics: Unlimited Number of Graphic Pages, Global Tag Source
- Number of Data Logging: Number of I/O Tags License x 2
- Web-Enabled Integration: Video and Google Maps
- Others: SCADA Redundancy, TdScript / VBScript / Jscript Language, Data Transfer and Reporting, ODBC and SQL Query, Device Redundancy

Specifications
General
- Operating System: Windows 7 Embedded
- BIOS: AMI 8Mbit
- Certification: BSMI, CCC, CE, FCC Class A, UL
- Cooling System: Fanless Design
- Enclosure: Front bezel: Die-cast Aluminum alloy, Back housing: PC/ABS Resin
- Mounting: Desktop, Wall or Panel Mount
- Power Consumption: 24 W (typical)
- Power Input: 10–29 VDC
- Watchdog Timer: 1 – 255 sec (system)

System Hardware
- CPU: Intel® Atom™ D525 1.8 GHz with 1MB cache
- Chipset: ICH8M
- Memory: 4GB SO-DIMM DDR3 SDRAM
- LAN: 10/100/1000Base-T x 2
- Expansion Slots: Half-size PCI-E or full-size Mini PCI-E
- Storage: 2.5” SATA, 1TB 5400RPM
- I/O: RS-232 x 2 (COM1, 2) with isolation, RS-422/485 x 1 (COM3) with isolation and auto data flow control, USB 2.0 x 2 (Host), PS/2 x 1
- DI/DO & Backup SRAM: 8 x DI/DO with isolation and backup 1MB SRAM

LCD Display
- Display Type: SXGA TFT LED LCD
- Display Size: 17"
- Max. Resolution: 1280 x 1024

Touchscreen
- Lifespan: 36 million touches at single point
- Light Transmission: Above 75%
- Resolution: Linearity
- Type: 5-wire, analog resistive

Environment
- Humidity: 10 – 95% RH @ 40°C, non-condensing
- Ingress Protection: Front panel: NEMA4, IP65
- Operating Temperature: 0 – 50°C (32 – 122°F)
- Storage Temperature: -20 – 60°C (-4 – 140°F)
- Vibration Protection: With HDD: 1 Gms (5 – 500 Hz) (Operating, random vibration)
**Dimensions**

Panel Cut-out Dimensions: 400.8 ±1 x 334.3 ±1mm (16.03" x 13.37")

**Ordering Information**

- **WA-TPC1771-T600E** 17" Touch Panel Computer, 600 tags WebAccess with Traditional Chinese
- **WA-TPC1771-T500E** 17" Touch Panel Computer, 5,000 tags WebAccess with Traditional Chinese
- **WA-TPC1771-C600E** 17" Touch Panel Computer, 600 tags WebAccess with Simplified Chinese
- **WA-TPC1771-C500E** 17" Touch Panel Computer, 5,000 tags WebAccess with Simplified Chinese
- **WA-TPC1771-E600E** 17" Touch Panel Computer, 600 tags WebAccess with English
- **WA-TPC1771-E500E** 17" Touch Panel Computer, 5,000 tags WebAccess with English

**Accessories**

- **TPC-1000H-WMKE** TPC series wallmount kit from 10" to 17"
- **TPC-1000H-SMKE** TPC series stand kit from 10" to 17"
- **1757003463** 100-240Vac to 19Vac 90W Power Adapter
- **1700001524** Power Cord 3P UL 10A 125V 1.8M
- **170202605** Power cable EU Plug 1.8M
- **1702031801** Power cable UK Plug 1.8M
- **1702031836** Power cable China/Australia Plug 1.8M
- **EMW-W139F01E** B:11 b/g/n, RT5390, 1T1R, Full-size Mini-PCIe
- **PWR-247-AE** 50W DC 24V/2.3A Output Power Supply
- **1750000318** EMI Antenna 20dB 2.4GHz SMA CONN for ARK-3384
- **1750003222** 802.11b/g 5dBi Dipole Antenna
- **1750003418** Wireless Antenna AN2400-591RS R/P SMA M9dBi

* VESA support via a wall mounting kit
Introduction

Advantech WA-UNO2178 is a plug and play compact SCADA server. It is built on Advantech solid UNO platform with pre-installed WebAccess SCADA software and pre-configured Windows 7 Embedded and IIS environment. Just plug in the power and network cable, the web enabled browser-based server is ready for user to start configuring his SCADA system from his computer. This compact server enables users to view real-time graphics, alarms, trending and logs, and control the field devices via a web browser remotely on his desktop or notebook computer. This compact SCADA server is powered by 1.66 GHz Intel® Atom™ D510 processor. It provides excellent computing power and balanced with Energy Star certified low power consumption. It also equipped with dual Gigabit LAN ports, 6 USB 2.0 ports and 2 mini PCIe slots for WLAN cards and 1 SIM card slot. The fan-less design, spindle-free storage, wide operating temperature environment and IP40 ingress protection make this SCADA server a durable and reliable platform.

WebAccess Professional Version

- I/O Tag Number: 600/5000
- Internal Tag Number: 600/5000
- Web Client: 1024
- Alarm Logs: 5000
- Action Logs: 5000
- Graphics: Unlimited Number of Graphic Pages, Global Tag Source
- Number of data logging: Number of I/O Tags License x 2
- Integration: SCADA Redundancy
- Others: TcScript / VBscript / Jscript Language, Data Transfer and Reporting, ODBC and SQL Query, Device Redundancy

Specifications

General
- Operating System: Windows 7 Embedded
- Certification: Energy Star, CE, FCC Class A, UL, C.C., C-Tick Class A, BSMI
- Dimensions (W x D x H): 255 x 152 x 59 mm (10” x 6.0” x 2.3”)
- Enclosure: Aluminum +SECC
- Mounting: DIN-rail, Wallmount, VESA
- Industrial Grounding: Isolation between chassis and power ground
- Power Consumption: 16 W (Typical)
- Power Requirements: 9 – 36 VDC (e.g +24 V @ 1.5 A) (Min. 36 W), ATX
- System Design: Fanless design with no internal cabling

System Hardware
- CPU: Intel Atom D510 Dual Core 1.66 GHz
- Memory: 2 GB DDR2 SDRAM built-in
- Indicators: LEDs for Power, CF, LAN (Active, Status), Serial (Tx, Rx)
- Keyboard/Mouse: 1 x PS/2
- Storage: 2.5” SATA , 1TB 5400RPM
- Display: DB15 VGA connector up to 2048 x 1536
- Watchdog Timer: 1–255 sec (System)

I/O Interface
- Serial Ports: 2 x RS-232/485 (COM1-2), 2 x RS-232/422/485 w/ 128kB FIFO (COM A-B), 4 x RS-232/485 from DB25 print port (COM3-6)
- LAN: 2 x 10/100/1000Base-T RJ-45 ports (Built-in boot ROM in flash BIOS)
- USB Ports: 6 x USB 2.0

Ordering Information
- WA-UNO2178-T600E: Automation Computer, 600 tags WebAccess with Traditional Chinese
- WA-UNO2178-T500E: Automation Computer, 5,000 tags WebAccess with Traditional Chinese
- WA-UNO2178-C600E: Automation Computer, 600 tags WebAccess with Simplified Chinese
- WA-UNO2178-C500E: Automation Computer, 5,000 tags WebAccess with Simplified Chinese
- WA-UNO2178-E600E: Automation Computer, 600 tags WebAccess with English
- WA-UNO2178-E500E: Automation Computer, 5,000 tags WebAccess with English
## Motion Control

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To view all of Advantech’s Motion Control Solutions, please visit [www.advantech.com/products](http://www.advantech.com/products).
Motion Control Overview

Application-Oriented Motion Control Platforms to Fulfill a Variety of Control Requirements

Looking back over decades of PC-based motion control, ASIC-based & distributed control topologies through proprietary bus are quite common. However, the new emerging market for machine control comes with multiple-axis dependency, synchronization, and improved response times. These factors drive the paradigm shift from ASIC-based to SoftMotion-based and have more flexibility in design through suitable trajectories aligned with machines to meet the faster-throughput, high performance and precision, and real-time Ethernet to give system integrators and machine builders help find the suitable solutions and reduce costs. Combining SoftMotion-based & Ethernet, this paradigm shift helps improve flexible trajectories, wiring-saving, and faster response times compared with past centralized topologies and reduce system implementation complexity.

Moreover, each quadrant of technology in the following diagram could be integrated into PC-based barebones to provide application-ready motion control platforms with off-the-shelf utilities and bountiful libraries for vertical market applications. For example, Advantech’s PEC-3240 is a dispensing-oriented controller for the electronic industries.

Application-ready Motion Control Platform Related Technology Chart

ASIC-based Motion Control

Since the 1990’s, Advantech has been developing several motion control boards with ASIC-based technology. Based on the ASIC kernel, the boards are digital signal type and connected with servo drives and motors to build a system. The pulse train speed and resolution will determine the control precision and response. Advantech’s motion control team implemented application-ready libraries to fulfill the different machines in industry. The ASIC-based series boards are for GMC (General Motion Control) purposes to provide faster time-to-market with robust and cost-effective market adopters.

Distributed Motion Control

As industrial Ethernet technology moves forward to increase response times and accurate time-deterministic precision, using real-time Ethernet is the future trend and benefits many machine builders with open standards. Distributed motion control can significantly reduce wiring efforts and cost in significant ways. In the past, fieldbus control was proprietary and had lower response times. Machine builders only have limited options in the market. However, open standard real-time Ethernet is the next generation. This technology will be also applied to a variety of Advantech platforms to offer application-ready motion control platforms with real-time Ethernet technology.

SoftMotion-based Motion Control

In order to meet increasingly demands for complexity of trajectories, such as Gantry control & synchronization, and voltage signals for speed/torque control, Advantech’s motion control team developed SoftMotion-based motion controllers and provides application-oriented & customization services. The SoftMotion technology is a control kernel executed by software which can run in DSP-based, RISC-based and X86-based CPUs with real-time extension. This technology gives flexibility in system implementation and the possibility to integrate third party real-time I/O control boards.

Features and Benefits of Common Motion APIs

Most machine builders and system integrators face library integration headaches from different vendors and different boards. Moreover, re-programming applications are necessary when the motion control boards are changed or upgraded. Advantech’s motion control team delivered the common motion API concept and developed the common motion library to reduce time-consuming on this task and give faster time-to-market if any upgrading request exists. The common motion API concept is applied to all of Advantech’s motion controllers.

Application-Ready Motion Control Platform

In any vertical specific application, machine builders and system integrators are looking for application-ready control platforms. The main reasons for this consideration are system integrity and system stability. Compared with plug-in motion controllers plus industrial PCs, the application-ready motion control platform provides a well-designed system with validation to guarantee stability. Furthermore, this concept can bring higher add-on value to system integrators and machine builders.
Motion Control Overview

Complete Application-Ready Platforms for General Motion Control Tasks

Advantech offers application-ready platforms that range from industrial workstations and industrial-grade CPUs, to motion control, encoder input and isolated I/O cards for general motion control (GMC) applications such as SMT/PCB, semiconductor and LCD manufacturing machinery. Advantech provides a full-range of industrial computing platforms that include high-brightness LCD displays, keypads, up to 20-slot backplanes and redundant power supplies for machine builders.

Nowadays general motion applications are divided into two functions – centralized and distributed motion control solutions. For centralized motion control, ASIC-based motion controllers are entry level that allow customers to easily build their own motion machines. As complicated and high performance applications are increasing, Advantech has recently developed SoftMotion control modules which are DSP-based to help customers do more tasks that ASIC-based motion modules can’t do, such as gantry control, trajectory planning, electrical-CAM and so on. Furthermore, in order to enhance performance and stability, customized firmware in SoftMotion will be possible and can add secure protection for authorization. Advantech provides 2, 4, 6 and 8 axis motion modules to fulfill the different motion applications.

AMONet - Advantech Distributed Motion Control Solutions

Motion control is growing in complexity as the number of axis in newly developed machines with motion control increases each year. Distance is also becoming an issue, as motors are located further and further away from the host computer. AMONet (Advantech Motion Network) was engineered to tackle the problems of increasing spending on wiring and maintenance of these complex motion control systems, and it also gets rid of distance limitations.

The first series of distributed motion control products from Advantech are called the AMONet RS-485 Series. AMONet RS-485 products are categorized as Master cards or Slave modules. While the Master card is kept in the host PC, the slave modules can be distributed so that they are next to motor drivers on the factory floor. The communication speed between the AMONet RS-485 slave modules can be up to 20 Mbps. This makes it possible to scan 2048 I/O points within 1.04 ms (or 1024 I/O points in 0.56 ms). Furthermore, an AMONet RS-485 master will update the I/O status automatically, and map data into local memory. Software running on the host PC can then read the status by simply reading the onboard memory, so no polling of slave modules is necessary.

Each port of a master card can control up to 2048 I/O connections or 256 motion axes, so future extensions are easily implemented. The distance between a master card and its slave modules can be up to 100 meters, and this distance is covered with a cost-effective Cat 5 network cable. In addition to saving wiring costs, debugging and maintenance are also simplified.

Another advantage of AMONet RS-485 is its compatibility with motor drivers from different vendors. Advantech provides specially designed wiring boards for popular motion drivers from vendors such as Panasonic, Mitsubishi, Yaskawa and Delta. This makes configuration easier, as pin-to-pin cables can be used. Having a selection of motor vendors can also be an advantage when sourcing of a certain motor is difficult.

Motion control and I/O functions with AMONet RS-485 use the same library. This unique feature saves time, as programmers do not need to study both a motion library and an I/O library. You can also connect to a manual pulse generator directly to adjust and calibrate the system without having to write programs first.

AMONet makes machine building with motion control easier. The savings made on wiring and programming effort, as well as the compatibility with a wide range of popular motors have already led to many requests for AMONet products.
A Broad Array of Products for Centralized Motion Control

Advantech’s full product offering can accommodate all your motion control needs. You can choose from 2-axis and 4-axis controllers, ISA-bus-based or PCI-bus-based, and standard PC-based or embedded in a system. The functions of the motion cards also vary, from high-end linear/circular interpolation cards to low-cost point-to-point motion devices. And if you cannot find a controller to meet your exact requirements for an embedded motion controller, Advantech is ready to build cost-effective controllers to meet your criteria, whether it be adding digital I/O channels or changing connector styles, or perhaps changing CPU grade. With all the inherent costs, time and risks involved, there’s no reason why you should design your own controller when you can instead rely on the expertise, cost-efficiency, experience and proven reliability of Advantech.

The Differences Between Centralized & Distributed Motion Control

Machine control system architectures generally fall into two categories – centralized or distributed. In a centralized system, all control loops including logic, trajectory generation, and PID control, are executed on a single processor. In a distributed system, the trajectory generation and logic control executes in the central processor, but the PID control loop is executed in the intelligent slave module. A distributed approach gives more processing power, while it reduces overall wiring cost and system complexity.

The Distributed Motion Control Products are categorized in two groups - Master Cards and Slave Modules. Communication between master and slave is based on a custom-engineered technology based on RS-485, which saves wires, transmits over long distances at high speeds, and has time-deterministic features.

The communication interface between master and host PC is based on memory mapping. Various functions can be chosen on the slave modules, and the industrial DIN-rail mountable design makes it easy to distribute them in the field. The master card collects information from slave modules and publishes the data to its host PC, and vice versa.

SoftMotion-based Motion Control

Advantech develops DSP-based SoftMotion control cards which enable the simplified utilization of complex motion manipulation involving JOG, PTP, linear and circular interpolation, multiple axes synchronized motion, and etc. For highly flexible programming features, it has the possibility to offer motion kernel customization. For high performance FPGA, high execution rate DSP, and Dual-Port RAM (DPM) technology, SoftMotion control cards can support faster encoding speeds, higher speed position comparison, and trigger pulse outputs over cards which use ASIC motion IC. SoftMotion controllers can provide programmable acceleration and deceleration to eliminate jerk and smooth velocity profile. For each axis, individual unlimited point tables can realize seamless continuous movements. These tables are also able to combine linear and arc segments. Based on the Common motion API—DSP & FPGA architectures, Advantech provides customers much easier programming environment and robust motion control.

Application-Ready Motion Control Platforms - PEC Series

Advantech provides embedded motion control platforms for embedded motion applications. PEC series is 1/8 the size compared with standard industrial computers, even with built-in motion control and digital I/O. Analog input functionalities, greatly saving space and development time. Fanless, no internal cables, and diskless mechanisms allow PEC series to operate under -10 – 65°C (14 – 149°F) without any heat issues. Due to its PC-based computing architecture integrated with motion control and digital I/O, PEC series can handle a wide range of devices under test (DUT), such as touch panel profiles very quickly, greatly reducing development time. Its small size allows it to fit into space-constrained applications and its anti-vibration capabilities allow PEC series to withstand vibration and noise interference during verification processes. To meet different demands for industrial automation, PEC series provides a variety of motion control functions, such as 2/3-axis linear, 2-axis circular interpolation, continuous interpolation, T/S-curve speed profile and software limits. PEC series features USB ports, COM (RS-232) ports, 10/100 Base-T LAN ports, and CompactFlash slots. These interfaces provide the capability to easily expand peripheral devices and modules.
**SoftMotion Introduction**

**Advantech’s SoftMotion Introduction**

SoftMotion is Advantech’s important core technology in the equipment automation field. Compared to ASIC motion control solutions, Advantech’s Machine Automation Team independently developed its own SoftMotion control technology and uses the FPGA (Field Programmable Gate Array) and DSP (Digital Signal Processing) as the core-computing hardware platform. Because of SoftMotion, which is developed into the software architecture, excludes the inherent limitations of ASIC specifications Advantech is able to offer the expertise of professional motion control for our customers and provides custom firmware to optimize customer’s devices control as well as to minimize their needs for programming. Through SoftMotion technology enhancements, Advantech offers critical technologies in EMA (Electronic Machine Automation) and TMA (Traditional Machine Automation) fields. Meanwhile, based on the three motion control architectures (centralized, distributed and embedded), Advantech’s comprehensive product offering helps our customers to continuously progress their technologies, so as to create a win-win opportunity.

Supporting Advantech’s PCI-1245/1245E/1245L/1265/1285/1285E series, SoftMotion’s features are described below:

### JOG Move
Manually control the axis to directly move within a fixed (predefined) amount of position or continuously in the +/- direction along all axes via external signals; with this feature, users can manually control the movement while reducing CPU loading without consuming system resource.

### Handwheel Move
Use a handwheel to control a motor to rotate positively or negatively; also, users can define parameters for or use external handwheels to control axial movement.

### Trapezoidal & S-Curve Profile
Users can issue commands to configure movement profiles (initial speed, acceleration, deceleration, maximum speed and acceleration onset rate (or called jerk which is for S-speed-curve movement)) and control a motor to move based on predefined speed curves such as the trapezoidal curve or S-curve (second degree curve).

### Programmable Acceleration and Deceleration
Programmable to define the rate of acceleration and deceleration and configure acceleration curve profile (the initial speed, maximum speed, acceleration, deceleration. Jerk) that best meets user needs. Acceleration and deceleration rates can be set independently to ensure the movement better & smooth!

### Homing
SoftMotion supports more than 10 homing modes to fit into the mechanical design.

**MODE1_Abs**: Limited to using ORG only, movement (direction) → ORG trigger → stop
**Example**: Positive direction; ORG logic: trigger on a high voltage level

**MODE2_Lmt**: Limited to using EL only, movement (direction) → EL trigger → stop
**Example**: Positive direction; EL logic: trigger on high voltage level

**MODE3_Ref**: Limited to using EZ only, movement (direction) → EZ trigger → stop
**Example**: Positive direction; EZ logic: trigger on high voltage level
**Soft Motion Introduction**

**MODE4_Abs_Ref:** ORG + EZ, movement (direction) → ORG trigger → stop → movement (direction) → EZ trigger → stop

**Example:** Positive direction; ORG logic: trigger on high voltage level; EZ logic: trigger on high voltage level

**MODE5_Abs_NegRef:** ORG + negative EZ, movement (direction) → ORG trigger → stop → movement (negative direction) → EZ trigger → stop

**Example:** Positive direction; ORG logic: trigger on high voltage level; EZ logic: trigger on high voltage level

**MODE6_Lmt_Ref:** EL + negative EZ, movement (direction) → EL trigger → stop → movement (negative direction) → EZ trigger → stop

**Example:** Positive direction; EL logic: trigger on high voltage level; EZ logic: trigger on high voltage level

**MODE7_AbsSearch:** limited to searching ORG only, movement (direction) → ORG → stop

**Example:** Positive direction; ORG logic: trigger on high voltage level; EL logic: trigger on high voltage level

**MODE8_LmtSearch:** Limited to searching EL only, movement (direction) → ORG → stop

**Example:** Positive direction; ORG logic: trigger on high voltage level; EL logic: trigger on high voltage level

**MODE9_AbsSearch_Ref:** Search ORG-EZ only, movement (direction) → ORG search → stop → movement (direction) → EZ trigger → stop

**Example:** Positive direction; ORG logic: trigger on high voltage level; EL logic: trigger on high voltage level

**MODE10_AbsSearch_NegRef:** Search ORG+ negative EZ, movement (direction) → ORG search → stop → movement (direction) → EZ search → stop

**Example:** Positive direction; ORG logic: trigger on high voltage level; EL logic: trigger on high voltage level; EZ logic: trigger on high voltage level

**MODE11_LmtSearch_Ref:** Search ORG+ EZ only, movement (direction) → ORG search → stop → movement (direction) → EZ search → stop

**Example:** Positive direction; ORG logic: trigger on high voltage level; EL logic: trigger on high voltage level

**MODE12_AbsSearchRefInd:** Search ORG + Refind ORG, movement (direction) → ORG Search → stop → movement (negative direction) → EZ trigger → stop

**Example:** Positive direction; ORG logic: trigger on high voltage level; limit logic: trigger on high voltage level

**MODE13_LmtSearchRefInd:** Search EL + Refind EL, movement (direction) → EL Search → stop → movement (negative direction) → Leave (EL(FL)) → stop → movement (negative direction) → Refind (EL(FL)) → stop

**Example:** Positive direction; limit logic: trigger on high voltage level

**MODE14_AbsSearchRefInd:** Search ORG + Refind ORG + EZ, movement (direction) → ORG search → stop → movement (negative direction) → Leave (ORG(FL)) → stop → movement (negative direction) → Refind (ORG(FL)) → stop

**Example:** Positive direction; ORG logic: trigger on high voltage level; EL logic: trigger on high voltage level

**MODE15_AbsSearchRefInd_NegRef:** Search ORG + Refind ORG + NegEZ, movement (direction) → ORG search → stop → movement (negative direction) → Leave (ORG(FL)) → stop → movement (negative direction) → Refind (ORG(FL)) → stop → movement (negative direction) → EZ trigger → stop

**Example:** Positive direction; ORG logic: trigger on high voltage level; ORG logic: trigger on high voltage level
**SoftMotion Introduction**

**Helical / Spiral Interpolation**
Helical / spiral movement by interpolation defined by
(1) center position
(2) terminal point on the circular route or points along the circular route
(3) terminal point on the circular route and Z axis movement.
To perform interpolation up to 2+1 axes for helical / spiral movement.

**Multi-axis (Group) Motion**
- Group settings: up to 3 group settings
- Linear interpolation: up to 8 axes
- Speed override is available

**3-axis Linear Interpolation**
- The composite speed can be specified

**2-axis Linear Interpolation**
- The composite speed can be specified
- The axis speed for the axis to be a long axis can be specified.
SoftMotion Introduction

2-axis Circular Interpolation

2-axis circular interpolation (Center point specification/CW direction)

Y axis

The center position can be specified

X axis

2-axis circular interpolation (Center point specification/CCW direction)

Y axis

The center position can be specified

X axis

2-axis circular interpolation (Pass point specification)

Y axis

The pass point on a arc can be specified

X axis

Backlash Compensation

In order to enhance ball screw repeatability precision, special algorithms and commands can be adopted to eliminate these errors and offset their inherited weakness in mechanism design.

Tangential Following

The knife control of cutting machine is typical application. For Z axis movement, a motor follows the X-Y movement and curve. As shown below, the tangential direction of the circular movement for the Z axis on this X-Y dimension will be adjusted instantly to ensure that the radius between its movement and the circular trace stays at 90 degrees.

Superimposed Move

Change the current state of motion by superimposing new commands onto existing movement. E.g. the expected position and speed are 5,000 and 300. The state of motion is changed by superimposing position 1,000 and speed 100.

Position Window Output

The digital output voltage level within a certain position window can be controlled by using commands.
Position / Velocity Override

Under certain conditions, users can use commands to set up and change the position of a terminal point and movement speed to fulfill certain purposes. The terminal points and movement speed can still be changed on the fly.

Trigger Function

- Single compare & trigger: trigger on a single position.
- Table compare & trigger: multi position triggers during fixed intervals or variable intervals can be achieved via commands.
- Linear compare & trigger: triggers on any position within 2D or 3D space can be achieved via commands.
- Compare and toggle trigger: as shown in the bottom right figure, we can set to invert DO after triggers of a certain position — ex. high voltage level at the first point after triggers for DO, low voltage level at the second point after triggers for DO, and high voltage level again at the third position and ends with a low voltage level at the fourth point.

E-Gear

Multi-axial and absolutely synchronized controls can be achieved through SoftMotion algorithms and parameter configurations. With E-Gear, users can enforce configurations and controls over master and slave gears through their relationship. This not only simplifies the mechanism designs, but also saves mechanism space and enforces absolute and synchronized controls.
**SoftMotion Introduction**

**Velocity Motion**
Via commands, users can control motors to operate continuously under a defined speed.

**E-Cam**
The relationship of relative movement between master (shaft axis) and slave (follower axis) axes can be established from following tables and it can simulate moves of the cam and provide multiple movement models based on the relationship.

**Path Table Motion**
- Supports up to 3 describing path tables and each table can be up to 10,000 points
- Supports linear and circular interpolation commands
- Supports start/stop motion list as descriptive commands for movement control
- Supports Pause/ Resume commands
- Supports Auto Blending
- Supports Z axis following movement

**Multi-Axis Point to Point Motion**
Entering terminal points of axis with relative and absolute positions, users can configure the motor to arrive at the final position configured. With this feature, users can activate multi-axial control and simultaneous start/stop on the same or different cards.
SoftMotion Introduction

**Look Ahead**
By configuring customized parameter profiles (e.g. feed speed and acceleration) users can use the forward looking preprocessing module to enforce movement control and continuous small segmented linear-wise trajectories processing procedures.

**Event Interrupt**
Instantly notify users with event interruption alerts when specified event occur. So, users can activate contingency procedures based on event condition.

**Gantry Control**
Ensure that the error deviation of absolute mutual parallel axes positions during active sessions remain within the predefined range via special algorithms to achieve gantry controls.

**Position Latch**
Record down the theoretical and actual motor positions when corresponding sensors are triggered.

**Up to 3 Groups of Vectors Moving**
With SoftMotion algorithms designed to enhance DSP and FPGA interaction, users can use the system to perform interpolated movement: to simplify the design of machines for mechanism designers.
Common Motion API

Introduction

Advantech’s New Generation Motion Control Software

System integrators often encounter difficulties when an engineer may not be familiar with the different syntaxes during the integration of various motion control cards. And what bothers them the most is that when the system has to be upgraded, the problems often occur with rewriting the program as well as increasing the development time. To reduce these difficulties, Advantech has introduced a unified interface - Common Motion API- which provides a single syntax and interface, regardless of the types of motion control card the integrator chooses to use. The design can proceed under a single syntax interface to save development time and speed up the time to market. The ACM (Advantech Common Motion) architecture defines a single interface which consists of three types of operation objects, including Device, Axis and Group and each object has its own Property, Method and State.

Features of Common Motion API

- Provides complete debugging tool utility
  - Hardware wiring testing
  - Software functional testing
  - Condition & status monitoring
- Provides the dedicated APIs for different applications
- Simplifies API calls process
- Improves the integration
- Supports scalable hardware
  - Supports the existing hardware and future hardware development, such as PCI-1245/45E/45L/65/85/85E series

Through the above advantages and the lower learning threshold, integrators can significantly reduce development time and follow-up maintenance work!

5 Compositions in Common Motion API

1. Easy-understanding Naming Rule

<table>
<thead>
<tr>
<th>Property</th>
<th>Method</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT_XXX: Feature Property</td>
<td>Acm_DeviceXXX(): Use ‘Device’ as a control unit</td>
<td>EVT_DeviceXXX</td>
</tr>
<tr>
<td>CFG_XXX: Configuration Property</td>
<td>Acm_AxisXXX(): Use ‘Axis’ as a control unit</td>
<td>EVT_AxisXXX</td>
</tr>
<tr>
<td>PAR_XXX: Parameter Property</td>
<td>Acm_GroupXXX(): Use ‘Group’ as a control unit</td>
<td>EVT_GroupXXX</td>
</tr>
</tbody>
</table>

2. Object-oriented Interface

3 Categories of Property

- Feature Property
- Configuration Property
- Parameter Property

3 Categories of Method

- Use ‘Device’ as a control unit
- Use ‘Axis’ as a control unit
- Use ‘Group’ as a control unit

3 Categories of Event

- EVT_DeviceXXX
- EVT_AxisXXX
- EVT_GroupXXX

4. Simple Integer Type

| U/I/F stands for different types of integers and the following numbers stand for bits. |

<table>
<thead>
<tr>
<th>New Type</th>
<th>Windows Data Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>U8</td>
<td>UCHAR</td>
<td>8-bit unsigned integer</td>
</tr>
<tr>
<td>U16</td>
<td>USHORT</td>
<td>16-bit unsigned integer</td>
</tr>
<tr>
<td>U32</td>
<td>ULONG</td>
<td>32-bit unsigned integer</td>
</tr>
<tr>
<td>U64</td>
<td>ULONGLONG</td>
<td>64-bit unsigned integer</td>
</tr>
<tr>
<td>I8</td>
<td>CHAR</td>
<td>8-bit signed integer</td>
</tr>
<tr>
<td>I16</td>
<td>SHORT</td>
<td>16-bit signed integer</td>
</tr>
<tr>
<td>I32</td>
<td>INT</td>
<td>32-bit signed integer</td>
</tr>
<tr>
<td>I64</td>
<td>LONGLONG</td>
<td>64-bit signed integer</td>
</tr>
<tr>
<td>F32</td>
<td>FLAT</td>
<td>32-bit Floating point variable</td>
</tr>
<tr>
<td>F64</td>
<td>DOUBLE</td>
<td>64-bit Floating point variable</td>
</tr>
</tbody>
</table>

Example: U32 Acm_AxMoveRel (U32 AxHandle, PF64 Distance)

5. Detailed Error Classification

<table>
<thead>
<tr>
<th>No</th>
<th>Error Code</th>
<th>Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>Success</td>
<td>Set up successfully</td>
</tr>
<tr>
<td>2</td>
<td>0x01000001</td>
<td>Warning</td>
<td>The parameter is incorrect but do not affect performance</td>
</tr>
<tr>
<td>3</td>
<td>0x80000000</td>
<td>Function Error</td>
<td>Cannot execute because the parameter is incorrect</td>
</tr>
<tr>
<td>4</td>
<td>0x80001000</td>
<td>Communication Error</td>
<td>Cannot execute because of communication errors</td>
</tr>
<tr>
<td>5</td>
<td>0x80002000</td>
<td>Motion Error</td>
<td>Cannot execute because of motion errors</td>
</tr>
<tr>
<td>6</td>
<td>0x80003000</td>
<td>DAQ Error</td>
<td>Cannot execute because of data acquisition errors</td>
</tr>
</tbody>
</table>
## Embedded Motion Controller

### Model: PEC-3240

<table>
<thead>
<tr>
<th>Category</th>
<th>Motion Control</th>
<th>Encoder</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bus</strong></td>
<td>PC/104</td>
<td>PCI</td>
</tr>
<tr>
<td><strong>Number of Axis</strong></td>
<td>4</td>
<td>4/8</td>
</tr>
<tr>
<td><strong>Linear Interpolation</strong></td>
<td>✓</td>
<td>✓/8</td>
</tr>
<tr>
<td><strong>2-axis Circle Interpolation</strong></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Onboard RAM</strong></td>
<td>512 MB DDR SDRAM</td>
<td></td>
</tr>
<tr>
<td><strong>Operating Systems</strong></td>
<td>Windows XP Embedded</td>
<td></td>
</tr>
<tr>
<td><strong>Limit Switch Input Channels</strong></td>
<td>8</td>
<td>8/16</td>
</tr>
<tr>
<td><strong>Home Input Channels</strong></td>
<td>4</td>
<td>8/16</td>
</tr>
<tr>
<td><strong>Emergency Stop Input Channels</strong></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Slow Down Limit Switches</strong></td>
<td>8</td>
<td>8/16</td>
</tr>
<tr>
<td><strong>General Purpose DI Channels</strong></td>
<td>12</td>
<td>16/32</td>
</tr>
<tr>
<td><strong>Servo On Output Channels</strong></td>
<td>4</td>
<td>4/8</td>
</tr>
<tr>
<td><strong>General Purpose DO Channels</strong></td>
<td>16</td>
<td>8/16</td>
</tr>
<tr>
<td><strong>Analog Input Channels</strong></td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td><strong>Position Compare Event</strong></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Position Latch</strong></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Dimensions (mm)</strong></td>
<td>96 x 90</td>
<td>96</td>
</tr>
<tr>
<td><strong>Connector</strong></td>
<td>2 x 50-pin IDC</td>
<td>100-pin SCSi</td>
</tr>
<tr>
<td><strong>Wiring Boards</strong></td>
<td>ADAM-3950</td>
<td>ADAM-3950</td>
</tr>
<tr>
<td><strong>Page</strong></td>
<td>2-21</td>
<td>online</td>
</tr>
</tbody>
</table>

## Centralized Motion Control Solutions

### Centralized Motion Control Solutions

- **NEW**
- **NEW**
- **NEW**

### Category

- **Motion Control Encoder**
- **Bus**
  - PC/104
  - PCI
  - ISA
  - PCI-1220U
  - PCI-1240U
  - PCI-1243U
  - PCI-1245L
  - PCI-1245E
  - PCI-1265
  - PCI-1285
  - ISA
  - ISA
  - ISA

### Advanced Functions

- **Encoder Channels**
  - 4
  - 2
  - 4
  - 4
  - 4/8
  - 3
  - 4

- **Limit Switch Input Channels**
  - 8
  - 4
  - 4
  - 8
  - 8
  - 16
  - 16
  - 16
  - 6

- **Home Input Channels**
  - 4
  - 2
  - 4
  - 4
  - 4
  - 4/8
  - 4/8
  - 4/8
  - 3

- **Emergency Stop Input Channels**
  - 1
  - 1
  - 1
  - 1
  - 1
  - 1
  - 1
  - -

- **Slow Down Limit Switches**
  - 8
  - 4
  - 8
  - -
  - 8
  - 8/16
  - 8/16
  - 6

- **General Purpose DI Channels**
  - 12
  - 6
  - 12
  - 8
  - 16
  - 16
  - 16
  - 16
  - 6

- **Servo On Output Channels**
  - 4
  - 2
  - 4
  - 4
  - 4/8
  - -
  - -

- **General Purpose DO Channels**
  - 16
  - 8
  - 16
  - 8
  - 16
  - 16
  - 16
  - 16
  - 4

- **Analog Input Channels**
  - -
  - -
  - -
  - -
  - -
  - -
  - -
  - 2

- **Position Compare Event**
  - ✓
  - ✓
  - ✓
  - ✓
  - ✓
  - ✓
  - ✓
  - -

- **Position Latch**
  - -
  - -
  - -
  - -
  - -
  - -
  - -
  - -

- **Dimensions (mm)**
  - 96 x 90
  - 175 x 100
  - 175 x 100
  - 175 x 100
  - 175 x 100
  - 175 x 100
  - 175 x 100
  - 175 x 100
  - -

- **Connector**
  - 2 x 50-pin IDC
  - 50-pin SCSI
  - 100-pin SCSi
  - DB62
  - 100-pin/200-pin SCSi
  - 100-pin SCSi
  - 2x100-pin SCSi
  - 1 x DB37
  - 2 x 20-pin
  - DB37
  - 1 x DB25

- **Wiring Boards**
  - ADAM-3950
  - ADAM-3952
  - ADAM-3955
  - ADAM-3956
  - ADAM-3920
  - ADAM-3937
  - ADAM-3925

- **Page**
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  - 2-21
  - 2-21
  - 2-22
  - 2-20
  - 2-19
  - 2-16
  - 2-17/2-18
  - online
  - online
  - online

---

**NEW**

**NEW**

**NEW**

---

**Centralized Motion Control Solutions**

**Model:** PEC-3240

- **CPU:** Celeron M 1.0 GHz CPU
- **Onboard RAM:** 512 MB DDR SDRAM
- **Operating Systems:** Windows XP Embedded

<table>
<thead>
<tr>
<th>Motion Axis</th>
<th>Number of Axis</th>
<th>Linear Interpolation</th>
<th>2-axis Circle Interpolation</th>
<th>General Inputs</th>
<th>General Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
<td>✓</td>
<td>✓</td>
<td>12 (NO – 2 of each axis)</td>
<td>16 (OUT4 – 7 of each axis)</td>
</tr>
</tbody>
</table>

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**Page:** 2-15
### AMONet Motion Master Cards

<table>
<thead>
<tr>
<th>Model</th>
<th>Bus</th>
<th>PCI-1202U</th>
<th>PCM-3202P</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Purpose DI Channels</td>
<td>PCI</td>
<td>8</td>
<td>-</td>
</tr>
<tr>
<td>General Purpose DO Channels</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Remote Motion</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Remote I/O</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Dimensions (L x H)</td>
<td>175 x 100 mm</td>
<td>96 x 90 mm</td>
<td></td>
</tr>
<tr>
<td>Connectors</td>
<td>2 x RJ45</td>
<td>4 x 10-pin box header</td>
<td></td>
</tr>
<tr>
<td>Digital I/O Slave Modules</td>
<td>AMAX-1752, AMAX-1754, AMAX-1756, AMAX-2752SY, AMAX-2754SY, AMAX-2756SY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motion Slave Modules</td>
<td>AMAX-1220, AMAX-1240, AMAX-2241/PMA, AMAX-2242/U2S, AMAX-2243/YS2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Page</td>
<td>2-20</td>
<td>2-20</td>
<td></td>
</tr>
</tbody>
</table>

### AMONet Motion Slave Modules

<table>
<thead>
<tr>
<th>Model</th>
<th>AMAX-1220</th>
<th>AMAX-1240</th>
<th>AMAX-2241/PMA</th>
<th>AMAX-2242/U2S</th>
<th>AMAX-2243/YS2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axis Number of Axis</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Linear Interpolation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2-axis Circle Interpolation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Encoder Channels</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Limit Switch Input Channels</td>
<td>4</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Home Input Channels</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Emergency Stop Input Channels</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Slow Down Limit Switches</td>
<td>4</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Servo On Output Channels</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>BoardID Switch</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Position Compare Event</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Position Latch</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Simultaneously Start/Stop among Modules</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>2 W @ 24 V typical</td>
<td>5 W @ 24 V typical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions (L x W x H)</td>
<td>141 x 108 x 60 mm</td>
<td>125 x 47.6 x 151 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Page</td>
<td>2-21</td>
<td>2-21</td>
<td>2-23</td>
<td>2-23</td>
<td>2-23</td>
</tr>
</tbody>
</table>

### Isolated Digital I/O Slave Modules

<table>
<thead>
<tr>
<th>Model</th>
<th>AMAX-1752</th>
<th>AMAX-1754</th>
<th>AMAX-1756</th>
<th>AMAX-2752SY</th>
<th>AMAX-2754SY</th>
<th>AMAX-2756SY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isolated Digital Input Channels</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Isolated Digital Output Channels</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Typical Power Consumption</td>
<td>600 mW</td>
<td>1.2 W</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Power Consumption</td>
<td>2 W</td>
<td>5 W</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions (L x W x H)</td>
<td>141 x 95 x 60 mm</td>
<td>125 x 47.6 x 151 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Page</td>
<td>2-22</td>
<td>2-22</td>
<td>2-22</td>
<td>2-24</td>
<td>2-24</td>
<td>2-24</td>
</tr>
</tbody>
</table>
PEC-3240

Introduction
PEC-3240 is a standalone embedded motion controller that provides 4-axis motion and 32 isolated digital inputs/outputs. This controller also supports serial communication ports and several other networking interfaces. The Windows XP Embedded OS offers a pre-configured image with optimized onboard device drivers. You can seamlessly integrate your applications into Windows XP Embedded and speed up your system development with this application ready controller.

Specifications

General
- Certification: CE, FCC Class A
- Dimensions (W x D x H): 255 x 152 x 59 mm (10" x 6.0" x 2.3")
- Power Consumption: 24 W (Typical)
- Power Requirements: 10 – 30 Vdc (e.g. 24 V @ 2 A) (Min. 48 W), AT
- Weight: 2.4 kg (Typical) 4
- OS Support: Windows XP Embedded, Windows 2000/XP

System Hardware
- CPU: Intel® Celeron® M 1.0 GHz
- Memory: 512 MB DDR SDRAM
- Indicators: Power, IDE and LAN (Active, Status)
- Keyboard/Mouse: 1 x PS/2
- Storage: SSD: 2 x internal type I/II CompactFlash® slot

I/O Interface
- Serial Ports: 2 x RS-232 with DB9 connectors
- Serial Port Speed: 50 – 115.2 kbps
- LAN: 2 x 10/100Base-T RJ45 ports
- USB Ports: 2 x USB, EHCI, Rev 2.0 compliant

Pulse Type Motion Control
- Number of Axis: 4
- Interpolation: 2-axis linear, 3-axis linear, 2-axis circular
- Max. Output Speed: 4 Mpps
- Step Count Range: ±2, 147, 483, 646
- Pulse Output Type: CW/CCW or pulse/direction
- Velocity Profiles: T-Curve, S-Curve
- Local I/O: PEL x 4, MEL x 4, ORG x 4, ALM x 4, INP x 4, CMP x 4
- General Inputs: 16 (OUT4 – 7 of each axis)
- General Outputs: 16 (OUT4 – 7 of each axis)

Encoder Interface
- Input Type: Quadrature (x1, x2, x4 A/B phase) or CW/CCW
- Input Range: 5 – 25 V
- Isolation Protection: 1,000 Vdc
- Max. Input Frequency: 1 MHz

Features
- Onboard Intel® Celeron® M 1.0 GHz CPU
- 2 x RS-232 ports
- Two 10/100Base-T RJ45 ports
- 2 x USB ports (one with lockable cable mechanism)
- Independent 4-axis motion control
- 32-ch isolated Digital I/O (16-ch inputs and 16-ch outputs)
- 2/3-axis linear, 2-axis circular interpolation function
- Continuous interpolation
- Up to 4 Mpps output; up to 1 MHz encoder input
- Two pulse output types: CW/CCW or pulse/direction
- Two encoder pulse input types: A/B or CW/CCW

Isolated Digital Input
- Channels: 16
- Input Voltage: Logic 0: 2 V max.; Logic 1: 5 V min. (24 V max.)
- Isolation Protection: 1,000 Vdc

Isolated Digital Output
- Channels: 16
- Output Type: Sink Type (NPN)
- Output Voltage: 5 – 40 V max.
- Sink Current: 200 mA max. per channel
- Isolation Protection: 1,000 Vdc

Environment
- Humidity: 5 – 95% RH, non-condensing (IEC 60068-2-3)
- Operating Temperature: -10 – 65°C (14 – 149°F) @ 5 – 85% RH
- Storage Temperature: -20 – 80°C (-4 – 176°F)
- Shock Protection: IEC 68 2-27
- Vibration Protection: CompactFlash: 2 Gms @ 5 – 500 Hz

Ordering Information
- PEC-3240-AE: Celeron M 1 GHz 4-axis Motion Controller w/ DIO

Accessories
- PCL-10251-1E/3E: 100-pin SCSI to Two 50-pin SCSI Cable, 1m/3m
- PCL-10125-1E/3E: 100-pin DIN-rail SCSI 4-axis Motion Wiring Board
- ADAM-3955-AE: 50-pin DIN-rail SCSI 2-axis Motion Wiring Board
- ADAM-3952-AE: 50-pin DIN-rail SCSI and Box Header Board
- ADAM-3925-AE: 50-pin Cable from ADAM-3955/ADAM-3956 to Panasonic Minas A Servo, 2 m
- PCL-10153PA5-2E: 50-pin Cable from ADAM-3955/ADAM-3956 to Delta J3 Serve, 2 m
- PCL-10153PA5LS-2E: 50-pin Cable from ADAM-3955/ADAM-3956 to Mitsubishi J3 Serve, 2 m
- PCL-10153MRI5SE: 50-pin Cable from ADAM-3955/ADAM-3956 to Sigma V Serve, 2 m
- PCL-10153MJ3-2E: 50-pin Cable from ADAM-3955/ADAM-3956 to Mitsubishi J3 Serve, 2 m
- PCL-10153D82E: 50-pin Cable from ADAM-3955/ADAM-3956 to Delta A2 Serve, 2 m

Online Download: www.advantech.com/products
PCI-1285

Features
- Encoder input is 10 MHz for 4xAB mode, 2.5 MHz for CW/CCW mode
- Pulse output up to 5 Mpps
- Memory buffer (10K points) for trajectory planning which is designed in DSP
- Supports E-Gear, and helical interpolation
- Supports E-CAM providing 256 points to describe the CAM profiles which buffers located in DSP
- Hardware emergency input
- Watchdog timer
- Position latch
- Position compare triggering up to 100 KHz, and memory buffer is up to 100 K points in DSP
- Programmable interrupt
- Supports gantry mode by semi-closed loop pulse train control
- RDY/LTC-dedicated input channels & SVON/CMP/CAM-DO/ERC-dedicated output channels are switchable for general input and output purposes

Introduction
PCI-1285 is a 8-axis universal PCI (supporting both 3.3 V and 5 V signal slot) stepping/pulse-type servo motor control card designed for applications which need to control interpolation, synchronization among multiple axes, continuous contouring and high speed triggering to integrated machine vision solution. PCI-1285 utilizes the high-performance DSP and FPGA to calculate the motion trajectories, synchronization timing control for multiple axes and input/output handling to offer functionality, such as up to 8-axis linear interpolation, 2- axis circular interpolation, helical interpolation, T/S-curve acceleration/deceleration rate and so on. In addition, Advantech supplies a Common Motion API library, graphical utility and user-friendly examples to decrease programming load, helping users complete configuration and diagnosis easily.

Specifications

<table>
<thead>
<tr>
<th>Pulse Type Motion Control</th>
<th>General</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Motor Driver Support</td>
<td>• Bus Type</td>
</tr>
<tr>
<td>Pulse-type servo/stepping</td>
<td>Universal PCI V2.2</td>
</tr>
<tr>
<td>• Number of Axes</td>
<td>• Connectors</td>
</tr>
<tr>
<td>8</td>
<td>2 x 100-pin mini-SCSI female connector</td>
</tr>
<tr>
<td>• Interpolation</td>
<td>• Dimensions (L x H)</td>
</tr>
<tr>
<td>2 to 8-axis linear, 2-axis circular, X-Y plane with Z thread helical interpolation</td>
<td>175 x 100 mm (6.9” x 3.9”)</td>
</tr>
<tr>
<td>• Max. Output Speed</td>
<td>• Power Consumption</td>
</tr>
<tr>
<td>5 Mbps</td>
<td>Typical: 5 V @ 300 mA</td>
</tr>
<tr>
<td>• Step Count Range</td>
<td>3.3 V @ 1.2 A</td>
</tr>
<tr>
<td>±2, 147, 483, 646</td>
<td>Max.: 5 V @ 400 mA</td>
</tr>
<tr>
<td>• Pulse Output Type</td>
<td>3.3 V @ 1.5 A</td>
</tr>
<tr>
<td>Pulse/direction (1-pulse, 1-direction type) or CW/CCW (2-pulse type)</td>
<td></td>
</tr>
<tr>
<td>• Position Counters</td>
<td>• Humidity</td>
</tr>
<tr>
<td>Range of command and actual position</td>
<td>5 ~ 95% RH, non-condensing (IEC 60068-2-3)</td>
</tr>
<tr>
<td>• Velocity Profiles</td>
<td>• Operating Temperature</td>
</tr>
<tr>
<td>T-Curve, S-Curve</td>
<td>0 ~ 60°C (32 ~ 140°F)</td>
</tr>
<tr>
<td>• Local I/O</td>
<td>• Storage Temperature</td>
</tr>
<tr>
<td>Machine Interfaces:</td>
<td>-20 ~ 85°C (-4 ~ 185°F)</td>
</tr>
<tr>
<td>LMT+, LMT-, ORG</td>
<td></td>
</tr>
<tr>
<td>Servo Driver Interfaces:</td>
<td></td>
</tr>
<tr>
<td>ALM, INP</td>
<td></td>
</tr>
<tr>
<td>Position Compare I/O:</td>
<td></td>
</tr>
<tr>
<td>CMP</td>
<td></td>
</tr>
<tr>
<td>General Digital I/O:</td>
<td></td>
</tr>
<tr>
<td>32-ch DI, 32-ch DO</td>
<td></td>
</tr>
</tbody>
</table>

Encoder Interface

<table>
<thead>
<tr>
<th>Input Type</th>
<th>Count per Enc. Cycle</th>
<th>Input Range</th>
<th>Isolation Protection</th>
<th>Max. Input Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quandrature (A/B phase) or up/down</td>
<td>x1, x2, x4 (A/B phase only)</td>
<td>5 – 10 V</td>
<td>2,500 VOC</td>
<td>10 MHz under 4xAB mode</td>
</tr>
</tbody>
</table>

Ordering Information

- • PCI-1285-AE 8-axis Stepping/Servo Control Universal PCI Card

Accessories

- ADAM-3956-AE 100-pin DIN-rail SCSI 4-axis Motion Wiring Board
- ADAM-39100-AE 100-pin DIN-rail SCSI Wiring Board
- PCL-101100SB-1E Mini-SCSI-100 Shielded Cable, 1m
- PCL-101100SB-2E Mini-SCSI-100 Shielded Cable, 2m
- PCL-101100SB-3E Mini-SCSI-100 Shielded Cable, 3m
- PCL-10153PA5-2E 50-pin Cable from ADAM-3955/ADAM-3956 to Panasonic A4 and A5 Servo, 2m
- PCL-10153PA5LS-2E 50-pin Cable from ADAM-3955/ADAM-3956 to Panasonic MINAS A Servo, 2m
- PCL-10153YS5-2E 50-pin Cable from ADAM-3955/ADAM-3956 to Yaskawa Sigma V Servo, 2m
- PCL-10153MJ3-2E 50-pin Cable from ADAM-3955/ADAM-3956 to Mitsubishi J3 Servo, 2m
- PCL-10153DA2-2E 50-pin Cable from ADAM-3955/ADAM-3956 to Delta A2 Servo, 2m
PCI-1245
PCI-1265

DSP-based 4/6-axis Stepping and Servo Motor Control Universal PCI Card

Introduction
PCI-1245/1265 is a 4/6-axis universal PCI (supporting both 3.3 V and 5 V signal slot) stepping/pulse-type servo motor control card designed for applications which need to control interpolation, synchronization among multiple axes, continuous contouring and high speed triggering to integrated machine vision solution. PCI-1245/1265 utilizes the high-performance DSP and FPGA to calculate the motion trajectories, synchronization timing control for multiple axes and input/output handling to offer functionality, such as up to 4/6-axis linear interpolation, 2-axis circular interpolation, helical interpolation, T/S-curve acceleration/deceleration rate and so on. In addition, Advantech supplies a Common Motion API library, graphical utility and user-friendly examples to decrease programming load, helping users complete configuration and diagnosis easily.

Specifications

Pulse Type Motion Control
- Motor Driver Support: Pulse-type servo/stepping
- Number of Axes:
  - PCI-1245: 4
  - PCI-1265: 6
- Interpolation:
  - PCI-1245: 2 to 4-axis linear, 2-axis circular, X-Y plane with Z thread helical interpolation
  - PCI-1265: 2 to 6-axis linear, 2-axis circular, X-Y plane with Z thread helical interpolation
- Max. Output Speed: 5 Mbps
- Step Count Range: ±2, 147, 483, 646
- Pulse Output Type: Pulse/direction (1-pulse, 1-direction type) or CW/CCW (2-pulse type)
- Position Counters: Range of command and actual position
- Velocity Profiles: T-Curve, S-Curve
- Local I/O:
  - Machine Interfaces: LMT+, LMF-, ORG
  - Servo Driver Interfaces: ALM, INP
  - Position Compare I/O: General Digital I/O.
- Analog Input
- Encoder Interface
  - Input Type: Quadrature (A/B phase) or up/down
  - Counts per Enc. Cycle:
    - Linear: x1, x2, x4 (A/B phase only)
    - Circular: x1, x2, x4 (A/B phase only)
  - Input Range: 5 - 15 V
  - Isolation Protection: 2.500 Vdc
  - Max. Input Frequency: 10 MHz under 4xAB mode

General
- Bus Type: Universal PCI V2.2
- Connectors:
  - PCI-1245: 1 x 100-pin SCSI female connector
  - PCI-1265: 1 x 100-pin SCSI female connector & 1 x 50-pin female SCSI connector
- Dimensions (L x H): 175 x 100 mm (6.9’’ x 3.9’’)
- Power Consumption:
  - Typical: 5 V @ 850 mA
  - Max: 5 V @ 1 A
- Humidity: 5 – 95% RH, non-condensing (IEC 60068-2-3)
- Operating Temperature: 0 – 60°C (32 – 140°F)
- Storage Temperature: -20 – 85°C (-4 – 185°F)

Ordering Information
- PCI-1245-AE: 4-axis Stepping/Servo Control Universal PCI Card
- PCI-1265 AE: 6-axis Stepping/Servo Control Universal PCI Card

Accessories
- ADAM-3956-AE: 100-pin DIN-rail SCSI 4-axis Motion Wiring Board
- ADAM-3955-AE: 50-pin DIN-rail SCSI 2-axis Motion Wiring Board
- ADAM-3952-AE: 50-pin DIN-rail SCSI and Box Header Board
- ADAM-39100-AE: 50-pin DIN-rail SCSI Wiring Board
- PCL-10152-1E/3E: 100-pin SCSI Cable, 1m/2m/3m
- PCL-10151-1E/3E: 100-pin SCSI to Two 50-pin SCSI Cable, 1m/2m/3m
- PCL-1015PAS5-2E: 50-pin Cable from ADAM-3955/ADAM-3956 to Panasonic A4 and A5 Servo, 2 m
- PCL-10153P5LS-2E: 50-pin Cable from ADAM-3955/ADAM-3956 to Yaskawa Sigma V Servo, 2 m
- PCL-10153MJ3-2E: 50-pin Cable from ADAM-3955/ADAM-3956 to Mitsubishi J3 Servo, 2 m
- PCL-10153DA2-2E: 50-pin Cable from ADAM-3955/ADAM-3956 to Delta A2 Servo, 2 m
PCI-1245E
PCI-1285E

Economic DSP-based 4/8-axis Stepping and Servo Motor Control Universal PCI Card

Features
- Encoder input is 10 MHz for 4xAB mode, 2.5 MHz for CW/CCW mode
- Pulse output up to 5 Mpps
- Memory buffer for trajectory planning (circular trajectory and auto blending are not supported)
- Supports E-Gear
- Hardware emergency input
- Watchdog timer
- Position latch
- Programmable interrupt
- RDY/LTC-dedicated input channels & SVON/CMP/CAM-D0/ERC-dedicated output channels are switchable for general input and output purposes

Introduction
PCI-1245E/1285E is a 4/8-axis economic universal PCI (supporting both 3.3 V and 5 V signal slot) stepping/pulse-type servo motor control card designed for entry-level applications which need to control linear interpolation, electronic gear, continuous contouring (circular trajectories and auto blending are excluded). PCI-1245E/1285E utilizes the high-performance DSP and FPGA to calculate the motion trajectories, synchronization timing control for multiple axes and input/output handling to offer functionality, such as 2–8-axis linear interpolation, E-Gear (only for PCI-1245E), T/S-curve acceleration/deceleration rate, speed override, 16 home modes and so on. In addition, Advantech supplies a Common Motion API library, graphical utility and user-friendly examples to decrease programming load, helping users complete configuration and diagnosis easily.

Specifications

Pulse Type Motion Control
- Motor Driver Support: Pulse-type servo/stepping
- Number of Axis:
  - PCI-1245E: 4
  - PCI-1285E: 8
- Interpolation:
  - PCI-1245E: 2-axis linear
  - PCI-1285E: 2-axis linear
- Max. Output Speed: 5 Mbps
- Step Count Range: ±2, 147, 483, 646
- Pulse Output Type: Pulse/direction (1-pulse, 1-direction type) or CW/CCW (2-pulse type)
- Position Counters: Range of command and actual position
- Velocity Profiles: T-Curve, S-Curve
- Local I/O
  - Machine Interfaces: LMT+, LMT-, ORG
  - Servo Driver Interfaces: ALM, INP
  - General Digital I/O:
    - PCI-1245E: 16-ch DI, 16-ch DO
    - PCI-1285E: 32-ch DI, 32-ch DO

Encoder Interface
- Input Type: Quadrature (A/B phase) or up/down
- Counts per Enc. Cycle: x1, x2, x4 (A/B phase only)
- Input Range:
  - PCI-1245E: 5–15V
  - PCI-1285E: 5–10V
- Isolation Protection: 2,500 V
- Max. Input Frequency: 10 MHz under 4xAB mode

General
- Bus Type: Universal PCI V2.2
- Connectors:
  - PCI-1245E: 1 x 100-pin SCSI female connector
  - PCI-1285E: 2 x 100-pin mini-SCSI female connector
- Dimensions (L x H): 175 x 100 mm (6.9” x 3.9”)

Power Consumption
- PCI-1245E: Typical: 5 V @ 850 mA
  - Max.: 5 V @ 1 A
- PCI-1285E: Typical: 5 V @ 530 mA
  - 3.3 V @ 160 mA
  - Max.: 5 V @ 500 mA
  - 3.3 V @ 1.1 A

Humidity: 5 – 95% RH, non-condensing (IEC 60068-2-3)
Operating Temperature: 0 – 60°C (32 – 140°F)
Storage Temperature: -20 – 85°C (-4 – 185°F)

Ordering Information
- PCI-1245E-AE: Economic 4-axis Stepping/Servo Control Universal PCI Card
- PCI-1285E-AE: Economic 8-axis Stepping/Servo Control Universal PCI Card

Accessories
- ADAM-3956-AE: 100-pin DIN-rail SCSI 4-axis Motion Wiring Board
- ADAM-3955-AE: 50-pin DIN-rail SCSI 2-axis Motion Wiring Board
- ADAM-39100-AE: 100-pin DIN-rail SCSI Wiring Board
- PCL-101100M-1E/2E/3E: 100-pin SCSI Cable, 1m/2m/3m
- PCL-10251-1E/3E: 100-pin SCSI to Two 50-pin SCSI Cable, 1m/3m
- PCL-101100S9-1E/2E/3E: Mini-SCSI-100 Shielded Cable, 1m/2m/3m (for PCI-1285E)
- PCL-10153PA5-2E: DB-26 pin to SCSI-50 pin 50-pin Cable from ADAM-3955/ADAM-3956 to Panasonic A4 and AS Servo, 2 m
- PCL-10153PA5LS-2E: DB-26 pin to SCSI-50 pin 50-pin Cable from ADAM-3955/ADAM-3956 to Panasonic MINAS A Servo, 2 m
- PCL-10153YS5-2E: DB-26 pin to SCSI-50 pin 50-pin Cable from ADAM-3955/ADAM-3956 to Yaskawa Sigma V Servo, 2 m
- PCL-10153MJ3-2E: DB-26 pin to SCSI-50 pin 50-pin Cable from ADAM-3955/ADAM-3956 to Mitsubishi J3 Servo, 2 m
- PCL-10153DA2-2E: DB-26 pin to SCSI-50 pin Cable from ADAM-3955/ADAM-3956 to Delta A2 Servo, 2 m
PCI-1245L

4-axis Stepping and Servo Motor Control Universal PCI Card

Features
- Encoder input is 4 MHz for 4xAB mode, 1 MHz for CW/CCW mode
- Pulse output up to 1 Mpps and the output type can be switched to differential or single-ended by jumper setting
- Supports 2-axis linear interpolation
- Supports T/S-curve
- Supports speed override
- Hardware emergency input
- Watchdog timer
- Supports programmable acceleration/deceleration rate
- Programmable interrupt
- RDY dedicated input channels & SVON/ERC dedicated output channels are switchable for general input and output purposes

Introduction
The PCI-1245L is a 4-axis universal PCI card (supporting both 3.3 V and 5 V signal slots) stepping/pulse-type servo motor control card designed for entry-level applications which need to control interpolation, synchronization among multiple axes, with SoftMotion algorithm inside to perform the motion trajectory and precise movement. The PCI-1245L utilizes the high-performance FPGA to calculate the motion trajectories, synchronization timing control for multiple axes and input/output handling to offer functionality, such as 2-axis linear interpolation, T/S-curve, speed override, programmable acceleration/deceleration rate, 16 home modes and so on.

In addition, all Advantech motion controllers use the “Common Motion API” architecture which is a unified user programming interface and graphical utility. This architecture saves application maintenance and upgrades. Programmers can benefit from integrating any Advantech SoftMotion controller without changing large amounts of the application code. User-friendly examples decrease programming load, helping users complete configuration and diagnosis easily.

Specifications

Pulse Type Motion Control
- Motor Driver Support: Pulse-type servo/stepping
- Number of Axes: 4
- Interpolation: 2-axis linear interpolation
- Max. Output Speed: 1 Mbps
- Step Count Range: ±2, 147, 483, 646
- Pulse Output Type: Pulse/direction (1-pulse, 1-direction type) or single-ended +5V output (2-pulse type)
- Position Counters: Range of command and actual position
- Velocity Profiles: T-Curve, S-Curve
- Local I/O: 
  - Machine Interfaces: LMT+, LMT-, ORG
  - Servo Driver Interfaces: ALM, INP
  - General Digital I/O: 16-ch DI, 16-ch DO (RDY pin can be switchable to general-purpose input and SVON/ERC pin to general-purpose output)

Encoder Interface
- Input Type: Quadrature (A/B phase) or up/down
- Counts per Enc. Cycle: x1, x2, x4 (A/B phase only)
- Input Range: 5-10 V
- Isolation Protection: 2.500 Vcc
- Max. Input Frequency: 4 MHz for 4xAB mode

General
- Bus Type: Universal PCI V2.2
- Connectors: 1 x 10-pin SCSI female connector
- Dimensions (L x H): 175 x 100 mm (6.9” x 3.9”)
- Power Consumption: Typical: 5 V @ 0.6 A
  - Max.: 5 V @ 1 A
- Humidity: 5 – 95% RH, non-condensing (IEC 60068-2-3)
- Operating Temperature: 0 – 60°C (32 – 140°F)
- Storage Temperature: -20 – 85°C (-4 – 185°F)

Ordering Information
- PCI-1245L-AE: 4-axis Stepping/Pulse-type Servo Motor Control Universal PCI Card

Accessories
- ADAM-3956-AE: 100-pin DIN-rail SCSI 4-axis Motion Wiring Board
- ADAM-3955-AE: 50-pin DIN-rail SCSI 2-axis Motion Wiring Board
- ADAM-3952-AE: 50-pin DIN-rail SCSI and Box Header Board
- ADAM-39100-AE: 100-pin DIN-rail SCSI Wiring Board
- ADAM-3956-AE: 100-pin SCSI to Two 50-pin SCSI Cable, 1 m/Sm
- PCL-10251-1E/DE: 50-pin Cable from ADAM-3955/ADAM-3956 to Panasonic A4 and AServo, 2 m
- PCL-10153P5AS-2E: 50-pin Cable from ADAM-3955/ADAM-3956 to Yaskawa Sigma V Servo, 2 m
- PCL-10153M3J5-2E: 50-pin Cable from ADAM-3955/ADAM-3956 to Mitsubishi J3 Servo, 2 m
- PCL-10153DA2-2E: 50-pin Cable from ADAM-3955/ADAM-3956 to Delta A2 Servo, 2 m
Specifications

Pulse Type Motion Control
- Motor Driver Support: Pulse-type servo/stepping
- Number of Axis: 4
- Interpolation: 2-axis linear, 3-axis linear, 2-axis circular (PCI-1240U, PCM-3240)
- Max. Output Speed: 4 Mpps
- Step Count Range: ±2, 147, 483, 646 (32-bit)
- Pulse Output Type: Pulse/direction (1-pulse, 1-direction type), or CW/CCW (2-pulse type)
- Position Counters: Range of command and actual position
- Velocity Profiles: T-Curve, S-Curve
- Local I/O: Machine Interfaces: LMT+, LMT-, ORG
- Encoder Interface: Input Type: Quadrature (A/B phase or up/down)
- Input Counts/Enc. Cycle: x1, x2, x4 (A/B phase only)
- Input Range: 5 – 25 V
- Isolation Protection: 2,500 VDC
- Max. Input Freq.: 1 MHz

General
- Bus Type: PC/104
- Certification: CE, FCC Class A
- Connectors: 2 x IDC 50-pin male connector
- Dimensions (L x H): 96 x 90 mm (3.8” x 3.5”)
- Power Consumption: Typical: 5 V @ 850 mA
- Humidity: 5 – 95% RH, non-condensing (IEC 60068-2-3)
- Operating Temp.: 0 – 60°C (32 – 140°F)
- Storage Temp.: -20 – 85°C (-4 – 185°F)

Ordering Information
- PCI-1220U-AE: 2-axis Stepping and Servo Motor Control Universal PCI Card
- PCI-1240U-B2E: 4-axis Stepping and Servo Motor Control Universal PCI Card
- PCM-3240-AE: 4-axis Stepping and Servo Motor Control PC/104 Card

Accessories
- ADAM-3956-AE: 100-pin DIN-rail SCSI 4-axis Motion Wiring Board (PCI-1240U only)
- ADAM-3955-AE: 50-pin DIN-rail SCSI 2-axis Motion Wiring Board (PCI-1220U/1240U)
- ADAM-3952-AE: 50-pin DIN-rail SCSI and Box Header Board (PCI-1220U/1240U)
- ADAM-3950-AE: 50-pin DIN-rail Flat Cable Wiring Board (PCM-3240 only)
- ADAM-39100-AE: 100-pin DIN-rail SCSI Wiring Board (PCI-1240U only)
- PCL-101100M-1E/2E/3E: 100-pin SCSI Cable, 1m/2m/3m (PCI-1240U only)
- PCL-10150-1.2E: IDC-50 Flat Cable, 1.2m (PCM-3240 only)
- PCL-10152-1E/3E: 50-pin SCSI M-M Shielded Cable, 1m/3m (PCI-1220U only)
- PCL-10251-1E/3E: 100-pin SCSI to Two 50-pin SCSI Cable, 1m/3m (PCI-1240U only)
- PCL-10153PAS-2E: 50-pin Cable from ADAM-3955/ADAM-3956 to Panasonic A4 and A5 Servo, 2 m
- PCL-10153PASLS-2E: 50-pin Cable from ADAM-3955/ADAM-3956 to Panasonic MINAS A Servo, 2 m
- PCL-10153YS5-2E: 50-pin Cable from ADAM-3955/ADAM-3956 to Yaskawa Sigma V Servo, 2 m
- PCL-10153MJ3-2E: 50-pin Cable from ADAM-3955/ADAM-3956 to Mitsubishi J3 Servo, 2 m
- PCL-10153DA2-2E: 50-pin Cable from ADAM-3955/ADAM-3956 to Delta A2 Servo, 2 m
PCI-1243U is a 4-axis stepping motor control card with universal PCI interface. Each axis can be controlled directly through the card’s I/O registers. This board is an economic solution for stepping motor which provides 4 channels pulse train, T/S speed profile, on-the-fly velocity change and so on. The board is supplied with DLL library for Windows programmer to write the program. With the DLL driver, you can easily link to VC++, Visual Basic® or BCB.

**Specifications**

**Pulse Type Motion Control**
- **Motor Driver Support**: Stepping
- **Number of Axis**: 4
- **Max. Output Speed**: 400 kpps
- **Step Count Range**: 0 – 16,777,215
- **Pulse Output Type**: Pulse/Direction, CW/CCW
- **Position Counters**: ±16,777,215
- **Home Modes**: 4
- **Velocity Profiles**: T-Curve or S-Curve acceleration/deceleration
- **Local I/O Interfaces**: PEL x 4, NEL x 4, RG x 4, SLD x 4, EMG x 1
- **General Input Channels**: 8
- **General Output Channels**: 8

**Isolated Digital Input**
- **Channels**: 8
- **Input Voltage**: Logic 0: 1 V, Logic 1: 12 V (24 V max.)
- **Isolation Protection**: 3,750 Vrms
- **Opto-Isolator Response**: 25 μs
- **Input Resistance**: 4.7 kΩ

**Isolated Digital Output**
- **Channels**: 8
- **Output Type**: Sink (NPN)
- **Isolation Protection**: 3,750 Vrms
- **Output Voltage**: 5 – 30 VDC
- **Sink Current**: 200 mA max./channel; 1.1 A max. total
- **Opto-Isolator Response**: 25 μs

**General**
- **Bus Type**: PCI V2.2
- **Certification**: CE, FCC Class A
- **Connectors**: 1 x DB-62 female
- **Dimensions**: 175 x 100 mm (6.9” x 3.9”)
- **Power Consumption**: Typical: 5 V @ 340 mA, Max.: 5 V @ 500 mA
- **Storing Humidity**: 5 – 95% RH, non-condensing (IEC 60068-2-3)
- **Operating Temperature**: 0 – 60°C (32 – 140°F)
- **Storing Temperature**: -20 – 80°C (-4 – 170°F)

**Ordering Information**
- **PCI-1243U-AE**: 4-axis Stepping Motor Control Card

**Accessories**
- **PCL-10162-1E**: DB-62 Cable Assembly, 1m
- **PCL-10162-3E**: DB-62 Cable Assembly, 3m
- **ADAM-3962-AE**: DB-62 Wiring Board with DIN-rail Mounting
PCI-1202U
PCM-3202P

Specifications

AMONet RS-485 Motion Control
- AMONet RS-485: 2 rings
- Interface: Half duplex RS-485
- Cable Type: CAT5 UTP/STP Ethernet cable and above
- Surge Protection: 10 kV
- Transmission Speeds: 2.5, 5, 10, and 20 Mbps
- Data Flow Control: Automatic
- Communication: 100 m @ 20 Mbps w/32 slave modules
  Distance (Max.): 100 m @ 10 Mbps w/64 slave modules
- Slave Module: Digital I/O, Motion Control, Analog I/O

Isolated Digital Input
- Channels: 8
- Input Voltage: Dry contact (need external voltage source)
- Isolation Protection: 2,500 VDC
- Input Resistance: 2.4 kW @ 0.5 W

Isolated Digital Output
- Channels: 4
- Output Type: Open collector
- Isolation Protection: 2,500 VDC
- Output Voltage: 10 – 30 VDC
- Sink Current: 1 ch: Max. 0.5 A
  4 ch: Max. 1.1 A (total)

General
- Bus Type: Universal PCI V2.2
- Certification: CE, FCC Class A
- Connectors: 2 x RJ45
- Dimensions (L x H): 175 x 100 mm (6.9” x 3.9”)
- Power Consumption: 5 VDC @ 0.5 A typical
- Humidity: 5 – 95% RH, non-condensing (IEC 60068-2-3)
- Operating Temp.: 0 – 60°C (32 – 140°F)
- Storage Temp.: -20 – 85°C (-4 – 185°F)

Ordering Information
- PCI-1202U-AE: 2-port AMONet RS-485 PCI Master Card

Specifications

AMONet RS-485 Motion Control
- AMONet RS-485: 2 rings
- Interface: Half duplex RS-485
- Cable Type: CAT5 UTP/STP Ethernet cable
- Surge Protection: 10 kV
- Transmission Speeds: 2.5, 5, 10, and 20 Mbps
- Data Flow Control: Automatic
- Communication: 100 m @ 20 Mbps w/32 slave modules
  Distance (Max.): 100 m @ 10 Mbps w/64 slave modules
- Slave Module: Digital I/O, Motion Control, Analog I/O

General
- Bus Type: PC/104+
- Certification: CE, FCC Class A
- Connectors: 4 x 10-pin box header
- Dimensions (L x H): 96 x 90 mm (3.8” x 3.5”)
- Power Consumption: 5 VDC @ 0.5 A typical
- Humidity: 5 – 95% RH, non-condensing (IEC 60068-2-3)
- Operating Temp.: 0 – 60°C (32 – 140°F)
- Storing Temp.: -20 – 85°C (-4 – 185°F)

Ordering Information
- PCM-3202P-AE: 2-port PC/104+ AMONet RS-485 Master Card
Introduction
AMAX-1220 and AMAX-1240 have compact open frame designs for horizontal placement and an interface connector mounted on the board. With a transfer cable to servo drive, both models can conveniently connect to Mitsubishi J3, Yaskawa Sigma V and Panasonic A4/A5.

The AMAX-1220 is an economic 2-axis AMONet slave module which supports motion functionality in point-to-point (PTP), linear & circular interpolation, simultaneously start/stop among multiple slave modules, and brake signal to servo for emergence consideration. The AMAX-1240 is an advanced 4-axis AMONet slave module which not only supports AMAX-1220 motion functionality, but also supports advanced features in position compare and triggering function. Both linear interval and table setups are supported.

Specifications

Pulse Type Motion Control
- Motor Driver Support: Pulse-type servo
- Number of Axes: AMAX-1220: 2, AMAX-1240: 4
- Interpolation: Linear and circular
- Max. Output Speed: 6.5 Mpps
- Step Count Range: ±134,217,728
- Pulse Output Type: OUT/DIR, CW/CCW, A/B phase
- Position Counter: ±134,217,728
- Home Modes: 13
- Velocity Profiles: T-Curve, S-Curve
- Local I/O: Machine Interfaces: EL+/-, ORG and SD (Slow Down) for Each Axis
  Servo Driver Interfaces: ALM, HDY, SVON, INP, Break for Each Axis
  Position Compare I/O: LTC, CMP for Each Axis (Only available for AMAX-1240-AE)
  Simultaneous Move Within Multiple Modules: CSTA/CSTP (Simultaneously Start/Stop) for each model
  General Purpose I/O: AMAX-1220 supports 8xDI and 8xDO

Encoder Interface
- Input Type: A/B phase, CW/CCW
- Counts per Enc. Cycle: x1, x2, x4 (AB phase only)
- Input Range: Low: 0 ~ 0.5V
  High: 3.5 ~ 7V
- Isolation Protection: 2,500 Vrms
- Max. Input Frequency: 2 MHz @ 5 V

General
- Bus Type: AMONet RS-485
- Certification: CE, FCC Class A
- Connectors: RJ-45 x 2 are for communication port
  DB-26 connector by transfer cable to servo drives. Other are screw terminal type connectors
- Dimensions (L x W x H): 141 x 108 x 60 mm (5.6” x 4.3” x 2.4”)
- System Power Consumption: 120W typical, 240W max.
  Output Channel Power: AMAX-1220: 8 W @ 24 V external power (max.), AMAX-1240: 10 W @ 24 V external power (max.)
  Input Channel Power: AMAX-1220 supports 8 W @ 24 V external power (max.), AMAX-1240 supports 10 W @ 24 V external power (max.)
- System Power Input: 24 Vdc within 200 mV ripple
- Humidity: 5 ~ 95% RH, non-condensing (IEC 60068-2-3)
- Operating Temperature: 0 ~ 60°C (32 ~ 140°F)

Ordering Information
- AMAX-1220-AE: Economic 2-axis AMONet Motion Control Module
- AMAX-1240-AE: Advanced 4-axis AMONet Motion Control Module

Accessories
- PCL-1015P4A5-2E: 50-pin Cable to Panasonic A4 and A5 Servo, 2 m
- PCL-1015P4A5LS-2E: 50-pin Cable to Panasonic MINAS A Servo, 2 m
- PCL-10153YSS-2E: 50-pin Cable to Yaskawa Sigma V Servo, 2 m
- PCL-10153M3J3-2E: 50-pin Cable to Mitsubishi J3 Servo, 2 m
- PCL-10153DA2-2E: 50-pin Cable from ADAM-3955/ADAM-3956 to Delta A2 Servo, 2 m
Introduction

The AMAX-1752, AMAX-1754 and AMAX-1756 are compact open frame designs for horizontal placement, on-board screw terminal for direct wiring and on-board easily-visible LED indicators are for system diagnosis. All the digital I/O slave modules could be connected and distributed by standard LAN cables thereby saving wiring costs and maintenance. Three models are introduced: 32-ch digital input (AMAX-1752), 32-ch digital output (AMAX-1754) and 16-ch digital input/output (AMAX-1756). According to maximum communication baud rate, 2048 I/O points can be scanned and updated within 1.04 ms.

Specifications

<table>
<thead>
<tr>
<th>Isolated Digital Input</th>
<th>Channel Type</th>
<th>Channel Number</th>
<th>Isolation Type</th>
<th>Isolation Voltage</th>
<th>Reactance</th>
<th>Opto-Isolator Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMAX-1752</td>
<td></td>
<td>32</td>
<td></td>
<td>2,500 Vrms</td>
<td>3.2 kΩ</td>
<td>100 μs (max.)</td>
</tr>
<tr>
<td>AMAX-1756</td>
<td></td>
<td>16</td>
<td></td>
<td>2,500 Vrms</td>
<td>3.2 kΩ</td>
<td></td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Isolated Digital Output</th>
<th>Channel Type</th>
<th>Channel Number</th>
<th>Output Type</th>
<th>Isolation Type</th>
<th>Isolation Voltage</th>
<th>Voltage</th>
<th>Current</th>
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<tbody>
<tr>
<td>AMAX-1754</td>
<td></td>
<td>32</td>
<td>Sink (NPN) (open collector Darlington transistors)</td>
<td>2,500 Vrms</td>
<td>10 – 30 Vdc</td>
<td></td>
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<tr>
<td>AMAX-1756</td>
<td></td>
<td>16</td>
<td></td>
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</tr>
</tbody>
</table>

General

- Bus Type: AMONet-RS-485
- Certification: CE, FCC Class A
- Connectors: (1) RJ-45 x 2 are for communication port
  (2) I/O points use screw terminal type connector
- Dimensions: 141 x 95 x 60 mm (5.6” x 3.7” x 2.4”)
- Power Consumption: 600mW typical, 2 W max.
- Power Input: 24 Vdc within 200 mA ripple
- Power Supply for DIO: 10 – 30 Vdc (2A max)
- Humidity: 5 – 95% RH, non-condensing (IEC 60068-2-3)
- Operating Temperature: 0 – 60°C (32 – 140°F)

Ordering Information

- AMAX-1752-AE: Open Frame Type 32-ch Isolated Digital Input AMONet Module
- AMAX-1754-AE: Open Frame Type 32-ch Isolated Digital Output AMONet Module
- AMAX-1756-AE: Open Frame Type 16/16-ch Isolated Digital I/O AMONet Module

Features

- Communication baud rate, 2.5Mbps, 5Mbps, 10Mbps and 20Mbps are supported and switchable
- Onboard screw terminal for direct wiring
- 2,500 VRMS Isolation voltage
- Suitable for DIN-rail mounting
- BoardID is switchable
- Easily visible LED indicators on board to do diagnosis
Introduction

AMAX-2240 series is used to increase the number of axes for an AMONet RS-485 decentralized motion control network. These extension slave modules connect serially by a simple and affordable Cat.5 LAN cable, reducing the wiring between driver and controller. This is very suitable for highly integrated machine automation applications. Please select cable 20-pin SCSI and plug this cable into the motor driver and motion slave module.

Specifications

Pulse Type Motion Control
- Motor Driver Support: Pulse-type servo
- Number of Axis: 4
- Interpolation: Linear and circular
- Max. Output Speed: 6.5 Mpps
- Step Count Range: ±134, 217, 728
- Pulse Output Type: OUT/DIR, CW/CCW, A/B phase
- Position Counter: ±134, 217, 728
- Home Modes: 13
- Velocity Profiles: T-Curve, S-Curve
- Local I/O:
  - Machine Interfaces:
    - EL+ x 4, EL- x 4, ORG x 4, SD x 4
  - Servo Driver Interfaces:
    - ALM x 4, RDY x 4, SVON x 4, INP x 4, ERC x 4
  - Position Compare I/O:
    - LTC x 4, CMP x 4

Encoder Interface
- Input Type: A/B phase, CW/CCW
- Counts per Enc. Cycle: x1, x2, x4 (AB phase only)
- Input Range: Compatible with TII/EIA-422 differential line driver
- Isolation Protection: 2,500 Vrms
- Max. Input Frequency: 2 MHz @ 5 V

Features
- Max. 20 Mbps transfer rate
- Max. 6.5 MHz, 4-axis pulse output
- 28 bits counter for incremental encoder
- 2 ~ 4-axis linear interpolation
- 2-axis circular interpolation
- T-Curve and S-Curve velocity profiles support
- Change speed on-the-fly
- Easy installation with RJ45 phone jack and LED diagnostic
- Easy installation for servo or stepping motor driver
- Suitable for DIN-rail mounting

General
- Bus Type: AMONet RS-485
- Certification: CE, FCC Class A
- Connectors: AMAX-2242/J2S: 2 x RJ45 and 8 x 20-pin SCSI
  AMAX-2241/PMA & AMAX-2243/YS2: 4 x 50-pin SCSI
- Dimensions (L x W x H): 125 x 47.6 x 151 mm (4.9” x 1.8” x 5.9”)
- Power Consumption: 5 W @ 24 V typical
- Power Input: 24 VDC within 200 mV ripple
- Humidity: 5 ~ 95% RH, non-condensing (IEC 60068-2-3)
- Operating Temperature: 0 ~ 60°C (32 ~ 140°F)

Ordering Information
- AMAX-2241/PMA-AE: 4-axis AMONet Motion Module for Panasonic MINAS A
- AMAX-2242/J2S-AE: 4-axis AMONet Motion Module for Mitsubishi MR-J2S
- AMAX-2243/YS2-AE: 4-axis AMONet Motion Module for Yaskawa Sigma-II

Accessories
- PCL-10220M-2E: 20-pin SCSI Cable, 2 m (for AMAX-2242/J2S)
- PCL-10150M-2E: 50-pin SCSI Cable, 2 m (for AMAX-2241/PMA and AMAX-2243/YS2)
- ADAM-3940-AE: 40-pin Flat Cable Wiring Board with LED
### Introduction

The AMAX-2750SY series consists of digital slave modules for AMONet RS-485 that extend the digital I/O capacity. All the digital I/O slave extension modules are connected serially with a simple Cat.5 cable. This reduces wiring between driver and controller and is very suitable for highly integrated machine automation applications. High speed, scalability and cost-effectiveness ensures a solid solution for machine builders. There are 3 main types of digital I/O slave modules, 32-ch digital input, 32-ch digital output, and 16/16-ch digital input/output. With these slave modules, you can connect actuators/sensors directly with minimum hassle. You can access I/O points nearby or 100 meters away using simple and low-cost wiring, and the high speed of AMONet RS-485 makes it possible to scan 2,048 I/O channels in 1.04 ms.

### Specifications

#### Isolated Digital Input
- **Channels**: AMAX-2752SY: 32 (4 ports)  
  AMAX-2756SY: 16 (2 ports)
- **Input Type**: Dry contact
- **Isolation Protection**: 2,500 V<sub>max</sub>
- **Opto-Isolator Response**: 18 μs
- **Input Resistance**: 1 kΩ @ 0.5 W

#### Isolated Digital Output
- **Channels**: AMAX-2754SY: 32 (4 ports)  
  AMAX-2756SY: 16 (2 ports)
- **Output Type**: Sink (NPN) (open collector Darlington transistors)
- **Isolation Protection**: 2,500 V<sub>max</sub>
- **Output Voltage**: 10 – 30 V<sub>DC</sub>
- **Sink Current**: 150 mA/ea. for multiple-channel usage, total 1.1 A max. (1 port)

### General
- **Bus Type**: AMONet RS-485
- **Certification**: CE, FCC Class A
- **Connectors**: 2 x RJ45 and 2 x 40-pin wiring board
- **Dimensions (L x W x H)**: 125 x 47.6 x 151 mm (4.9” x 1.8” x 5.9”)
- **Power Consumption**: AMAX-2752SY: 1.2 W typical, 5 W max.  
  AMAX-2754SY: 1.2 W typical, 5 W max.  
  AMAX-2756SY: 1.2 W typical, 5 W max.
- **Power Input**
  - 24 V<sub>DC</sub> within 200 mA ripple
- **Power Supply for DIO**
  - 10 – 30 V<sub>DC</sub> (Current < 2A)
- **Humidity**: 5 – 95% RH, non-condensing (IEC 60068-2-3)
- **Operating Temperature**: 0 – 60°C (32 – 140°F)

### Ordering Information
- **AMAX-2752SY-AE**: 32-ch Isolated Digital Input AMONet Module
- **AMAX-2754SY-AE**: 32-ch Isolated Digital Output AMONet Module
- **AMAX-2756SY-AE**: 16/16-ch Isolated Digital I/O AMONet Module
# Selection Guide

## Motion Controller

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<th>Controller</th>
<th>Cable</th>
<th>Terminal Board</th>
<th>Cable for Motor</th>
</tr>
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<tr>
<td>PCI-1285/PCI-1285E</td>
<td>PCL-101100M-1E/2E/3E</td>
<td>ADAM-3996 x 2</td>
<td>PCL-10153PA5-2E for Panasonic A4/A5 series</td>
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<tr>
<td>PCI-1265</td>
<td>PCL-10152-1E/3E + PCL-10251-1E/3E</td>
<td>ADAM-3995 x 3</td>
<td>PCL-10153PA5-2E for Panasonic A4/A5 series</td>
</tr>
<tr>
<td>PCI-1245/PCI-1245E/PCI-1245L/PCI-1245U</td>
<td>PCL-101100M-1E/2E/3E</td>
<td>ADAM-3995 x 2</td>
<td>PCL-10153PA5-2E for Panasonic A4/A5 series</td>
</tr>
<tr>
<td>PCI-1243U</td>
<td>PCL-10152-1E/3E</td>
<td>ADAM-3956</td>
<td>PCL-10153PA5-2E for Panasonic A4/A5 series</td>
</tr>
<tr>
<td>PCI-1220U</td>
<td>PCL-10152-1E/3E</td>
<td>ADAM-3955</td>
<td>PCL-10153PA5-2E for Panasonic A4/A5 series</td>
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<tr>
<td>PCL-839+</td>
<td>PCL-10137-1E/2E/3E</td>
<td>ADAM-3937</td>
<td>PCL-10153PA5-2E for Panasonic A4/A5 series</td>
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<tr>
<td>PCM-3240</td>
<td>PCL-10150-1.2E x 2</td>
<td>ADAM-3950 x 2</td>
<td>PCL-10153DA2-2E Delta A2 series</td>
</tr>
</tbody>
</table>

## Cable

<table>
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<tr>
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<th>Cable for Motor</th>
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<td>PCL-10153PA5-2E for Panasonic A4/A5 series</td>
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<tr>
<td>PCI-1265</td>
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<tr>
<td>PCI-1245/PCI-1245E/PCI-1245L/PCI-1245U</td>
<td>PCL-10153PA5-2E for Panasonic A4/A5 series</td>
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<tr>
<td>PCI-1243U</td>
<td>PCL-10153PA5-2E for Panasonic A4/A5 series</td>
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<td>PCL-10153PA5-2E for Panasonic A4/A5 series</td>
</tr>
<tr>
<td>PCM-3240</td>
<td>PCL-10153DA2-2E Delta A2 series</td>
</tr>
</tbody>
</table>
Accessories

DIN-rail Terminal Boards

ADAM-3940
40-pin Wiring Board with LED

Features
- DIN-rail wiring board
- Dimensions (W x L x H): 160 x 50 x 43 mm (6.3" x 2" x 1.7")
- 40-pin box header connector
- LED indicators

To Be Used With
AMAX-2241, AMAX-2242, AMAX-2243

ADAM-3952
50-pin SCSI and IDC DIN-rail Wiring Board

Features
- DIN-rail wiring board
- Dimensions (W x L x H): 77.5 x 179.5 x 41.5 mm (3.1" x 7.1" x 1.6")
- 50-pin SCSI and IDC connectors

To Be Used With
PCI-1220U, PCI-1240U, PCI-1245, PCI-1245E, PCI-1245L, PCI-1265, PEC-3240

ADAM-3955
50-pin SCSI DIN-rail Motion Wiring Board

Features
- DIN-rail wiring board
- Dimensions (W x L x H): 103 x 120 x 45 mm (4.12" x 4.8" x 1.8")
- DB-26 and connector
- LED indicators

To Be Used With
PCI-1220U, PCI-1240U, PCI-1245, PCI-1245E, PCI-1245L, PCI-1265, PEC-3240

ADAM-3956
100-pin SCSI DIN-rail Motion Wiring Board

Features
- DIN-rail wiring board
- Dimensions (W x L x H): 122 x 171 x 45 mm (4.8" x 6.73" x 1.77")
- DB-26 and connector
- LED indicators

To Be Used With
PCI-1240U, PCI-1245, PCI-1245E, PCI-1245L, PCI-1265, PCI-1285

ADAM-3962
DB62 DIN-rail Wiring Board

Features
- Low cost universal DIN-rail mounting screw terminal module with DB62 female connector
- Screw-clamp terminal blocks allow easy and reliable connections
- Case dimensions (W x L x H): 77.5 x 124.5 x 63.5 mm (3.1" x 4.9" x 2.5")

To Be Used With
PCI-1243U

ADAM-39100
100-pin DIN-rail SCSI Wiring Board

Features
- Low cost universal DIN-rail mounting screw terminal module for industrial applications with 100-pin SCSI female connector
- Dimensions (W x L x H): 80 x 230 x 42 mm (3.14" x 9.05" x 1.65")

To Be Used With
PCI-1240U, PCI-1245, PCI-1245E, PCI-1245L, PCI-1265, PCI-1285, PCI-1285E
<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
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</thead>
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<tr>
<td>PCL-101100M</td>
<td>100-pin SCSI Cable</td>
</tr>
<tr>
<td>PCL-10220M</td>
<td>20-pin SCSI Cable w/ 2 Connectors, Ribbon Type</td>
</tr>
<tr>
<td>PCL-10162</td>
<td>DB-62 Cable</td>
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<td>PCL-10150M</td>
<td>50-Pin SCSI Cable, Ribbon Type</td>
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<td>PCL-10152</td>
<td>50-pin SCSI Cable</td>
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<td>PCL-10251</td>
<td>100-pin to Two 50-pin SCSI Cable</td>
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<td>PCL-10153PA5</td>
<td>50-pin Cable to Panasonic A4 and A5 Servo</td>
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<td>PCL-10153YS5</td>
<td>50-pin Cable to Yaskawa Sigma V Servo</td>
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<td>PCL-10153MJ3</td>
<td>50-pin Cable to Mitsubishi J3 Servo</td>
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<tr>
<td>PCL-10153PA5LS</td>
<td>50-pin Cable to Panasonic MINAS A Servo</td>
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<tr>
<td>PCL-10153DA2</td>
<td>50-pin Cable to Delta A2 Servo</td>
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<tr>
<td>PCL-101100SB</td>
<td>Mini-SCSI 100-pin Cable</td>
</tr>
<tr>
<td>Model</td>
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<tr>
<td>UNO-4671A</td>
<td>Intel® Atom™ D510/D525 Power &amp; Energy Automation Computers with 6 x LAN, 10 x COM, and 1 x PCI-104</td>
</tr>
<tr>
<td>ECU-4674</td>
<td>Intel® Atom™ N2600 Power &amp; Energy Computers with 8xLAN, 18xCOM, 8DI, 8DO, 1x IRIG-B and 1 x PCI-104</td>
</tr>
<tr>
<td>UNO-4678</td>
<td>Intel® Celeron® M Power &amp; Energy Automation Computers with 3 x LAN, 8 x COM, PC/104</td>
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<tr>
<td>UNO-4673A</td>
<td>Intel® Atom™ D510/ Core™ i7 Power &amp; Energy Automation Computers with 6 x LAN, 2 x COM and 3 x Expansion Slots</td>
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<tr>
<td>UNO-4683</td>
<td>Intel® Atom™ D510/ Core™ i7 Power &amp; Energy Automation Computers with 6 x LAN, 2 x COM and 3 x Expansion Slots</td>
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<td>UNOP-1624D</td>
<td>4-port Isolated RS-232/422/485 with IRIG B</td>
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<td>UNOP-1514RE/PE</td>
<td>4-Port Gigabit Base Ethernet Card</td>
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<td>ECU-1710A</td>
<td>Intel® Atom™ D510 Controller with 16-ch AI, 4-ch AO and 32-ch Isolated DI/O</td>
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<td>ECU-1871</td>
<td>Intel® Atom™ D510 Energy Controller with 2 x LAN, 3 x COM, IRIG-B, and I/O Extension</td>
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<td>ECU-1911</td>
<td>Xscale @ PXA-270 520 MHz RTU with 8-ch 16-bit AI,32-ch DI,32-ch DO</td>
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<td>ECU-P1706</td>
<td>250 KS/s, 16bit, Simultaneous 8-ch Analog input PCI-104</td>
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<td>ECU-P1702</td>
<td>10 MS/s, 12bit, Simultaneous 4-ch Analog input PCI-104</td>
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<tr>
<td>ECU-P1300</td>
<td>Vibration Signal Modulate Card</td>
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<td>DMU-5010</td>
<td>12-ch DI/O, 4-ch AI, 4-ch RTD Modbus TCP Module</td>
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Introduction

Advantech is dedicated to exploring new technologies for the power and energy industry. With an edge in the research and design of industrial products, Advantech provides rugged and highly reliable system components that are not only environmentally friendly, but also power efficient with control technology enabled by intelligent software. Advantech’s products can be applied to various power and energy markets, including renewable solar and wind power generation, nuclear simulation, substation automation systems, electrical car charging station solutions, and building energy saving systems.

On the other hand, power & energy applications are becoming more and more critical as demand for electricity continues to increase worldwide. Additionally, new challenges are arising due to the limitations of traditional power resources as we try to minimize the impact our power usage has on the environment. To that end, renewable energies, such as wind and solar power are playing more significant roles in modern electricity grids. Furthermore, the modernization of legacy Transmission & Distribution (T&D) systems and providing reliable T&D information for electric power management are becoming key goals for today’s power and energy applications. Thus, Advantech’s power & energy solutions will focus on renewable energy generation and substation automation system development.

Smart Substation Automation

Station and Bay Level Application

- HMI/SCADA Application in Substations
  Working status of devices within cabinet is controlled and monitored via HMI/SCADA, besides information and event trigger collection, time synchronization, such as IRIG-B function is also implemented in the automation controller.
  - Application Requirements
    - Reliable IEC 61850-3 platform
    - Redundancy

- Cyber Security for Smart Grids
  Communication within smart substations is based on network connection, and so is connection between smart substations. Hence, the cyber security to ensure smart substation maintenance becomes more critical than before. The UTM (Unified Threat Management) is the key to preventing hacker attacks.
  - Application Requirements
    - Reliable IEC 61850-3 platform
    - Fiber optic LAN

- Network Recorder and Analyzer
  A network recorder at substation operates in the same way as an aircraft flight recorder and is critical for recording and analyzing network flow information. It is possible to record and analyze data to discover the reason behind IED damage.
  - Application Requirements
    - Reliable IEC 61850-3 platform
    - High-speed computing & packet acquisition
    - Synchronized time stamp
    - RAID for storage

- Data Gateway for IEC 61850
  Within a substation, there are lots of devices using a wide variety of protocols. Status and information of devices need to be monitored and controlled reliably, hence, a reliable automation controller plays such an important data protocol gateway, communication server and IED analyzer at a substation.
  - Application Requirements
    - Reliable IEC 61850-3 platform
    - Isolated COM port
    - IRIG-B Time Sync. Receiver
    - Fiber optic LAN

Bay and Process Level Application

- Partial Discharge Detection & Analytic Device
  In electrical engineering, partial discharge is a localized dielectric breakdown if a small portion of a solid or fluid electrical insulation system under high voltage stress, which does not bridge the gap between two conductors. Protracted partial discharge can erode solid insulation and eventually lead to breakdown of insulation. Hence, a detection and analytic device to monitor the partial discharge is essential.
  - Application Requirements
    - Reliable IEC 61850-3 platform
    - High-speed analog input for partial discharge detection

- Vibration Detection & Analytic Device
  The most common cause of power transformer failures in mechanical defect is excessive vibration, which is formed by the combination of multiples of a frequency of 120 Hz. The vibration generated from machine structures causes abnormal vibration, breakage of machine and noise. The vibration level depends on the transformer construction and design, and it is increased through fault current, phase to ground or phase to phase fault. This electrical fault will change the transformer core or winding construction by mechanical force produced. The effect of the fault can be found by measuring the vibration level before and after several faults on low voltage side. Thus, a vibration analysis of the structure is important to prevent this vibration.
  - Application Requirements
    - Reliable IEC 61850-3 platform
    - High-speed analog input for partial discharge detection

- Distribution Substation RTU Application
  In substation automation systems, the RTU has interfaces towards protection and control equipment, as well as metering devices and other automation products. Local and remote monitoring and control can be easily achieved via the integrated RTU. The IEC 61850 client and server functionality of the RTU opens up an additional application area. It allows the combination of traditional protocols, parallel wiring and the IEC 61850 station bus. The hybrid solution provides the possibility to gradually upgrade the station to an IEC 61850 architecture.
  - Application Requirements
    - High isolation for I/O and communication
    - Powerful platform bundled with high density I/O
Renewable Solar Energy and Wind Power Generation

Renewable solar and wind generation play important roles in high power and low carbon demand. With harsh environment factors, such as drastic day-night temperature differences, dust/sand storms, vibration, heat and electrical noise, Advantech provides rugged, reliable and real-time communication, monitoring, tracking, testing and DAQ control solutions for renewable energy applications.

Wind Power Generation Monitoring Solution

Wind Power Turbine Gearbox Vibration Monitoring System

The vibration signals of a wind turbine gearbox contain a wide range of data, which can be used to detect defects within the gearbox. With an Energy Controller, vibration signal modulation card and simultaneous analog input card, Advantech provides an ideal solution for a Wind Power Turbine Gearbox Vibration Monitoring System. With a redundant Ethernet communication port, the analysis of data can be transferred to the remote management center in real time.

Wind Power Box-type Transformer Monitoring System

Box-type substations in a wind power turbine integrate the generated power into a power grid. Like traditional substation monitoring systems, the status of the transformer must be monitored in real time. Advantech Energy remote I/O monitors the status of the various parts of the transformer i.e. oil temperatures, 3-phase voltage, current, active and in-active power, and transfers the data to the remote control center via Ethernet.

Solar Power Monitoring System

Solar Power Plant management requires fast sampling, recording and analysis of data such as sunlight strength and overall direct current power. Average energy conversion efficiency of solar cell modules and power converters are also important. Advantech’s Open Embedded Controllers, compact and fanless UNO-1000 series, can serve as communication controllers and protocol converters. Also, Advantech offers Data acquisition I/O modules, ADAM-4000 series, including ADAM-4117 analog input module, ADAM-4118, thermocouple input module, and ADAM-4150 digital I/O module, which support Modbus communication protocol and are used to measure and collect solar plant information.
### P&E Automation Computers

#### Model Name
- UNO-4671A
- ECU-4674
- UNO-4678
- UNO-4673A/4683
- ECU-4784

#### Certification
- IEC 61850-3 / IEEE 1613
- Compliant
- China Electricity Commission IV level

#### CPU
- Intel Atom D510 1.66GHz
- Intel Atom D525 1.8GHz
- Intel Atom N2600 1.66GHz
- Intel Celeron M, 1.0 GHz
- Intel Core i7, 2.0 GHz
- Intel Haswell Core i7-4650U 1.7 GHz

#### RAM
- 2GB DDR2 SDRAM
- 4GB DDR3 SDRAM
- 2G DDR3 SDRAM
- 512 MB DDR SDRAM
- 2GB DDR2 SDRAM
- 4GB DDR3 SDRAM
- 8G DDR3L SDRAM

#### Display
- VGA
- VGA
- VGA

#### Serial Ports
- 2 x Isolated RS-232, 4 x Isolated RS-422/485
- 2 x Isolated RS-232, 6 x Isolated RS-232/422/485
- 2 x Isolated RS-232, 6 x Isolated RS-232/422/485
- 2 x Isolated RS-232 (Standard), 8 x RS-232/422/485 (Optional)

#### Ethernet Ports
- 6 x 10/100Base-T RJ-45
- 2 x 10/100/1000Base-T
- 6 x 10/100Base-T
- 2 x 10/100, 4 x 10/100 Base-T RJ-45
- 1 x 10/100 Base T RJ-45 (Support AMT)
- 7 x 10/100/1000 Base T RJ-45

#### Operating Systems
- WES2009, WES7, Windows CE 6.0 and Linux
- WES 7, WES 2009, Windows CE 6.0, Linux
- Windows CE 5.0 & Windows CE 6.0
- Windows XP, Linux
- Windows 2000/XP, Linus

#### Mounting
- 2U Rackmount
- 2U Rackmount
- 1U Rackmount
- 2U Rackmount

#### Operating Temperature
- -20 ~ 60°C (-4 ~ 140°F)
- -20 ~ 70°C (-4 ~ 158°F)
- -10 ~ 55° C (14 ~ 131° F)
- -20 ~ 70°C (-4 ~ 158°F)
- -20 ~ 70°C (-4 ~ 158°F)

#### Power Consumption
- Typical
- 30 W
- 24 W
- 45 W

#### Power Requirements
- Supports Redundant power input: Power 1: 100 ~ 240 VAC or 100 ~ 240 Vac (Optional) Power 2: 100 ~ 240 VAC or 100 ~ 240 Vac (Optional)
- Supports Redundant power input (Optional) Power 1: 100 ~ 240 Vac or 100 ~ 240 VAC Power 2: 100 ~ 240 Vac or 100 ~ 240 VAC
- 48W + 24V @ 2A Power input
- Supports Redundant power input (Optional) Power 1: 100 ~ 240 VAC or 100 ~ 240 Vac Power 2: 100 ~ 240 VAC or 100 ~ 240 Vac

#### Dimensions (W x D x H)
- 440 x 220 x 88 mm (17.3" x 8.6" x 3.4")
- 440 x 220 x 88 mm (17.3" x 8.6" x 3.4")
- 440 x 220 x 44 mm (17.3" x 8.6" x 1.7")
- 440 x 220 x 88 mm (17.3" x 8.6" x 3.4")
- 440 x 220 x 44 mm (17.3" x 8.6" x 1.7")

#### Weight
- 5.5 kg
- 6.0 kg
- 3.6 kg
- 6.0 kg
- 6.0 kg

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- 3-4
## Energy Automation Controller

<table>
<thead>
<tr>
<th>Model Name</th>
<th>ECU-1710A</th>
<th>ECU-1871</th>
<th>ECU-1911</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certification</td>
<td>-</td>
<td>IEC 61850-3 / IEEE 1613 Compliant China Electricity Certificate IV level</td>
<td>-</td>
</tr>
<tr>
<td>CPU</td>
<td>Intel Atom D510, 1.66 GHz</td>
<td>Intel Atom D510, 1.66 GHz</td>
<td>Xscale @ PXA-270 550MHz</td>
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<tr>
<td>RAM</td>
<td>1GB DDR2 667MHz</td>
<td>2GB DDR2 SDRAM</td>
<td>64MB SDRAM 32 MB Flash</td>
</tr>
<tr>
<td>Battery-Backup RAM</td>
<td>1MB</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Display</td>
<td>VGA</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Serial Ports</td>
<td>2 x RS-232</td>
<td>1 x RS-232</td>
<td>1 x RS-232 3 x isolated RS-485</td>
</tr>
<tr>
<td>Ethernet Ports</td>
<td>2 x 10/100Base-T RJ-45</td>
<td>2 x 10/100/1000 Base-T RJ-45</td>
<td>2 x 10/100Base-T RJ-45</td>
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<tr>
<td>Smart LAN</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>USB Ports</td>
<td>Two</td>
<td>Two</td>
<td>One</td>
</tr>
<tr>
<td>PC/104 Expansion</td>
<td>-</td>
<td>-</td>
<td>PCI-104</td>
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</tbody>
</table>

### Onboard I/O

<table>
<thead>
<tr>
<th>8-ch AI</th>
<th>4-ch AO</th>
<th>16-ch Isolated DI</th>
<th>1-ch Isolated Counter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support Expansion I/O:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(1) ECU-P1702: 10Ms/s, 12-bit Simultaneous 4-ch PCI-104 card</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(2) ECU-P1706: 250ks/s, 16-bit Simultaneous 8-ch PCI-104 card</td>
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<tr>
<td>(3) ECU-P1300: Vibration Signal Modulate card</td>
<td></td>
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<tr>
<td>8-ch AI</td>
<td>32-ch isolated DI</td>
<td>32-ch isolated DO</td>
<td></td>
</tr>
</tbody>
</table>

### Watchdog Timer
- Yes
- Yes
- Yes

### CompactFlash Slots
- One Internal
- One Internal
- One Internal

### 2.5” HDD Expansion
- 1 x SATA
- 1 x SATA
- -

### Operating Systems
- WES2009, WinCE 5.0, Linux
- WES 7, WES 2009, Windows CE 5.0 & 6.0, Linux
- Windows CE 5.0

### Mounting
- Wall & Rack Mount
- Wall & Rack Mount
- DIN-rail

### Anti-Vibration
- -
- 2 G w/CF, 1 G w/HDD
- -

### Anti-Shock
- -
- 30 G w/CF, 20 G w/HDD
- -

### Operating Temperature
- -20 ~ 70°C (-4 ~ 158°F)
- -20 ~ 70°C (-4 ~ 158°F)
- -20 ~ 70°C (-4 ~ 158°F)

### Power Consumption
- 28 W
- 24 W
- < 10 W

### Power Requirements
- 18 ~ 30 Vcc (e.g. 24 V @ 2 A) (Min. 48 W), AT
- 18 ~ 30 Vcc (e.g. 24 V @ 2 A) (Min. 48 W), AT
- DC: 10 ~ 30 Vcc

### Dimensions (W x D x H)
- 255 x 152 x 59 mm (10” x 6.0” x 2.3”)
- 220 x 150 x 89 mm (8.7” x 5.9” x 3.5”)
- 266 x 146 x 45 mm (10.5” x 5.7” x 1.8”)

### Weight
- 2.4 kg
- 2.4 kg
- 1.5 kg

## Extension IO Cards

### Module Name
- ECU-P1706
- ECU-P1702

#### Analog Input
- **Resolution**: 16-bit
- **Channels**: 8
- **Onboard FIFO**: 8K samples/total 32K samples/per channel
- **Sampling Rate**: 250K/s 10MS/s
- **Input Range/ Bipolar Inputs**: ±10, 5, 2.5, 1, 0.5
- **Timer/ Counter**: 2 channels (Isolation)
- **Resolution**: 32-bit
- **Max. Input Frequency**: 1 M Hz
- **Isolation Voltage**: 2500Vdc
- **Page**: 3-15

### Module Name
- ECU-P1300

#### Inputs
- **Voltage Input Range**: ±5 V Maximum*
- **Channels**: 8
- **Amplifier Input Impedance**: 20k (min)
- **Input Coupling**: AC

#### Outputs
- **Maximum Output Voltage**: ±10V
- **Accelerometer Input**: 4 mA ±1%, 24 V compliant
- **Page**: 3-15
UNO-4671A

Introduction
UNO-4671A is compliant with Electricity Certificate IV level (especially for China) and IEC 61850-3 certification, which defines the international standards of network and system communications in power substations. Featuring a fanless design with low power consumption and high performance Intel Atom D510/D525 processor, the UNO-4671A comes with 10 isolated serial ports, 6 x LAN, 4 x USB (Internal) and 1 x PCI-104 extension. With rich OS and driver support, such as WES 2009, Windows XP, Windows CE 6.0, WES7 and Linux, users can integrate applications easily with a platform that can provide versatile functions to fulfill diverse requirements.

Specifications

General
- Certification: CE, FCC class A, CCC, Electricity IV level for China (Compatible IEC 61850-3, IEEE 1613)
- Dimensions (W x D x H): 2U (440 x 220 x 88 mm/17.3" x 8.6" x 3.4") fits into standard 19 inch rack
- Enclosure: SECC & Aluminum
- Mounting: 2U Rackmount
- Power Consumption: 30 W @ 24 V (Typical)
- Power Requirements: Supports Redundant power input (Optional)
  Power 1: 100 – 240 VAC or 100 – 240 VDC
  Power 2: 100 – 240 VAC or 100 – 240 VDC
- Weight: < 5.5 kg
- System Design: Fanless design
- OS Support: WES 2009, Windows XP, Windows CE 6.0, WES7 and Linux
- Remote Management: Built-in Advantech DiagAnywhere agent on Windows CE/XP/7

System Hardware
- CPU: Intel Atom D510 1.66 GHz/D525 1.8 GHz
- Memory: 2GB DDR2/4GB DDR3 SDRAM
- Indicators: LEDs for Power1&2, IDE, LAN (Active,Link) and Serial (Tx, Rx)
- Storage: 1 x internal typeI/II CompactFlash® slot, 1 x Built-in 2.5" SATA HDD bracket
- Display: VGA, 1920 x 1080
- Reset Button: Yes
- WatchDog Timer: Programmable 256 levels time interval, from 1 to 255 seconds for each tier

I/O Interface
- Serial Ports: 10 ports, 2 x RS-232, 4 x RS-422/485, 4 x RS-485 (Automatic RS-485 data flow control)
- LAN: 6 x 10/100 Base-T RJ-45 ports (For UNO-4671A-A33E)
  2x 10/100/1000 Base-T RJ-45 ports and
  4 x 10/100 Base-T RJ-45 ports (For UNO-4671A-A44BE)
- USB Ports: 4 x USB (include 1 x internal USB), UHCI, Rev. 2.0 compliant
- Expansion: 1 x PCI-104

Environment
- Storage Humidity: 95% @ 40°C (non-condensing)
- Operating Temperature: IEC 60068-2-2 with 100% CPU/ I/O loading, 48 hrs -20 – 60°C (-4 – 140°F)
- Operating Humidity: 20 – 95% (non-condensing)
- Shock Protection: IEC 68 2-27 CompactFlash®: 30 G half sine, 11 ms
  HDD: 20 G half sine, 11 ms
- Vibration Protection: IEC 68 2-64 (Random 1 Oct./min, 1hr/axis.)
  CompactFlash: 2 Gms @ 5 – 500 Hz

Ordering Information
- UNO-4671A-A33E: Intel Atom D510 1.66 GHz, 2 GB RAM Power & Energy Automation Computer
- UNO-4671A-A44BE: Intel Atom D525 1.8 GHz, 4GB RAM Power & Energy Automation Computer
ECU-4674

Introduction
ECU-4674 series products is compliant with Electric Certificate IV level (especially for China) and IEC 61850-3 and IEEE 1613 certification, which provide higher reliability and stability, suitable for any Global P&E automation market and harsh environment. With versatile communication interface to use for Smart substation Communication server and IED Analyzer to fulfill the Data Gateway & Protocol Conversion requirement easily. Featuring a fanless design with high performance Intel Atom N2600 processor, the ECU-4674 comes with 18 isolated serial ports, 8 x LAN and 1 x PCI-104 extension. With iCDManager support, users can easily diagnose System & Communication and enhance maintenance efficiency, with Structured and functional module Internal design for easy customization and Fast assembly to fulfill the different kind of application.

Specifications

Features

- **Intel® Atom™ N2600 Power & Energy Computers with 8xLAN, 18xCOM, 8DI, 8DO, 1x IRIG-B and 1 x PCI-104**

**Features**

- China Electricity Certificate IV level
- IEC 61850-3 and IEEE 1613 compliant for substation automation applications
- Intel Atom N2600 1.6GHz processor
- 2 x RS-232 isolated serial ports, 16 x RS-232/485 isolated serial ports
- 2 x 10/100/1000 Base-T RJ-45 connector (Support teaming function and IEE-1588 hardware capability) and 6 x 10/100 Base-T RJ-45 connector
- Support 1x internal CF, 2x 2.5" SATA HDD
- 5x USB2.0 (1x internal)
- Front or Rear wiring, programmable LED indicator
- Isolated 8-ch Digital Input and 8-ch Digital Output
- 1 x Time Synchronize IRIG-B
- Fan less design with no internal cabling
- Support Redundant isolated power with wide AC/DC input range
- iCDManager: intelligent Connectivity Diagnose and Manager

**Introduction**

**ECU-4674 series products is compliant with Electric Certificate IV level (especially for China) and IEC 61850-3 and IEEE 1613 certification, which provide higher reliability and stability, suitable for any Global P&E automation market and harsh environment. With versatile communication interface to use for Smart substation Communication server and IED Analyzer to fulfill the Data Gateway & Protocol Conversion requirement easily. Featuring a fanless design with high performance Intel Atom N2600 processor, the ECU-4674 comes with 18 isolated serial ports, 8 x LAN and 1 x PCI-104 extension. With iCDManager support, users can easily diagnose System & Communication and enhance maintenance efficiency, with Structured and functional module Internal design for easy customization and Fast assembly to fulfill the different kind of application.**

**Specifications**

**General**

- **Certification** CE, FCC class A, CCC, Electricity Certificate IV level for China (Compatible IEC 61850-3, IEEE 1613)
- **Dimensions (W x D x H)** 440 x 220 x 88 mm
- **Enclosure** SECC & Aluminium
- **Mounting** 2U Rack mount
- **Power Requirements** Supports Redundant power input (Optional)
  - Power 1: 100 – 240 Vac or 100 – 240 Vac
  - Power 2: 100 – 240 Vac or 100 – 240 Vac
- **Weight** < 5.5 kg
- **OS Support** WEST7, Windows7, Linux
- **System Design** Fanless with no internal cabling

**System Hardware**

- **CPU** Intel Atom N2600, 1.6GHz
- **Memory** 2G DDR3 SDRAM built-in
- **Indicators** LEDs for Power, HDD, Programmable LED,IRIG-B, LAN(Active, Status) and Serial (Tx, Rx)
- **Storage** 1x internal CF, 2x 2.5" SATA HDD
- **Display** DB15 VGA connector
- **PCI/104 slot** 1 x PCI-104
- **Watchdog Timer** Programmable 256 levels time interval, from 1 to 255 seconds for each tier

**I/O Interface**

- **Serial Ports** 18 Ports, 2 x RS-232, 16 x RS-232/485 (Automatic RS-485 data flow control)
- **Serial Port Speed** RS-232: 50 – 115.2 kbps, RS-422/485: 50 – 321.6 kbps (Max.)
- **LAN** 2 x 10/100/1000Base-T RJ-45 ports, teaming function supported,IEEE-1588 hardware capability,
  - 6 x 10/100Base-T RJ-45 ports
- **USB Ports** 5 x USB (include 1 x internal USB), UHCI, Rev. 2.0 compliant

- **Digital Input (optional)** 8-ch isolated digital input
  - Wet contact: Logic 0: 0~3 VDC, Logic 1: 10~30 VDC
  - Isolation protect: 2000 VDC, 50-55 VDC over voltage protection
  - Opto-Isolator Response:25us-interrupt capable

- **Digital Output (optional)** 8-ch isolated digital output
  - 2000 VDC isolation, 200mA max/channel sink current
  - Keeps output status after system hot reset
  - Open collector to 40V (200mA maximum sink current load) 3 kHz speed

- **Programmable LED** 8-ch programmable LED indicator
- **Expansion** 1 x PCI-104

**Time Synchronization Interface (optional)**

- **Type** IRIG-B
- **Channel** 1
- **Support Format** IRIG-BooX according to IRIG STANDARD 04, 200-96
- **Message Syntax** QQIHHMMSS (year, day, hour, minute & second)
- **Resolution of Time** 1s

**Environment**

- **Storage Humidity** 95% @ 40°C (non-condensing)
- **Operating Temperature** IEC 60669-2-2:1 with 100% CPU/ I/O loading, 48 hrs
  - -20~70°C (+ 4 ~ 140°F)
- **Operating Humidity** 20 – 90% (non-condensing)
- **Shock Protection** IEC 68 2-27 CompactFlash™: 30 G half sine, 11 ms
  - HDD: 20 G half sine, 11 ms
- **Vibration Protection** IEC 68 2-64 (Random 1 Oct/min, 1hr/axis.)
  - CompactFlash: 2 Gms @ 5~500 Hz
  - HDD: 1 Gms @ 5~500 Hz

**Ordering Information**

- **ECU-4674-A53SAE** Intel Atom N2600 1.6GHz 2GB RAM Power & Energy Automation Computers with 8xLAN, 18xCOM, 8DI, 8DO, 1x IRIG-B and PCI-104 Expansion
- **ECU-4674-la53SAE** Intel Atom N2600 1.6GHz 2GB RAM Power & Energy Automation Computers with 8xLAN, 10xCOM, and PCI-104 Expansion

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UNO-4678

Intel® Celeron® M Power & Energy Automation Computers with 3 x LAN, 8 x COM, PC/104

Features
- Onboard Celeron® 1 GHz processor and or 1024 MB RAM
- Supports Lm sensor which can retrieve CPU and board temperature for monitoring purposes
- 8 x isolated RS-232/422/485 ports with automatic flow control
- 3 x 10/100Base-T RJ-45 ports
- Supports two USB and 1 x type I/II CF card
- Windows® CE 5.0 and Windows XP Embedded ready solution
- Windows 2000/XP driver ready and Linux driver support
- Windows XP Embedded (SP2) ready platform with write protection (EWF)
- Onboard system & I/O LED indicators
- Fanless design with no internal cabling

Introduction
UNO-4678 is high-performance Fanless Box PC, which supports a Celeron M 1 GHz CPU, and equipped with eight isolated serial communication ports. They inherit the glory from the UNO family and includes the typical characteristics as it is fanless, robust, and reliable. Furthermore, in order to meet the diverse applications in industrial automation and control, varied interfaces and 1U form factor are suitable for use, especially for rack mounting. Also, LEDs for all ports and modes on the front panel simplify the monitoring status for operation, administration and maintenance. UNO-4678 is convenient and user-friendly platforms to fulfill a wide range of requirements.

Specifications

General
- Certification: CE, FCC class A, CCC, Electricity IV level for China
- Dimensions (W x D x H): 1U (440 x 220 x 44 mm/17.3” x 8.6” x 1.7”)
- Enclosure: SECC & Aluminum
- Mounting: Rack mount
- Power Consumption: 24 W (Typical)
- Power Requirements: DC: 9 – 36 VDC
- Weight: 3.6 kg
- OS Support: Windows® XP Embedded, Windows CE 6.0, Linux

System Hardware
- CPU: Celeron M 1.0 GHz
- Memory: 1024 MB DDR SDRAM (UNO-4678-C12E)
- Indicators: LEDs for Power, Power Input 1 & 2, Power fault, IDE, LAN (Active, Status) and Serial (Tx, Rx)
- Keyboard/Mouse: 1 x PS/2
- Storage: 1 x internal typeI/II CompactFlash® slot, 1 x Built-in 2.5” IDE HDD bracket
- Display: VGA, 1600 x 1200 @ 85 Hz

I/O Interface
- Serial Ports: 8 Ports, 8 x RS/232/422/485 (Automatic RS-485 data flow control)
- Serial Port Speed: RS-232: 50 – 230.4 kbps
- LAN: 3 x 10/100Base-T RJ-45 ports
- USB Ports: 2 x USB (include 1 x internal USB), EHCI, Rev. 2.0 compliant

Environment
- Storage Humidity: 95% @ 40°C (non-condensing)
- Operating Temperature: -10 – 50°C (14 – 122°F)
- Shock Protection: IEC 68 2-27
- Vibration Protection: IEC 68 2-64 (Random 1 Oct./min, 1 hr/axis.)

Ordering Information
- UNO-4678-C12E: Celeron M 1 GHz, 1024 MB RAM Power & Energy Automation Computers
**UNO-4673A and UNO-4683**

**NEW**

**Introduction**

UNO-4673A and UNO-4683 are compliant with the hardware requirements of IEC 61850-3, which defines the international standards of network and system communications in power substations. Featuring fanless designs with built-in isolated PSU and 3 expansion slots for I/O plug-in cards, the UNO-4673A and UNO-4683 are suitable for harsh environments. The rear I/O connection and LEDs on front panel for all ports and modes highly simplify monitoring for operation and maintenance.

**Specifications**

**General**

- **Certification**: IEC 61850-3, IEEE 1613, CE, FCC Class A, UL, CCC, Electricity IV level for China
- **Dimensions (W x D x H)**: 2U (440 x 220 x 89 mm/ 17.3" x 8.6" x 3.4") fits into standard 19 inch rack
- **Enclosure**: SECC + Aluminum
- **Mounting**: 2U Rackmount
- **Power Consumption**: 45 W (Typical)
- **Power Requirements**: AC: 81~275 V AC  (47 ~ 63 Hz), DC: 90~300 V DC , With isolation protection, AT
- **Weight**: ~6.0 kg
- **OS Support**: WES, Windows XP Embedded, Windows XP, Windows CE 6.0, Linux, QNX, Window server 2008 R2 (64bits)
- **System Design**: Fanless Design
- **Remote Management**: Built-in Advantech DiagAnywhere agent on Windows CE/XP

**System Hardware**

- **CPU**: Intel Atom D510 1.69 GHz/Core i7 2.0 GHz
- **Memory**: 2 GB DDR2 SDRAM/4G DDR3 SDRAM built-in
- **Indicators**: LEDs for Power, IDE, Alarm for battery backup SRAM, Diagnosis (programmable), LAN (Active, Status) and Serial (Tx, Rx)
- **Keyboard/Mouse**: 2 x PS/2
- **Storage**: CF: 1 x internal type I/I CompactFlash® slot
- **HDD**: Built-in one 2.5” SATA HDD bracket
- **RAID capable with 2nd HDD kit**: Yes
- **Display**: DB15 VGA connector, 2048 x 1536 @ 85 Hz (UNO-4673A), 1 x DVI-I (UNO-4683)
- **Watchdog Timer**: Programmable 7-tier event handler, from 1 to 255 seconds for each tier
- **Battery Backup SRAM**: 1 MB

**Features**

- **China Electricity Certificate IV level**
- **IEC 61850-3 and IEEE 1613 certified for substation automation applications**
- **Onboard Intel Atom 1.69 GHz / Core i7 2.0 GHz processor**
- **Support Intel Virtualization Technology for Direct IO (VT-D)**
- **2 x RS-232/422/485 isolated serial ports with automatic flow control and 128KB FIFO**
- **2 x 10/100/1000Base-T (supports teaming function) and 4 x 10/100Base-T**
- **Supports 1 x internal CF card and 1 x 2.5” SATA HDD**
- **6 x USB 2.0 (1 x internal) and 5 x Domain I/O expansions**
- **Rear wiring, rich system & I/O LED status indicators**
- **Windows® CE 6.0, Windows XP Embedded SP2, and Linux ready solution**
- **Fanless design with no internal cabling**
- **Isolation power design with wide AC / DC input range**
- **Isolation between chassis and power ground**
- **One internal USB for dongle and flash drive**

**Environment**

- **Storage Humidity**: 95% @ 40°C (non-condensing)
- **Operating Temperature**: IEC 60068-2-2 with 100% CPU/I/O loading, 48 hrs -20 ~ 70°C (optional for -40°C)
- **Operating Humidity**: 20 ~ 95% (non-condensing)
- **Shock Protection**: IEC 60068-2-27 CompactFlash®: 50 G half sine, 11 ms HDD: 20 G half sine, 11 ms
- **Vibration Protection**: IEC 60068-2-64 (Random 1 Oct./min, 1hr/axis.) CompactFlash®: 2 Grms @ 5 – 500 Hz

**Ordering Information**

- **UNO-4673A-A33E**: Intel Atom 1.69 GHz, 2 GB RAM Power & Energy Automation Computer
- **UNO-4683-D34E**: Intel Core i7 2.0 GHz, 4 GB RAM Power & Energy Automation Computer
- **UNO-4673ADP-A33E**: Intel Atom 1.69 GHz, 2 GB RAM,dual PSU Power & Energy Automation Computer
- **UNO-4683DP-D34E**: Core i7 2.0 GHz, 4 GB RAM,dual PSU Power & Energy Automation Computer

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Introduction

ECU-4784 series products are compliant with TUV IEC 61850-3 and IEEE 1613 certification, which can provide higher reliability and stability, suitable for any global P&E automation market and harsh environment. With high computing and high integration performance, ECU-4784 is target to Smart Substation station level's Server application. Featuring a fanless design with high performance processor (Intel Haswell Core i7 4650U), the ECU-4784 comes with 2 isolated serial ports, 8 x LAN and 2 x Expansion Slots. ECU-4784 are easy to expand more kinds domain I/O by functional module to extend data collection variety and highly simplify monitoring for operation and maintenance. With iCDManager (intelligent Connectivity Diagnose and Manager) function support, ECU-4784 can remote monitor & diagnose and manage system to provide the high efficiency, users can quick access to remote device's desktop for diagnosis and troubleshooting without on-site technical support to reduce maintenance cost.

Specifications

General
- Certification: CE, FCC class A, CCC, Electricity IV level for China (Compatible IEC 61850-3, IEEE 1613), UL
- Dimensions (W x D x H): 440 x 280 x 88 mm
- Enclosure: SECC & Aluminum
- Mounting: 2U Rack mount
- Power Requirements: Supports Redundant power input (Optional)
  - Power 1: 100 – 240 VAC or 100 – 240 VDC
  - Power 2: 100 – 240 VAC or 100 – 240 VDC
- Weight: 6.0 kg
- OS Support: WES7, Windows7, Linux
- System Design: Fanless with no internal cabling

System Hardware
- CPU: Intel Haswell Core i7 4650U 1.7GHz
- Memory: DDR3L 1.35V non-ECC 8G (Up to 16G by 2 Piece 8G)
- Indicators: LEDs for Power, HDD, Programmable LED, LAN (Active, Status) and Serial (Tx, Rx)
- Storage: 2x 2.5" SATA HDD RAID 0,1; 1 x CFast socket
- Display: DB15 VGA connector, 1 x DVI
- Watchdog Timer: Programmable 256 levels time interval, from 1 to 255 seconds for each tier
- Relay
  - Relay Output: Form C
  - Contact: 5 A @ 250 VAC/5 A @ 30 VDC

Environment
- Storage Humidity: 95% @ 40°C (non-condensing)
- Operating Temperature: IEC 6068-2-2 with 100% CPU/ I/O loading, 48 hrs -20~70°C (-4 ~ 158°F)
- Operating Humidity: 20 – 95% (non-condensing)
- Shock Protection: IEC 68 2-27 CFast®: 50 G half sine, 11 ms
- Vibration Protection: IEC 6066-2-64 (Random 1 Oct./min, 1hr/axis.)
  - CFast®: 2 Grms @ 5 ~ 500 Hz
  - HDD: 1 Grms @ 5 ~ 500 Hz

I/O Interface
- Serial Ports: 2 x RS-232 (DB-9 connectors) (Standard ), 8 x RS-232/242/485 (Terminal Block) (Optional)
- Serial Port Speed: RS-232: 50 ~ 115.2 kbps.
- LAN: RS-422/RS-485: 50 ~ 921.6 kbps (Max.)
- USB Ports: 6 x USB, UHCI, Rev.2.0 Compliant
- Expansion: 2 Domain I/O Expansions (Each Support 1 PCIe and 2 PCI)

Ordering Information
- ECU-4784-D55RAE
  - Intel Haswell Core i7 4650U 1.7GHz 8GB RAM; P&E Automation Computers with 8xLAN, 2xCOM and 2 Expansion Slots
### UNOP-1628D/1618D
8-port Isolated/Non Isolated RS-232/422/485

### UNOP-1624D
4-port Isolated RS-232/422/485 with IRIG B

### UNOP-1514RE/PE
4-Port Gigabit Base Ethernet Card

#### Specifications

##### General
- **Connector**: 120-pin connector for UNO-4673A/PCI, UNO-4683/PCI
- **Dimensions**: 5.3” x 6.0” (136 x 150 mm)
- **Power Consumption**: 5V ± 5% @ 620mA typical; 5V ± 5% @ 180mA typical.
- **Certification**: CE/FCC, RoHS

##### Environment
- **Operating Temp.** -20 ~ 70°C (-4 ~158°F)
- **Operating Humidity**: 5 ~ 95% RH non-condensing
- **Storage Humidity**: 95% RH non-condensing (refer to IEC 60068-2-3)

##### Ordering Information
- **UNOP-1618D-AE**: 8-port RS-232/422/485 for UNO-4673A & UNO-4683
- **UNOP-1628D-AE**: 8-port RS-232/422/485 for UNO-4673A & UNO-4683

### Specifications

##### General
- **Connector**: 120-pin connector for UNO-4673A/PCI, UNO-4683/PCI
- **Dimensions**: 5.3” x 6.0” (136 x 150 mm)
- **Power Consumption**: 5V ± 5% @ 600mA typical; 3.3V ± 5% @ 75mA typical.
- **Certification**: CE/FCC

##### Communication
- **IRQ**: All COM ports use the same IRQ assigned by PCI Bus
- **IRIG Interface**: Male 9-pole D-Sub connector (COM or IRIG-B)
- **Compatibility**: IEEE 802.3 Ethernet interface
- **Speed**: 1000M bps

##### Environment
- **Operating Temp.** -20 ~ 70°C (-4 ~158°F)
- **Operating Humidity**: 10 ~ 90% RH non-condensing (refer to IEC 60068-2-3)
- **Storage Humidity**: 95% RH non-condensing (refer to IEC 60068-2-3)

##### Ordering Information
- **UNOP-1514RE-AE**: 4-port RJ45 Gigabit Base Ethernet Card
- **UNOP-1514PE-AE**: 4-port SFP Gigabit Base Ethernet Card

### Accessories
- **SFP-GTX/RJ45**: 1000Base RJ45 SFP module
- **SFP-GSX/LC**: 1000Base-SX Multi-mode SFP module
- **SFP-GLX/LC-10**: 1000Base-LX Single-mode SFP module (10 km)
- **SFP-GLX/LC-20**: 1000Base-LX Single-mode SFP module (20 km)
- **SFP-GLX/LC-40**: 1000Base-LX Single-mode SFP module (40 km)
ECU-1710A

Intel® Atom™ D510 Controller with 16-ch AI, 4-ch AO and 32-ch Isolated DI/O

Introduction

ECU-1710A is a standalone automation controller with integrated PCI-1710UL and PCI-1720U to provide 16-ch Analog Input, 4-ch Analog Output, 16-ch Isolated Digital Input and 16-ch Isolated Digital Output. This controller also supports serial communication ports and several other networking interfaces. You can seamlessly integrate your applications into the ECU-1710A and speed up your system development with these application ready controllers.

Specifications

General
- Dimensions (W x D x H): 255 x 152 x 59 mm (10” x 6.0” x 2.3”)
- Power Consumption: 28 W (Typical)
- Power Requirements: 18 – 30 VDC (e.g. 24 V @ 2 A) (Min. 48 W), AT
- Weight: 2.4 kg (Typical)
- OS Support: WES 2009

System Hardware
- CPU: Intel Atom D510 1.66 GHz/ 512 KB L2 Cache
- Memory: 1GB DDRII 667MHZ
- Indicators: LEDs for Power, IDE and LAN (Active, Status)
- Keyboard/Mouse: 1 x PS/2
- Storage: 1 x internal typeI/II CompactFlash® slot, 1 x Built-in 2.5” SATA HDD bracket

I/O Interface
- Serial Ports: 2 Ports, 2 x RS-232
- LAN: 2 x 10/100Base-T RJ-45 ports
- USB Ports: 2 x USB, EHCI, Rev. 2.0 compliant

Analog Input
- Channels: 16 single-ended/ 8 differential
- Resolution: 12 bits
- Max. Sampling Rate: 100 kS/s
- FIFO Size: 4,096 samples
- Overvoltage Protection: 30 Vp-p
- Input Impedance: >18M ohm
- Sampling Mode: Delay to Start, Delay to Stop, None
- Input Range: (V)

<table>
<thead>
<tr>
<th></th>
<th>Unipolar</th>
<th>0 – 10</th>
<th>0 – 5</th>
<th>0 – 2.5</th>
<th>0 – 1.25</th>
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<tr>
<td>Accuracy (% of FSR ±1LSB)</td>
<td>N/A</td>
<td>±10</td>
<td>±5</td>
<td>±2.5</td>
<td>±1.25</td>
</tr>
</tbody>
</table>

Analog Output
- Channels: 4
- Resolution: 12 bits

Features
- Onboard Intel Atom D510 1.66 GHz processor
- 2 x RS-232 ports
- 2 x 10/100Base-T RJ-45 ports
- 2 x USB ports
- Integrated PCI-1710UL & PCI-1720U modules
- 16-ch single-ended or 8-ch differential or a combination of Analog Input
- 12-bit A/D converter, with up to 100kS/s sampling rate
- 4-ch 12-bit Analog Output
- 16-ch Isolated Digital Input/Digital Output
- 1-ch Isolated Counter

Output Range
- (Software programmable)
  - Unipolar (V): 0 – 5, 0 – 10
  - Bipolar (V): ±5, ±10
- Current Loop (mA): 0 – 20, 4 – 20
- Driving Capability: 5 mA
- Accuracy: Relative: ±1 LSB; Differential Non-Linearity: ±1 LSB (monotonic)
- Excitation Voltage: 48 V (max.)

Digital Input /Output / Counter
- DI Channels: 16
- DI Input Voltage: Logic 0: 2 V max.
  - Logic 1: 5 V min. (30 V max.)
- DO Channels: 16
- DO Output Type: Sink Type (NPN)
- DO Output Voltage: 5 – 40 VDC
- DO Sink Current: 300 mA max. per channel
- Counter Channels: 1
- Counter Resolution: 16 bits
- Counter Input Voltage: Logic 0: 2 V max.
  - Logic 1: 5 V min. (30 V max.)
- Counter Max. Input Frequency: 1 MHz
- Isolation Protection: 1,000 VDC

Environment
- Storage Humidity: 5 – 95% RH, non-condensing (IEC-60068-2-3)
- Operating Temperature: -10 – 60°C (14 – 140°F) @ 5 – 85% RH
- Storage Temperature: -20 – 80°C (-4 – 176°F)

Ordering Information
- ECU-1710A-A32E: Intel Atom D510 1.66 GHz controller with A/O and D/I/O

Accessories
- ADAM-3925-AE: DB25 DIN-rail Wiring Board
- ADAM-3937-BE: DB37 DIN-rail Wiring Board
ECU-1871

NEW

Intel® Atom™ D510 Energy Controller with 2 x LAN, 3 x COM, IRIG-B, and I/O Extension

Introduction

ECU-1871 is compliant with Electricity Certificate IV Level (especially for China) and IEC 61850-3 certification. Featuring a fanless design with low power consumption and high performance Intel Atom D510 processor, the ECU-1871 comes with 2 x Ethernet, 1 x RS-232, and 2 x isolation RS-485 ports. The ECU-1871 supports two extension interface, PCI-104 & PCIe-104, and users can easily order other Energy I/O boards to integrate into the ECU-1871 and speed up your system development with an energy controller.

Specifications

General
- Dimensions (W x D x H): 220 x 150 x 89 mm (8.7”x 5.9”x 3.5”)
- Power Consumption: 24 W (Typical)
- Power Requirements: 18 – 30 VDC (e.g 24 V @ 2 A) (Min. 48 W), AT
- Weight: 2.4 kg (Typical)
- Mounting: 2U Rack-mount & Wall-mount
- OS Support: WES 2009, WES 7, WinCE 6.0, Linux
- System Design: Fanless with no internal cabling

System Hardware
- CPU: Intel Atom D510 1.66 GHz/ 512 KB L2 Cache
- Memory: 2G DDRII 667 MHz
- Indicators: LEDs for Power, HDD,IRIG,COM(Tx Rx) and LAN (Active Statue)
- Storage: SSD: 1 x type II CompactFlash® slot
- HDD: 1 x integrated 2.5” SATA HDD bracket
- Display: VGA, 1600 x 1200 @ 85 Hz
- Watchdog Timer: Programmable 256 levels time interval, from 1 to 255 seconds for each tier
- PCI-104/PCIe-104: Supports +3.3/ +5 V power

Communication Interface
- Serial Ports: 3 Ports, 1 x RS-232, 2 x RS-485
- Serial Ports Speed: RS-232 50 – 115.2 kbps, RS-485 50 – 921.5 kbps
- LAN: 2 x 10/100/1000Base-T RJ-45 ports
- USB Ports: 4 x USB (include 1 x internal USB), EHCI, Rev. 2.0 compliant

Time Synchronization Interface
- Type: IRIG-B
- Channel: 1
- Support Format: IRIG-B00X according to IRIG STANDARD 04, 200-98
- Input Signal: ST Multi-mode, 1 Isolation RS-485 (Optional)
- Message Syntax: QQQHHMMSS(year, day, hour, minute & second)
- Resolution of Time: 1s

Environment
- Storage Humidity: 5 – 95% RH, non-condensing (IEC 60068-2-3)
- Operating Temperature: -20 – 70°C (-4 – 158°F) @ 5 – 85% RH
- Storage Temperature: -40 – 80°C (-40 – 176°F)

Ordering Information
- ECU-1871 -A33CAE: Intel Atom Energy Controller with 2 x LAN, 3 x COM, IRIG-B and I/O Extension

Accessories
- ECU-P1706-AE: 250 KS/s, 16 bit, Simultaneous 8-ch Analog input PCI-104 Card
- ECU-P1300-AE: Vibration Signal Modulate, Vibration Sensor Driver, 8-order Low-pass Filter
- ECU-P1702-LAE: 10 MS/s, 14bit, Simultaneous 4-ch Analog input PCI-104 Card
Introduction

ECU-1911 focuses on RTU monitor application. The ECU-1911 is also a standalone RTU that provides a 16-bit 8-ch A/D converter, 32-ch Relay and 32-ch Digital Input. This controller also supports four serial communication ports and two networking interfaces. You can seamlessly integrate your applications into the ECU-1911 and speed up your system development with this application ready RTU.

Specifications

General
- **Power Consumption**<10 W (Typical)
- **Power Requirements** 24 Vdc (Typical) (10 Vdc Min – 30 Vdc Max)
- **OS Support** Windows CE 5.0

System Hardware
- **CPU** Xscale @ PXA-270 520MHz
- **Memory** Onboard 64 MB SDRAM/ 32 MB Flash
- **Storage** 1 x type I/II Compact Flash slot
- **Display** VGA 640 x480 @ 60Hz

Digital Input
- **Channels** 32
- **I/O Type** Sink
- **Wet Contact**
  - Logic 0: 0 – 10 V
  - Logic 1: 19 – 30 V
- **Isolation** 3000 Vdc
- **Connector** Terminal Block (#14 – 22 AWG)

Digital Output
- **Channels** 32
- **I/O Type** Power Relay Form A
- **Contact Rating** AC: 5A @ 250 V; DC: 30 V @ 5 A (Resistive Load)
- **Isolation** 500 Vdc
- **Connector** Terminal Block (#14 – 22 AWG)

Analog Input
- **Channels** 8 differential
- **Resolution** 16 bits
- **Sampling rate** 10 Hz/sec (total)
- **Input Impedance** 700 kΩ
- **Input Range**
  - 0 – 150 mV, 0 – 500 mV, 0 – 1 V, 0 – 5 V, 0 – 10 V, 0 – 15 V, ±150 mV, ±500mV, ±1 V, ±5 V, ±10 V, ±15 V, ±20 mA, 4 – 20 mA
- **Accuracy**
  - Voltage : ± 0.1 %
  - Current : ± 0.2 %
- **Span Drift** ±25 ppm/°C
- **Zero Drift** ±5 μV/°C

Environment
- **Storage Humidity** 5 – 95% @ 40°C (non-condensing)
- **Operating Temperature** -20 – 70°C (-4 –158°F) @ 5 – 85% RH
- **Storage Temperature** -40 – 80°C (-40 –176°F)

I/O Interface
- **Serial Ports** 4 Ports, 1 x RS-232, 3 x RS-485
  (Automatic RS-485 data flow)
- **LAN** 2 x 10/100Base-T RJ-45 ports
- **USB Port** 1 x USB, OpenHCI, Rev. 1.1 compliant

Ordering Information
- **ECU-1911-ROCAE** Xscale @ PXA-270 520 MHz RTU with 8-ch 16-bit Analog Input, 32-ch Digital Input, and 32-ch Digital Output
ECU-P1300

**Specifications**

**General**
- **Power Consumption**: Typical: 5V @ 850mA
- **Bus Type**: PCI-104
- **I/O Connector**: Plug-in Terminal Block
- **Operating Temperature**: -20 ~ 70°C (-4 ~ 158°F)
- **Storage Temperature**: -40 ~ 80°C (-40 ~ 176°F)
- **Storage Humidity**: 5 ~ 95% RH, non-condensing

**Analog Input**
- **Channels**: 8 differential
- **Resolution**: 16 bits
- **Max. Sampling Rate**: 250 KS/s
- **FIFO Size**: 8K samples
- **Overvoltage Protection**: 50 ohm/1M ohm/Hi Z
- **Input Impedance**: 50 ohm/1M ohm/Hi Z
- **Sampling Mode**: Software, onboard programmable pacer and external (TTL Level)
- **Trigger mode**: Delay To Start Trigger, Delay To Stop Trigger
- **Trigger Source**: Analog Trigger, External Trigger
- **Input Range**: ±10V, ±5V, ±2.5V, ±1.25V

**Ordering Information**
- **ECU-P1300-18**: 250 KS/s, 16bit, Simultaneous 8-ch PCI-104
- **ECU-P1300-17**: 250 KS/s, 16bit, Simultaneous 4-ch PCI-104

**Features**
- Designed for Smart-Grid Applications
- ECU-P1706 focuses on the Vibration/ Substation Signal Analytics (Wind-power / Smart Substations)
- ECU-P1702 focuses on the Partial Discharge Detection and Analytical Devices (Smart Substations)
- ECU-P1300 focuses on Vibration Applications (Wind-power / Smart Substations)
- Easy to install to ECU-1871 Energy Controller

**Vibration Signal Modulate Card**

**Specifications**

**General**
- **Power Consumption**: 5V @ 700mA (Max.)
- **Bus Type**: PCI-104
- **I/O Connector**: BNC
- **Operating Temperature**: -20 ~ 70°C (-4 ~ 158°F)
- **Storage Temperature**: -40 ~ 80°C (-40 ~ 176°F)
- **Storage Humidity**: 5 ~ 95% RH, non-condensing

**Analog Input**
- **Channels**: 4 Single-ended
- **Resolution**: 12 bits
- **Max. Sampling Rate**: 10 MS/s
- **FIFO Size**: 32K samples
- **Overvoltage Protection**: ±15V
- **Input Impedance**: 50 ohm/1M ohm/Hi Z switch selectable
- **Sampling Mode**: Software, onboard programmable pacer and external (TTL Level)
- **Trigger mode**: Delay To Start Trigger, Delay To Stop Trigger
- **Trigger Source**: Analog Trigger, External Trigger
- **Input Range**: ±5V, ±2.5V, ±1V, ±0.5V

**Ordering Information**
- **ECU-P1702-LAE**: 10 MS/s, 12bit, Simultaneous 8-ch PCI-104
- **ECU-P1702-LAE**: 10 MS/s, 12bit, Simultaneous 4-ch PCI-104
- **ECU-P1702-LAE**: 10 MS/s, 12bit, Simultaneous 2-ch PCI-104
- **ECU-P1702-LAE**: 10 MS/s, 12bit, Simultaneous 1-ch PCI-104

**Features**
- Designed for Smart-Grid Applications
- ECU-P1706 focuses on the Vibration/ Substation Signal Analytics (Wind-power / Smart Substations)
- ECU-P1702 focuses on the Partial Discharge Detection and Analytical Devices (Smart Substations)
- ECU-P1300 focuses on Vibration Applications (Wind-power / Smart Substations)
- Easy to install to ECU-1871 Energy Controller

**Ordering Information**
- **ECU-P1300-AE**: Vibration Signal Modulate Card

**Specifications**

**General**
- **Power Consumption**: Typical: 5V @ 700mA; 12V @ 100mA
- **Operating Temperature**: -20 ~ 70°C (-4 ~ 158°F)
- **Storage Temperature**: -40 ~ 80°C (-40 ~ 176°F)
- **Storage Humidity**: 5 ~ 95% RH, non-condensing

**Ordering Information**
- **ECU-P1300-18**: 250 KS/s, 16bit, Simultaneous 8-ch PCI-104
- **ECU-P1300-17**: 250 KS/s, 16bit, Simultaneous 4-ch PCI-104
- **ECU-P1300-16**: 250 KS/s, 16bit, Simultaneous 2-ch PCI-104
- **ECU-P1300-15**: 250 KS/s, 16bit, Simultaneous 1-ch PCI-104

**Features**
- Designed for Smart-Grid Applications
- ECU-P1706 focuses on the Vibration/ Substation Signal Analytics (Wind-power / Smart Substations)
- ECU-P1702 focuses on the Partial Discharge Detection and Analytical Devices (Smart Substations)
- ECU-P1300 focuses on Vibration Applications (Wind-power / Smart Substations)
- Easy to install to ECU-1871 Energy Controller
## Introduction

DMU-5010 is an Ethernet I/O module that supports Modbus TCP protocol and Ethernet daisy chain. DMU-5010 delivers various onboard I/Os including analog input, digital input, and digital output, providing flexible options to satisfy versatile application requirements. With high anti-interference performance, DMU-5010 is suitable for harsh environment applications. You can easily configure the module by the Advantech Domain Focused Configuration Tool.

## Specifications

### General
- **Enclosure**: SECC
- **Mounting**: DIN-rail, Wallmount
- **Dimensions (WxHxD)**: 43 x 125 x 105 mm (1.69” x 4.92” x 4.13”)
- **LAN**: 10/100Base-T
- **Connector**: 1x40 Plug-in screw terminal block (#14~22 AWG) (Power and I/O), 2 x RJ-45 (LAN)
- **Watchdog**: System (1.6 second) and Communication (programmable)
- **Supported Protocols**: Modbus/TCP
- **Power Input**: Unregulated10-30Vdc w/power reversal protection
- **Power Consumption**: 7.2W@ 24VDC

### Analog Input
- **Channels**: 8
- **Input Type**: mV, mA (Ch0-Ch3), mV, V, mA, RTD (Ch4-Ch7)
- **Input Range**: 0~5V, 0~10V, 0~15V, ±5V, ±10V, ±15V, ±20mA, ±4~20mA, ±100mA, ±200mA
- **RTD Types & Temp Range**:
  - Pt 100 (2-wire and 3-wire): -50 ~ 150°C, 0 ~ 400°C
  - IEC RTD 100 ohms ( = 0.0385 )
  - JIS RTD 100 ohms ( = 0.0392 )
  - Pt-100(2-wire and 3-wire): -40°C ~ 160°C
- **Input Impedance**: Voltage: ≥10MQ; Current: 120Ω
- **Accuracy**: ±0.1%, (voltage); ±0.2% (current); ±0.2°C (RTD) or better
- **Span Drift**: ±88 ppm/°C (Voltage)
- **Zero Drift**: ±6 μV/°C (Voltage)
- **Resolution**: 16-bit
- **Sampling Rate**: 10 samples/second
- **Burn-out Detection**: 4-20mA and RTD

### Digital Input /Output
- **Channels**: 8-ch DI
- **Channels**: 4-ch DI/DO shared (DIO0~DIO3 can be set as DI/DO by Utility)
- **Digital Input**
  - **Input Level**: Dry contact: Logic level 0 (Off): open Logic level 1 (On): close to GND
    - Wet contact: Logic level 0 (Off): +10V to +30V Logic level 1(On): -3V max
  - **Supports 200Hz Frequency/counter input**: 2 channels max Counter (32 bit) 200Hz
    - Frequency 0.1Hz~200Hz
  - **Supports Digital Noise filter**: Isolation Protection 2500 VDC
  - **Isolation Protection**: 2500 VDC

### Digital Output
- **Output**: Open Collector to 30V
  - 30mA max load.
- **Power Dissipation**: 300mW for each channel
- **PWM Period**: 2ms~3600sec
- **PWM Minimum Duty On**: 0.2ms
- **Isolation Protection**: 2500 VDC

### Environment
- **Storage Humidity**: 5~95% RH
- **Operation Temperature**: -20 ~ 70°C (-4 ~ 158°F)
- **Storage Temperature**: -30 ~ 80°C (-22 ~ 176°F)

### Ordering Information
- **DMU-5010-AE**: 8-ch DI, 4-ch DO, 8-ch AI, 4-ch RTD Modbus TCP Module

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### Features
- Ethernet-based I/O
- Mixed I/O in single module
- Active I/O message by data stream
- Industrial Modbus/TCP protocol
- Easily update firmware through Ethernet
- Support burn-out detection
- Support Ethernet Daisy Chain
- Wide operating temperature range
- High anti-interference performance
## Automation Software

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To view all of Advantech’s Automation Software, please visit www.advantech.com/products.
Introduction

Advantech WebAccess is a web browser-based software package for human-machine interfaces (HMI) and supervisory control and data acquisition (SCADA). All the features found in conventional HMI and SCADA software including Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in an standard web browser. WebAccess is built around the latest internet technologies. The basic components are:

1. SCADA Node: it communicates in real-time with automation equipment and controls the equipment via serial, Ethernet or proprietary communication via multiple built-in device drivers. Not only does it run local controls and monitoring, but also provides real-time data to all remote clients.
2. Project Node: it is the development platform for WebAccess and is a web server for all clients to connect to the development project or remotely monitor and control the system. All system configuration, project database files and graphics are stored here.
3. Client node: through the ActiveX control inside Microsoft Internet Explorer, it monitors and controls the SCADA Node. The client connects to the Project Node and get the address of the SCADA Node, then communicates directly with the SCADA Node using proprietary communications over a TCP/IP connection. Data is displayed in real-time with dynamically animated graphics along with real-time, historical trending and alarm information. Users can acknowledge alarms and change set-points, status and other data.
4. Mobile Client: the Mobile Client interface is intended for use with smart mobile devices, such as iOS, Android; and Windows mobile devices. In the mobile client users can browse graphics, data-log trends, and tag information in real-time. Set value to tag or acknowledge alarms can also be supported via an intuitive interface.

Feature Details

View and Control from a Remote Web Browser

Using a standard web browser, users can view and control automation equipment used in industrial, manufacturing, process and building automation systems. Field data and alarms are delivered in real-time to remotely browse using animated graphics and sound.

Powerful Remote Diagnose and Maintenance Functionality

The unique feature, which distinguishes WebAccess from the competition, is that all engineering works, such as: database configuration, graphics drawing and system management (download, start and restart remote nodes) is performed using a web browser. If any troubleshooting is needed, no matter where the engineer is, he can use the internet to operate the system remotely. This can significantly increase the efficiency of maintenance operations and reduce maintenance costs.

Multi-touch Gesture Support

WebAccess supports multi-touch functionality with various pre-set gestures, such as flick to change pages, zooming in and out of the display and 2-handed operation maximizing operating safety, increasing usability and decreasing training time due to the more intuitive handling. In addition, multi-touch also supports multi-finger tap, multi-finger grab, and multi-finger spread gestures to operate pre-defined actions.

Features

- View, control and configure system remotely over an intranet or the Internet using standard web browser
- Mobile client supports for iOS and Android
- Support for open standard programming: TCL, JScript and VB script
- Open real-time data connectivity: OPC, Modbus, BACnet, DDE Server
- Open offline data connectivity: SQL Server, Oracle, MySQL, Microsoft Access database
- Full LonWorks LNS and BACnet support
- Distributed SCADA architecture with central database server and Multi-layer inter-operable SCADA nodes
- Redundant SCADA, ports and devices
- SMS alarm notifications, e-mail alarms, reports and messages
- Web-enabled video, audio, and Google Maps and GPS Location Tracking
- Multi-touch gesture support
- WebAccess Express - The Auto-Configuration Tool

Google Maps and GPS Tracking Integration

WebAccess integrates real-time data on each geographical site with Google Maps and GPS location tracking. For remote monitoring, users can intuitively view the current energy consumption on each building, production rate on each field or traffic flow on the highway together with alarm status. By right-clicking on Google Maps or entering the coordinate of the target, users can create a marker for the target and associate the real-time data of 3 sites with a display label. Furthermore, this function also integrates with GPS modules to track the location of the marker in Google Maps and allows it to be used in vehicle systems.
WebAccess Express - The Auto-Configuration Tool

Advantech WebAccess Express is an automated graphical remote control application program with 1-click to bring device information online. It automatically discovers the ADAM and EKI modules on the network and serial ports, generates a database and brings real-time data online with prebuilt monitoring graphics. Express also provides remote monitoring functions and allows users to communicate and exchange data with an SNMP or DiagAnywhere Server and then check the health of the CPU, memory, temperature, and voltage of the target machine as device monitoring platform. With SNMP or DiagAnywhere Driver integration, users can configure the alarm function if any abnormal or suspicious data is detected in WebAccess.

Vector-based Graphics

Regardless of engineer and user computer resolution, WebAccess graphics can be built at any resolution and displayed at any resolution. Vector-based graphics scale infinitely, providing smaller file and data sizes for fast downloading and data updates. WebAccess also has the option to allow users to define the aspect ratio, 16:9, 16:10 or 4:3, to view their graphics to avoid distortion when displaying in certain aspect ratio display.

Wide Ranging Building Automation Support

WebAccess supports all open systems in the building automation industry. LonWorks devices can be accessed through LNS database, iLon and B-Track. BACnet MS/TP and IP are also supported. Modbus protocol for most of power meters is also a standard driver of WebAccess. In WebAccess Scheduler users can schedule on/off, temperature set points, and messages based on time-of-day, day-of-week and holidays.

Open Data Connectivity

Advantech WebAccess exchanges online data with 3rd party software in real-time by supporting OPC UA/DA, DDE, Modbus and BACnet Server/Client. It supports SQL, Oracle, MySQL, and MS Access for offline data sharing.

Data Transfer

The Data Transfer function is used to transfer data from one PLC or automation device to another. Data value can be sent from one tag to another tag, regardless of the communication medias or protocols, with a predefined period in the same equipment or between different equipment.

Distributed Architecture

SCADA nodes run independent of any other node. Each SCADA node communicates to automation equipment using communication drivers supplied with Advantech WebAccess.

Central Database Server

The Project Node is a centralized database server of configuration data. A copy of the database and graphics of all SCADA nodes is kept on the Project Node. The historical data is also stored in the database in project node.

Redundant SCADA, COM Ports and Devices

Advantech WebAccess assures continuous, reliable communication to automation equipment. WebAccess Backup node activates when the primary node is down. WebAccess device drivers communicate with backup ports or devices if the primary connection is lost and automatically restores to the primary item when it becomes available.

Historical and Real-Time Trending, Data Logging and Centralized Logs

12 Tags can be added to a Trend display without losing the history of the other tags. Real-time data, alarms, and operator actions from all SCADA nodes can be logged to a central ODBC database.

Scheduled Reports

A "Fill-in-the-blanks" reporting package gives average, maximum, minimum, last and totals with summary for user-defined shifts, daily, and monthly reports. These reports can be automatically generated and printed or sent to users by e-mail. Users can also query reports from a remote browser anywhere, anytime.

Event Log and Action

An event can trigger data before and after the event to be logged or scripts to be executed.

Enhanced Security

Users can be assigned various privileges to restrict display and data access. WebAccess uses the Area of Responsibility concept to restrict changes to data.

Ample Driver Support

WebAccess supports hundreds of devices. In addition to Advantech I/Os and controllers, WebAccess also supports all major PLCs, controllers and I/Os, like Allen Bradley, Siemens, LonWorks, Mitsubishi, Beckhoff, Yokogawa etc. WebAccess can easily integrate all devices in one SCADA. For a complete listing of WebAccess drivers, refer to WebAccess.advantech.com.
### Advantech WebAccess

**Gateway with WebAccess Installed**

With open real-time data connectivity and hundreds of device drivers, WebAccess can integrate all devices and a selected hardware platform with pre-installed WebAccess becomes the perfect protocol gateway or data concentrator. With intuitive setup, WebAccess converts field device data to Modbus, OPC DA, OPC UA or BACnet protocol, so other software, such as ERP and MES can gain access without knowing the field device protocol. WebAccess+ Solution Products, a bundle of WebAccess Professional 7.2 and Windows 7 Embedded built into Advantech's robust hardware platform, can be used as a high performance, low cost data gateway solution.

**Web-enabled Video Display**

WebAccess allows operators and users to monitor equipment and facilities directly using web-enabled full-motion video cameras, audio, and web cams. It also supports the use of live video cameras that are IP-enabled via ActiveX control, Windows Media Player, JPEG and other formats supported by Microsoft Internet Explorer 8.0 (or later). The video image appears in the same display area as graphics, alarms and trends displays. Optionally, WebAccess can launch the video in a pop-up window. WebAccess also supports push button key macros to easily call up video cameras and WebAccess scripts can be used to automatically rotate between multiple cameras and send Pan-Tilt-Zoom (PTZ) commands.

**Software Specifications**

<table>
<thead>
<tr>
<th>Advantech WebAccess Professional</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I/O Tag Number</td>
<td>75/300/600/1500/5000/20K/64K</td>
</tr>
<tr>
<td>Internal Tag Number</td>
<td>75/300/600/1500/5000/20K/64K</td>
</tr>
<tr>
<td>Web Client</td>
<td>1024</td>
</tr>
<tr>
<td>Alarm Logs</td>
<td>5000</td>
</tr>
<tr>
<td>Action Logs</td>
<td>5000</td>
</tr>
</tbody>
</table>

**Graphics**

- **Number of Graphic Pages:** Unlimited (limited by H/D size)
- **Variables per Graphic Pages:** 4000
- **Tag Source:** Global
- **Multi-touch Gesture:** Yes

**Group Trend Log**

- **Number of data logging:** Number of IO tags license x 2
- **Alarm Groups per SCADA:** 9999

**Receipt**

- **Recipes per Project:** Unlimited (limited by H/D size)
- **Unit per Recipe:** 999
- **Item per Unit:** 999

**Scheduler**

- **Holiday Configuration Group:** 9999
- **Time Zone Group:** 9999
- **Device Loop Group:** 9999
- **Equipment Group:** 9999
- **Scheduler Reservation Group:** 9999

**Web-enabled Integration**

- **Video:** Yes
- **Google Maps and GPS Location Tracking:** Yes

**Open Connectivity**

- **Modbus Server:** Yes
- **BACnet Server:** Yes
- **ODBC and SQL Query:** Yes
- **OPC DA/UA Server:** Yes
- **DDE Server:** Yes

**Others**

- **Centralized logs on project:** Yes node via ODBC
- **SCADA Redundancy:** Yes
- **Script language:** TclScript/VBScript/JavaScript
- **Data Transfer:** Yes
- **ODBC and SQL Query:** Yes
- **Reporting:** Yes
- **Device Redundancy:** Yes
- **Supports IPv6:** Yes
- **WebAccess Express:** Yes

### Ordering Information

#### Professional Versions

- **WA-P72-U075E**
  - WebAccess V7.2 Professional Software with 75 tags
- **WA-P72-U300E**
  - WebAccess V7.2 Professional Software with 300 tags
- **WA-P72-U600E**
  - WebAccess V7.2 Professional Software with 600 tags
- **WA-P72-U15HE**
  - WebAccess V7.2 Professional Software with 1,500 tags
- **WA-P72-U50HE**
  - WebAccess V7.2 Professional Software with 5,000 tags
- **WA-P72-U20KE**
  - WebAccess V7.2 Professional Software with 20,000 tags
- **WA-P72-U64KE**
  - WebAccess V7.2 Professional Software with Unlimited tags

#### Upgrade*

- **WA-P72-X075E**
  - WebAccess Software License, 75 tags upgrade
- **WA-P72-X300E**
  - WebAccess Software License, 300 tags upgrade
- **WA-P72-X600E**
  - WebAccess Software License, 600 tags upgrade
- **WA-P72-X15HE**
  - WebAccess Software License, 1,500 tags upgrade
- **WA-P72-X50HE**
  - WebAccess Software License, 5,000 tags upgrade

* Original serial number from WebAccess Professional version is required to purchase WebAccess upgrade. The serial number can be found on the USB dongle.

### Minimum Requirements

- **Operating System:** Windows XP, Windows 7, Windows 8 Professional, Windows Server 2003 or later
- **Hardware**
  - Celeron or Athlon. Dual Core processors or higher recommended.
  - 1GB minimum; more recommended
  - 30GB or more disk space
- **Display Resolution:** 1024 x 768 or higher (recommended)
- **USB Port:** USB port for License Hardkey on SCADA node

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**Lower resolutions also supported**

1024 x 768 or higher (recommended)

**USB Port**

USB port for License Hardkey on SCADA node
Advantech WebAccess Express

Introduction
Advantech WebAccess Express is an automated graphical remote control application program. It automatically discovers all the ADAM modules on the network and serial ports, generates a database and brings real-time data online with prebuilt monitoring graphics. Users can easily get real-time ADAM I/O devices data from remote smart devices with just one click. And what’s more it’s free with 75 ADAM I/O points.

Feature Details

Auto-discover and Deliver Technology
Using state of the art auto-discover technology, WebAccess Express detects all the available communication ports on the machine and discover all the online serial ADAM devices. From Ethernet ports, WebAccess Express also finds all the online ADAM-6000 devices. Automation technology does not stop here, monitoring database is generated from the information gathered from discovered devices. WebAccess Express data engine automatically start to poll real-time data from all the devices.

Auto-display over Internet and on Smart Mobile Devices
All real-time data is delivered to the computer and displayed in preconfigured graphics, which are systematically organized by the comport and device for easy monitoring. By double clicking the analog output or digital output point, a dialog box pops up letting users change the analog value or toggle the digital output. Analog data can also be viewed in trend pages. If an IIS server is installed, the data can also be viewed from remote computers or from a mobile device. Search for “WebAccess mobile” from App Store for iPhone, iPad or from Google Play for Android devices.

Auto-deposit Functionality
All the analog data are automatically deposited to a historical data log. Users can view data in the Data Log Trend group page, each group contains an ADAM module. The data in the trend page can be exported to HTML and then exported to Excel for further analysis. The trend can also be viewed in the mobile device application.

WebAccess Express Support List

<table>
<thead>
<tr>
<th>ADAM-4000 Series</th>
<th>ADAM-6000 Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADAM-4015</td>
<td>ADAM-4055</td>
</tr>
<tr>
<td>ADAM-4015T</td>
<td>ADAM-4068</td>
</tr>
<tr>
<td>ADAM-4017+</td>
<td>ADAM-4069</td>
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<tr>
<td>ADAM-4019+</td>
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<td>ADAM-4019+</td>
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<td>ADAM-4024</td>
<td>ADAM-4150</td>
</tr>
<tr>
<td>ADAM-4051</td>
<td>ADAM-4168</td>
</tr>
</tbody>
</table>

WebAccess Express Download Linkage
Software Features

- Allows users to manage multiple HMI applications in one project
- Allows users to switch multi-language UI dynamically, with Unicode and multilingual screen text supported
- Provides password protection of designs, macros and upload/download operations
- Running various applications on Open Platform with different O.S. - RTOS/WinCE and Windows O.S.
- Link and Control automation controller directly from platform
- Provides index registers for modifying device addresses at runtime
- Collects data from many devices with various methods
- Supports various data acquisition and trend presentation
- Operation log helps the review and investigation of important events
- Flexible runtime download through serial / Ethernet and memory cards.
- Allows to use the USB Memory Sticker for the trouble-free update of the application
- Supports over 300 industrial communication protocols such as SIMATIC S7-1200, BACNet MSTP/BACNet IP etc. and the driver list is growing

Introduction

WebOP Designer is powerful yet intuitive software to create total solutions for WebOP series Human Machine Interface products. WebOP Designer is proven in many application fields and is an easy to use integrated development tool. The features include solution-oriented screen objects, high-end vector graphics, Windows fonts for multi-language applications, recipes, alarms, data loggers and operation logging. WebOP Designer also includes online/offline simulation and other utility programs such as Data Transfer Helper (DTH); recipes editors and text editors.

Panel Express runtime, a part of WebOP Designer, guarantees reliability and performance of Open Platform because of the minimum system overhead, high communication data rates, sub-second screen switching, and 24/7 operation. Our fast response software team adds new functions, communication drivers and solutions to the software all the time to meet dynamic needs.

System Requirements

Minimum OS Requirements:
- Windows XP SP2 (for all flavors of XP such as Home, Media Center, Tablet PC)
- Windows Server 2003
- Windows Vista
- Windows 7

Feature Details

Global Settings and Resources Sharable to all Applications of the Same Project
- Multi-languages (up to 10 languages)
- Font templates (up to 20 fonts for each language, TrueType fonts supported)
- Picture database (BMP, JPG, GIF, WMF), Sound database (WAV), Text Database
- Global Tags
- Global Macros

Plenty of Solution-oriented Screen Objects
- For common HMI needs: Buttons, Lamps, Message displays, Numeric displays, Numeric entries, Character displays, Character entries, Time displays, Date displays, Bar Graphs, Meters, etc.
- For animation: Pictures displays, GIF displays, Animated graphics, Dynamic rectangles, Dynamic circles, Pipelines, Circular bar graph, etc. Color of basic graphic objects (text, lines, rectangles, circles, etc.) changeable.
- Shape and color of buttons and lamps changeable.
- For advanced functions: Line chart, Scatter chart, Recipe selector, Recipe table, Alarm history display, Active alarm display, Alarm count display, Historic trend graph, Historic data table, Historic event table, Historic line chart, Operation log display, Sub-link table, etc.

Communication Links

The WebOP series HMI products can have at most 4 built-in communication ports. The WebOP Designer software allows you to create up to 4-links and 255 sub-links for one application. More than 400 communication drivers allow 1-to-N (one panel to a wide variety of industrial devices) or N-to-1(multiple panels to one device) connections.

The Panel Express can have at most 16 built-in communication ports. It also allows you to create up to 16-links for 255 sub-links with serial port & 128 sub-links with Ethernet ports in one application.
One Design for all Models
The WebOP Designer software provides the auto resizing function to resize all the objects so they can fit the new screen size when you change the HMI model. It makes the HMI model changes done in seconds.

Easy to Accumulate/Reuse Design Achievements
- Import/Export Function
  The WebOP Designer software provides the simple method for importing and exporting data between applications or projects. The data includes Language setting, Font templates, Pictures, Sounds, Text, Tags, Macros, Application, Screen, Alarm messages, Control block and status word settings, etc.
- Object Library
  The object library makes configuring, managing and sharing user-defined objects easier. It contains default objects, common objects, object groups and global objects.

Enhanced Intellectual Property (IP) Protection
WebOP Designer strengthens the IP protection by password with different levels. You can set the password to protect project, password table and global macros. You can also use up to 9 levels of passwords to secure the operations and restrict access to the objects. You can choose to prohibit uploading and copying of the panel application stored in the HMI unit.

Recipe
Distinguish from the conventional recipe operations, the WebOP Designer provides complete solutions to deal with recipes:
- Supports up to 16 recipe blocks
- Provides recipe selector for selecting a recipe and recipe table for displaying and modifying recipe data at runtime
- Provides Recipe Editor, an independent executable program, to view and edit recipe data saved in a binary file on PC
- Able to notify a bit when the recipe operations are performed successfully to prevent data loss

Data Collected into a CSV/TXT file
Allows to save/load collected data to/from CSV or TXT files. Those two standard file formats allow the easy manipulation data on PC.

Alarm
The WebOP Designer supports up to 16 discrete alarm blocks and up to 16 analog alarm blocks. It provides alarm history display, active alarm display, alarm count display and alarm marquee to display alarms in the application.

Macros, an easy-to-learn language with simple syntax
Application developers may program their own solutions using the macro commands for:
- Operations that are not supported in a standard object or feature of WebOP Designer
- Sequential, Interactive, Conditional and File operations
- Non-linear data conversions
- Data exchange between two controllers
- Simple communication drivers
- Hard-to-implement tasks in controllers
- Offloading the burden of controllers to boost their performance

Simplified Architecture
- Real time WYSIWYG screen editor, 8 toolbars and screen manager
- Screen overview that shows the relations among screens of the current application
- Link overview that shows the relations among links of the current application
- Object list that shows the screen objects and the associated I/O address of the current screen
- I/O list that shows all the I/O addresses of the project and their owners
- Compiler to verify, optimize, and build the designs
- Online/offline simulation for design verification
- Data Transfer Helper (DTH), an independent executable program, to help you get/update application data through serial port or Ethernet port
- Text Editor for editing all screen texts in multi-languages

Ordering Information
- 968WEXP015E  PanelExpress V2.0 1500 tags S/W license (WinCE)
- 968WEXP050E  PanelExpress V2.0 5000 tags S/W license (WinCE)
- 968WEXP03X  PanelExpress V2.0 300 tags S/W license
- 968WEXP015X  PanelExpress V2.0 1500 tags S/W license
- 968WEXP050X  PanelExpress V2.0 5000 tags S/W license
- 968WEXP1USB  PanelExpress V1.2 S/W USB dongle
- 968WEXP2USB  PanelExpress V2.0 S/W USB dongle
**Features**
- IEC 61131-3 programming languages
- Intuitive programming with a clear project structure
- Cross-compiling: FBD, LD and IL can be cross-compiled to each other
- Multi user functionality shortens programming time
- Management of distributed controls
- Network variables: Easy and powerful configuration of distributed communication
- Powerful debugging tools: Online changes, PLC simulation, overwriting & forcing, breakpoints, watch windows & recipes, logic analyzer, and cross reference
- Online program download
- Download Change Function
- Advantech FBs Support (Auto-Tuning PID, Batch Control)

**Introduction**
Advantech’s Programmable Automation Controllers (PAC) leverage KW-Software’s Multiprog and ProConOS as a single development tool with the SoftLogic control kernel. Requiring only a one-time design, users can easily leverage the control know-how into different control platforms to meet versatile automation projects needs. KW SoftLogic also creates single tagging database and HMI Software, such as WebAccess and other 3rd party SCADA software, all the features can help users to save the visible and invisible cost.

Multiprog supports all IEC 61131-3 programming languages. Depending on the task to be handled, your experience and company standards, you may choose one of the five standardized programming languages. The use of Multiprog offers you many advantages. Our long-term experience in the automation industry guarantees you a sophisticated software product.

**Specifications**

**Hardware Requirements**

<table>
<thead>
<tr>
<th>Device</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM compatible PC with Pentium Processor</td>
<td>Pentium 4, 2 GHz or above</td>
</tr>
<tr>
<td>System RAM</td>
<td>Windows XP : 512 MB Windows Vista : 1 GB Windows 7 : 1 GB</td>
</tr>
<tr>
<td>Hard Disk</td>
<td>1 GB free memory space</td>
</tr>
<tr>
<td>VGA Monitor Color Settings Resolution</td>
<td>True color 1024 x 768</td>
</tr>
<tr>
<td>RS-232 interface</td>
<td>Optional</td>
</tr>
<tr>
<td>Mouse</td>
<td>Recommended</td>
</tr>
</tbody>
</table>

**Advantech Hardware Supported**
- APAX-6000 Series
- APAX-5000 Series
- ADAM-55X0KW Series

**Software Requirements**
- Microsoft Windows 7
- Microsoft Windows Vista (SP2)
- Microsoft Windows XP (SP3)
- Microsoft Internet Explorer 6.0 or higher

**IEC 61131-3 Programming Languages**
- Instruction List (IL)
- Structured Text (ST)
- Function Block Diagram (FBD)
- Ladder Diagram (LD)
- Sequential Function Chart (SFC)
- All programming languages can be mixed within one project

**Ordering Information**

<table>
<thead>
<tr>
<th>MPROG-PRO535E</th>
<th>KW Multiprog Pro v5.35</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(128k bytes I/O, Win7 32-bit support)</td>
</tr>
</tbody>
</table>
HMI Software for Data Acquisition

OPC Server for ADAM & Modbus Devices

Introduction

We have noticed that many users apply the ADAM Data Acquisition modules in small base projects. Because the cost ran higher than system hardware, Human Machine Interface software was not suitable for these projects. ADAMView, the ADAM Data Acquisition software, is especially designed for low-volume ADAM projects. It provides a 150 physical points database, ADAM Drivers, for all monitoring and control functions. In brief, ADAMView is a cost-effective and simple SCADA software for the ADAM I/O series.

Feature Details

- Complete Software Package
- Graphical Panel Configuration
- Modularized and Prioritized Task Design
- BasicScript Scripting Language to Customize Your Applications
- Easy Connection with ADAM I/O Series

Specifications

System Requirements
- CPU: Intel® Pentium® 200 MHz or higher
- RAM: 64 MB Minimum
- Disk Space: 20 MB Minimum
- Display: VGA Resolution or Higher
- Microsoft Compatible Mouse
- OS: Microsoft® Windows® 98, Windows NT 4.0 SP4 or above, Windows 2000, Window XP

Supported Hardware
- ADAM-4000 Modbus/RTU and ADAM-6000 Modbus/TCP Modules

Ordering Information
- PCLS-ADAMVIEW32: ADAMView Data Acquisition Software

Introduction

The Industrial Automation Group of Advantech introduces a standardized interface for industrial device servers, the OPC (OLE for process control) Server. An OPC server provides devices, such as an I/O device, to communicate with a wide range of HMI/SCADA software packages residing on a host. Any software system with OPC client capabilities can access the Advantech OPC server drivers.

Key Features of the OPC Servers
- Supports Advantech ASCII, MODBUS/RTU, and MODBUS/TCP protocol.
- Compliant with the latest OPC Data Access 1.0, 2.04 and 3.0 standards.
- Compliant with the latest OPC Alarm and Events 1.0 and 1.2 standards.
- Built-in OPC tag simulation and value conversion.
- Wizards to create OPC Server tags about ADAM series quickly.
- Compatible with OPC client compliant application software.
- Provides OPC custom interface.
- Online configuration capability; add new signals and tags during runtime.
- Tag Multiplier let you create tags quickly.
- OPC DA and AE Client for rapid testing of your OPC data connections.

Specifications

Supported Hardware
- All ADAM-4000 series modules
- All ADAM-5000 series modules
- All ADAM-6000 series modules

Ordering Information
- PCLS-OPC/ADM30: OPC Server for ADAM ASCII protocol
- PCLS-OPC/MTP30: OPC Server for Modbus/TCP protocol
- PCLS-OPC/RTU30: OPC Server for Modbus/RTU protocol
Introduction

DAQNavi is a completed software package, for programmers to develop their application programs using Advantech DAQ boards or devices. This integrated software package includes drivers, SDK, tutorial and utility. With the user-friendly design, even the beginner can quickly get familiar with how to utilize DAQ hardware and write programs through the intuitive ‘Advantech Navigator’ utility environment. Many example codes for different development environment dramatically decrease users’ programming time and effort.

You can go to [http://www.advantech.com/daqnavi](http://www.advantech.com/daqnavi) for more information about Advantech DAQNavi.

Feature Details

**Multiple Operating System Support**

DAQNavi supports many popular operating systems (OS) used in automation applications. For different OSs, API functions will be the same, so users can simply install the driver without modifying their program again when migrating between two different OSs.

DAQNavi supports latest Windows 7/Vista/XP and Windows CE (both 32-bit and 64-bit). Besides Windows operating system, Linux is famous for its openness and flexibility. DAQNavi software package also supports Linux OS distributions including Ubuntu, Fedora, Debian and Susi. For other distributions, contact with Advantech local branch or dealer in your area, for more information.

**.NET Support**

DAQNavi offers a series of .NET Component objects, that you can benefit from platform-unified feature with the latest .NET technology. Users can simply drag and drop the .NET Components within .NET programming environment, such as Microsoft Visual C# and VB .NET. An intuitive window (called “DAQNavi Wizard”) will pop-up, and user can perform all configurations by sequence. Then, related source code will be generated automatically. Programmers also can choose writing code manually with the .NET Component, to have a more flexible object calling. With Advantech CSCL technology, engineers can do the similar programming in Native environment such as Visual C++.

**LabVIEW Support**

LabVIEW is one popular graphical development environment used for measurement and automation. For LabVIEW user, DAQNavi offers two options for programming: Express VI and Polymorphic VI. DAQNavi Express VI for LabVIEW helps user quickly complete his LabVIEW without extra wiring. When the user drags the Express VI on LabVIEW Block Diagram, a pop-up intuitive wizard window will appear and user can perform hardware parameter configurations. After that, the programming is done. So it is similar to the .NET control used in Microsoft Visual Studio environment, suitable for programming beginners. As for the Polymorphic VI, users can use several VIs and wiring to build more complex program.

**C++, Delphi, ActiveX and Java Support**

DAQNavi also offers C++ Class Library (for VC++ and Borland C++ Builder) and ActiveX (for Visual Basic, Delphi and BCB) for Native programming environment with the same calling interface as .NET Class Library. With DAQNavi Java Class Library, user can develop Java program to across different platforms (including Windows and Linux) by means of Java engine.

**Support Modules**

DAQNavi supports all Advantech PCI Express, PCI, PC-104, and PCI-104 cards, as well as all USB DAQ devices.

**Intuitive Utility**

DAQNavi delivers one integrated easy-to-use and powerful utility, called Advantech Navigator. Within the Navigator, engineers can quickly start configuration and function testing for all Advantech DAQ devices, without any programming. Related user manuals are also displayed in the same environment. Besides, to help shorten development time, Advantech offers a series of DAQ applications examples (called “scenarios” in the Advantech Navigator). So programmers can refer to its source code and develop their own application based on it, as well as the wiring information. Without a DAQ device at hand, engineers can generate a simulated device and use that device for programming and testing. Except device testing, Navigator also offers complete documentation to describe how to use DAQNavi SDK to program in various development environments. Moreover, a video tutorial for how to create an application program in a different development environment is available.
## Operator Panels

<table>
<thead>
<tr>
<th>Selection Guide</th>
<th>5-2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RISC Open Platform</strong></td>
<td></td>
</tr>
<tr>
<td>TPC-31T</td>
<td>3.5&quot;/5.7&quot; QVGA TFT LED LCD TI Cortex-A8 Touch Panel Computer</td>
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<tr>
<td>TPC-61T</td>
<td></td>
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<tr>
<td>WebOP-3070T</td>
<td>7&quot; WVGA Cortex™ - A8 Operator Panel with Wide Operating Temperature Range</td>
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<tr>
<td>WebOP-3100T</td>
<td>10.1&quot; WSVGA Cortex™ - A8 Operator Panel with Wide Operating Temperature Range</td>
</tr>
<tr>
<td>WebOP-3120T</td>
<td>12&quot; XGA Cortex™ - A8 Operator Panel with Wide Operating Temperature Range</td>
</tr>
</tbody>
</table>

### Entry Level Operator Panel

| WebOP-2040T | 4.3" WQVGA Operator Panel with WebOP Designer Software |
| WebOP-2050T | 5.6" WVGA Operator Panel with WebOP Designer Software |
| WebOP-2070T | 7" WVGA Operator Panel with WebOP Designer Software |
| WebOP-2080T | 8" SVGA Operator Panel with WebOP Designer Software |
| WebOP-2100T | 10.1" WSVGA Operator Panel with WebOP Designer Software |
| WebOP-2121V | 12.1" SVGA Operator Panel with WebOP Designer Software |

**Supported PLC Controllers**

- Communication Port (COM) 5-24
- Communication Port (Ethernet) 5-26

To view all of Advantech’s Operator Panels, please visit www.advantech.com/products.
## Optional Operator Panels

### Intelligent Operator Panels

<table>
<thead>
<tr>
<th>Model</th>
<th>TPC-31T</th>
<th>TPC-31T</th>
<th>WOP-3070T</th>
<th>WOP-3100T</th>
<th>WOP-3120T</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>RISC 32 bits, 600 MHz (ARM® Cortex™-A8)</td>
<td>RISC 32 bits, 600 MHz (ARM® Cortex™-A8)</td>
<td>RISC 32 bits, 600 MHz (ARM® Cortex™-A8)</td>
<td>RISC 32 bits, 600 MHz (ARM® Cortex™-A8)</td>
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<tr>
<td>Backup Mem</td>
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<td>FRAM 128KB</td>
<td>FRAM 1Mbit (+128K Byte, 64Word)</td>
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<tr>
<td>Display</td>
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<td>Panel Express 300 Tags</td>
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<td>QVGA TFT LCD</td>
<td>WVGA (16:9) TFT LCD</td>
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<td>140/110</td>
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<td>Adjustable</td>
<td>Adjustable</td>
<td>Adjustable</td>
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<tr>
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<td>5-4</td>
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### Selection Guide

<table>
<thead>
<tr>
<th>WOP-2040T</th>
<th>WOP-2050T</th>
<th>WOP-2070T</th>
<th>WOP-2080T</th>
<th>WOP-2100T</th>
<th>WOP-2121V</th>
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<tr>
<td>Dimension (mm)</td>
<td>231.5 x 174.6 x 37 mm</td>
<td>269.8 x 212 x 37.4 mm</td>
<td>259.5 x 201.5 mm</td>
<td>203.4 x 150 x 43.7 mm</td>
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<td>1024 x 768</td>
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</table>

**Note:** The table shows the specifications for different models of Advantech's WOP series industrial panel computers. Each model has variations in dimensions, power consumption, and other features. The table is a reference for choosing the appropriate model based on the specific requirements of a project.
Introduction
The TPC-31T/61T model is a compact platform without redundant functions, and has been designed for small-sized operator interface applications. It has a 3.5"/5.7" TFT LCD display which is a cost effective choice for a limited budget. Its RISC kernel, the TI Cortex-A8 processor consumes minimum power without sacrificing performance. The TPC-31T/61T has a 10/100Base-T Ethernet port offering solid communication ability and comes bundled with a Windows® CE OS that supports Thin-Client solutions. The built-in Windows CE OS platform lets the TPC-31T/61T become an Open HMI solution for system integration.

Specifications

General
- Certification: CE, BSMI, CCC, UL, FCC Class A
- Cooling System: Fanless design
- Dimensions (W x H x D): TPC-31T: 120.79 x 85.5 x 26.5 mm (4.76" x 3.37" x 1.04")
  TPC-61T: 195 x 148 x 44.4 mm (7.68" x 5.83" x 1.75")
- Enclosure: TPC-31T: ABS
  TPC-61T: PC/ABS Resin
- Mounting: Panel
- OS Support: Windows CE 6.0
- Power Consumption: 8 W/12 W (typical)
- Power Input: 18 – 32 VDC
- Watchdog Timer: Programmable as 250 ms, 500 ms, 1 second
- Weight (Net): 0.25 kg (0.55 lbs)/0.8 kg (1.76 lb)

System Hardware
- CPU: TI Cortex-A8 600MHz
- Memory: DDR2 256MB on board
- LAN: 10/100Base-T x 1
- Storage: 512MB on board micro SD card
  1 x SD Card slot
  1Mbit FRAM for Data back-up
- I/O: TPC-31T: RS-232/RS-485 X1 with auto data flow control, USB 2.0(Host) x 1
  TPC-61T: RS-232 x 2 (COM1,2) RS-422/RS-485 x 1 (COM 3) with auto data flow control,
  USB2.0 (Host) x 1, USB2.0 (Client) x 1

LCD Display
- Display Type: QVGA TFT LED LCD
- Display Size: 3.5"/5.7"
- Max. Resolution: 320 x 240
- Max. Colors: 64 K
- Luminance cd/m²: 450/800
- Viewing Angle (H/V): 160/140
- Backlight Life: 30,000/50,000 hrs
- Contrast Ratio: 300:1/800:1

Touchscreen
- Lifespan: 1 million times with an 8mm diameter finger of silicone rubber
- Light Transmission Above 80%
- Resolution: Linearity
- Type: 4-wire, analog resistive

Environment
- Humidity: 10 – 95% RH @ 40°C, non-condensing
- Ingress Protection: Front panel: IP65
- Operating Temperature: 0 – 50°C (32 – 122°F)
- Storage Temperature: -20 – 60°C (-4 – 140°F)
- Vibration Protection: 2 Grms (5 – 500 Hz) (Operating, random vibration)

Ordering Information
- TPC-31T-E3AE: 3.5" QVGA Touch Panel PC, TI AM3517 600 MHz, 256 MB with WinCE 6.0
- TPC-61T-E3AE: 5.7" QVGA Touch Panel PC TI AM3517 600 MHz, 256 MB with WinCE 6.0
**Dimensions**

TPC-31T: 115 x 79.5 mm (4.6" x 3.18")

TPC-61T: 189 x 142 mm (7.56" x 5.68")

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**Accessories**

- **PWR-247-BE**: 63W DC 24V/2.62A Output Power Supply
- **1702002500**: Power Cable US Plug 1.8 M
- **1702002605**: Power Cable EU Plug 1.8 M
- **1702031801**: Power Cable UK Plug 1.8 M
- **1700000596**: Power Cable China/Australia Plug 1.8 M

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**Rear View**

**TPC-31T**

- Power Receptor
- LAN (10/100)
- COM (RS-232/485)

**TPC-61T**

- SD Slot
- USB 2.0 (Host)
- USB 2.0 (Client)
- COM 2 (RS-232)
- COM 3 (RS-422/485)
- Power Switch
- Power Receptor

---

**Panel Cut-out Dimensions**

TPC-31T: 115 x 79.5 mm (4.6" x 3.18")

TPC-61T: 189 x 142 mm (7.56" x 5.68")
**Introduction**

With brand-new ID design, the WebOP-3070T provides stringent standards required in the automation market. Advantech offers the WebOP-3070T with Cortex™-A8 processor which consumes minimum power without sacrificing performance. The WebOP-3000T supports a variety of LCD sizes from 4.3” to 12” for different applications involving the use of PLCs, motion/thermal controllers, inverters and sensors. It’s also provided with a wide operating temperature range to fulfill the requirements of harsh environments. The built-in Microsoft® WinCE 6.0 OS platform which bundles WebOP Designer lets the WebOP-3070T becomes a control HMI solution for flexible system integration.

**Specifications**

**General**
- **Certification**: CE, BSMI, CCC, UL, FCC Class A
- **Dimensions (WxHxD)**: 203.4 x 150 x 43.7 mm (8.01” x 5.91” x 1.72”)
- **Cut-out Dimensions**: 192 x 138.5 mm (7.56” x 5.45”)
- **OS Support**: Microsoft® Windows CE 6.0
- **Power Input**: 24VDC ±10%
- **Power Consumption**: 7W (Typical)
- **Enclosure Housing**: PC + ABS
- **Mounting**: Panel
- **Weight (Net)**: 1 Kg (2.20 lbs)

**System Hardware**
- **CPU**: RISC 32 bits, 600 MHz (ARM® Cortex™-A8)
- **Backup Memory**: FRAM 1M bit (=128K Byte, 64word)
- **Memory**: DDR2 256MB on board
- **Storage**: 512MB on board SLC type
- **Power-On LED**: Yes

**Communication Interface**
- **COM1**: RS-232/422/485 (DB9 Male)
- **COM2**: RS-422/485 (Terminal Plug 4-Pin)
- **COM3**: RS-485 (Terminal Plug 2-Pin)
- **CAN**: Terminal Plug 2-Pin
- **Ethernet (RJ45)**: 10/100-BaseT
- **I/Os**: USB Client / USB 2.0 Client x 1, USB Host / USB 2.0 Host x 1, Micro-SD Slot / Yes, Audio / 1 Line-out / 1 Mic-in

**LCD Display**
- **Display Type**: WVGA TFT LCD
- **Display Size**: 7"
- **Max. Resolution**: 800 x 480
- **Max. Colors**: 64K
- **Luminance (cd/m²)**: 500
- **Viewing Angle (H/V)**: 140/120
- **Backlight Life**: LED, 50,000 hrs
- **Dimming**: Adjustable by touch panel
- **Contrast Ratio**: 700:1

**Touchscreen**
- **Lifespan**: 36 million touches at 8mm-diameter finger point through silicone rubber bearing at least 250g 2 times per second.
- **Light**: Transmission Above 80%
- **Resolution**: Linearity
- **Type**: 5-wire, analog resistive

**Environment**
- **Operating Temperature**: -20 – 60°C (-4 - 140°F)
- **Storage Temperature**: -30 – 70°C (-22 - 158°F)
- **Humidity**: 10% – 90% RH @ 40°C, non-condensing
- **Ingress Protection**: Front panel: IP66
- **Vibration Protection**: Operating, random vibration 1 Grms (5 – 500 Hz)

**Ordering Information**
- **WOP-3070T-C4AE**: 7” WVGA, Cortex™-A8, 256MB DDR, WinCE 6.0
**Dimensions**

Panel Cut Out Dimensions: 192 x 138.5 mm (7.56” x 5.45”)

**Accessories**
- PWR-247-BE  63W DC 24V/2.62A Output Power Supply
- WOP-3000T-WMKE  WOP-3000T Series Wallmount Kits
- 1702002600  Power Cable US Plug 1.8 M
- 1702002605  Power Cable EU Plug 1.8 M
- 1702031801  Power Cable UK Plug 1.8 M
- 170000596  Power Cable China/Australia Plug 1.8 M

**Automation Software**
- 968WEXP015E  PanelExpress V2.0 1500 tags S/W license (WinCE)
- 968WEXP050E  PanelExpress V2.0 5000 tags S/W license (WinCE)

**Base View**
- Ethernet
- USB Client
- COM1 (RS-232/422/485)
- Micro SD Slot

**Rear View**
- USB Host
- Mic In / Audio Out
- Isolation Power Input
- Isolation Terminal I/O Ports
WebOP-3100T

**Features**
- RISC 32 bits TI ARM® Cortex™-A8 processor
- Various LCD sizes (7", 10.1", 12")
- Full line LED BL TFT LCD with 50K life time
- Embedded Microsoft® WinCE 6.0 OS
- Bundle Panel Express HMI Runtime software (300 tags)
- Backup Memory FRAM in 128KB (64 words) without battery concern
- Power & Terminal I/O ports isolation protection
- -20°C – 60°C wide operating temperature range
- Support CANopen library registered by CiA 301 V4.02
- RS-422/RS-485/CAN terminal I/O ports support Termination Resistor 120Ω
- Front panel IP66 compliant
- Die-cast aluminum alloy front bezel
- Level 4 ESD protection (Air:15kV / Contact:8kV)
- Industrial Control Equipment - UL 508 certification

**Introduction**
With brand-new ID design, the WebOP-3100T provides stringent standards required in the automation market. Advantech offers the WebOP-3100T with Cortex™-A8 processor which consumes minimum power without sacrificing performance. The WebOP-3000T supports a variety of LCD sizes from 4.3" to 12" for different applications involving the use of PLCs, motion/thermal controllers, inverters and sensors. It's also provided with a wide operating temperature range to fulfill the requirements of harsh environments. The built-in Microsoft® WinCE 6.0 OS platform which bundles WebOP Designer lets the WebOP-3100T become a control HMI solution for flexible system integration.

**Specifications**

**General**
- **Certification**: CE, BSMI, CCC, UL, FCC Class A
- **Dimensions (WxHxD)**: 271.5 x 213.5 x 43.2 mm (10.69" x 8.41" x 1.7")
- **Cut-out Dimensions**: 260 x 201.5 mm (10.24" x 7.93")
- **OS Support**: Microsoft® Windows CE 6.0
- **Power Input**: 24VDC ±10%
- **Power Consumption**: 9W (Typical)
- **Enclosure Housing**: PC + ABS
- **Mounting**: Panel
- **Weight (Net)**: 1.2 kg (2.65 lbs)

**System Hardware**
- **CPU**: RISC 32 bits, 600 MHz (ARM® Cortex™-A8)
- **Backup Memory**: FRAM 1M bit (=128K Byte, 64word)
- **Memory**: DDR2 256MB on board
- **Storage**: 512MB on board SLC type
- **Power-On LED**: Yes

**Communication Interface**
- **COM1**: RS-232/422/485 (DB9 Male)
- **COM2**: RS-422/485 (Terminal Plug 4-Pin)
- **COM3**: RS-485 (Terminal Plug 2-Pin)
- **CAN**: Terminal Plug 2-Pin
- **Ethernet (RJ45)**: 10/100-BaseT
- **I/Os**: USB Client 1 , USB 2.0 Client x 1 , USB Host 1 , USB 2.0 Host x 1 , Micro-SD Slot Yes, Audio 1 Line-out / 1 Mic-in

**LCD Display**
- **Display Type**: WSVGA TFT LCD
- **Display Size**: 10.1"
- **Max. Resolution**: 1024 x 600
- **Max. Colors**: 64K
- **Luminance (cd/m²)**: 550
- **Viewing Angle (H/V)**: 140/110
- **Backlight Life**: LED, 50,000 hrs
- **Dimming**: Adjustable by touch panel
- **Contrast Ratio**: 500:1

**Touchscreen**
- **Lifespan**: 36 million touches at 8mm-diameter finger point through silicone rubber bearing at least 250g 2 times per second.
- **Light**: Transmission Above 80%
- **Resolution**: Linearity
- **Type**: 5-wire, analog resistive

**Environment**
- **Operating Temperature**: -20 – 60°C (-4 – 140°F)
- **Storage Temperature**: -30 – 70°C (-22 – 158°F)
- **Humidity**: 10% – 90% RH @ 40°C, non-condensing
- **Ingress Protection**: Front panel: IP66
- **Vibration Protection**: Operating, random vibration 1 Gms (5 – 500 Hz)

**Ordering Information**
- **WOP-3100T-C4AE**: 10.1" WSVGA, Cortex™-A8, 256MB DDR, WinCE 6.0
**Dimensions**

Panel Cut-out Dimensions: 260 x 201.5 mm (10.24" x 7.93")

**Accessories**
- PWR-247-BE: 63W DC 24V/2.62A Output Power Supply
- WOP-3000T-WMKE: WOP-3000T Series Wallmount Kits
- 1702002600: Power Cable US Plug 1.8 M
- 1702002605: Power Cable EU Plug 1.8 M
- 1702031801: Power Cable UK Plug 1.8 M
- 1700000596: Power Cable China/Australia Plug 1.8 M

**Automation Software**
- 968WEXP015E: PanelExpress V2.0 1500 tags S/W license (WinCE)
- 968WEXP050E: PanelExpress V2.0 5000 tags S/W license (WinCE)

**Base View**
- Ethernet
- USB Client
- COM1 (RS-232/422/485)
- Micro SD Slot

**Rear View**
- USB Host
- Mic In / Audio Out
- Isolation Power Input
- Isolation Terminal I/O Ports
Introduction

With brand-new ID design, the WebOP-3120T provides stringent standards required in the automation market. Advantech offers the WebOP-3120T with Cortex™-A8 processor which consumes minimum power without sacrificing performance. The WebOP-3000T supports a variety of LCD sizes from 4.3” to 12” for different applications involving the use of PLCs, motion/thermal controllers, inverters and sensors. It’s also provided with a wide operating temperature range to fulfill the requirements of harsh environments. The built-in Microsoft® WinCE 6.0 OS platform which bundles WebOP Designer lets the WebOP-3120T become a control HMI solution for flexible system integration.

Specifications

General
- Certification: CE, BSMI, CCC, UL-508, FCC Class A
- Dimensions (WxHxD): 311 x 237 x 46.8 mm (12.24” x 9.33” x 1.84”)
- Cut-out Dimensions: 302.5 x 228.5 mm (12.1” x 9.14”)
- OS Support: Microsoft® Windows CE 6.0
- Power Input: 24VDC ±10%
- Power Consumption: 12W
- Enclosure Housing: PC + ABS
- Mounting: Panel
- Weight (Net): 2.5 kg (5.51 lb)

System Hardware
- CPU: RISC 32 bits, 600 MHz (ARM® Cortex™-A8)
- Backup Memory: FRAM 1M bit (=128K Byte, 64word)
- Memory: DDR2 256M Bytes
- Storage: 512MB on board SLC type
- Power-On LED: Yes

Communication Interface
- COM1: RS-232/RS-422/RS-485 (DB9)
- COM2: RS-422/RS-485 (Terminal 4pin+Ground)
- COM3: RS-485 (Terminal 2pin)
- CAN: Terminal 2pin
- Ethernet (RJ45): 10/100-BaseT
- I/Os: USB Client, USB 2.0 Client x 1, USB Host, USB 2.0 Host x 1 (Top), Micro-SD Slot, Audio, Yes, 1 Line-out / 1 Mic-in

LCD Display
- Display Type: XGA TFT LCD
- Display Size: 12"
- Max. Resolution: 1024 x 768
- Max. Colors: 64K
- Luminance (cd/m²): 500
- Viewing Angle (H/V): 160/140
- Backlight Life: LED, 50,000 hrs
- Dimming: Adjustable by touch panel
- Contrast Ratio: 500:1

Touchscreen
- Lifespan: 36 million touches at 8mm-diameter finger point through silicone rubber bearing at least 250g 2 times per second.
- Light: Transmission Above 80%
- Resolution: Linearity
- Type: 5-wire, analog resistive

Environment
- Operating Temperature: -20 – 60°C (-4 – 140°F)
- Storage Temperature: -30 – 70°C (-22 – 158°F)
- Humidity: 10% – 90% RH @ 40°C, non-condensing
- Ingress Protection: Front panel: IP66
- Vibration Protection: Operating, random vibration 1 Gms (5 – 500 Hz)

Ordering Information
- WOP-3120T-C4AE: 12” XGA, Cortex™-A8, 256MB DDR, WinCE 6.0
**Dimensions**

Panel Cut-out Dimensions: 302.5 x 228.5 mm (12.1" x 9.14")

**Accessories**

- **PWR-247-BE**
  - 63W DC 24V/2.62A Output Power Supply

- **WOP-3000T-WMKE**
  - WOP-3000T Series Wallmount Kits

- **170202600**
  - Power Cable US Plug 1.8 M

- **170202605**
  - Power Cable EU Plug 1.8 M

- **1702031801**
  - Power Cable UK Plug 1.8 M

- **1700000596**
  - Power Cable China/Australia Plug 1.8 M

**Automation Software**

- **968WEXP01SE**
  - PanelExpress V2.0 1500 tags S/W license (WinCE)

- **968WEXP050E**
  - PanelExpress V2.0 5000 tags S/W license (WinCE)

**Rear View**

- USB Host
- Mic In / Audio Out
- Isolation Power Input
- Isolation Terminal I/O Ports
- Isolation Terminal I/O Ports

**Base View**

- Ethernet
- USB Client
- COM1 (RS-232/422/485)
- Micro SD Slot
- CAN/COM3/COM2
- Isolation Terminal I/O Ports

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# Introduction

To satisfy the stringent standards required in the automation market, especially packaging, label slitting, and motion-based robot dispensing, Advantech offers the WebOP-2000T series with 200MHz ARM9-based RISC CPU’s and 128MB flash memory for application software. The WebOP-2000T series also support a variety of LCD sizes from 4.3” to 10.1” for different applications involving the use of PLCs, motion/thermal controllers, inverters and sensors. The WebOP-2000T series is bundled with WebOP Designer: a software development kit which helps create application solutions for labor-saving, improved efficiency of manufacturing and easy control of every machine in the factory. WebOP Designer offers an outstanding price performance ratio for various markets such as conventional operator panels, HMI + Low mini SCADA systems, and HMI + communication gateways.

## Specifications

### General

- **Certification**: CE, BSMI, CCC, UL, FCC Class A
- **Dimensions (WxHxD)**: 130 x 106.2 x 36.4mm (5.11” x 4.18” x 1.43”)
- **Cut-out Dimensions**: 118.5 x 92.5mm (4.66” x 3.64”)
- **Front Panel Thickness**: 5mm
- **Operating System**: HMI RTOS, WebOP Designer
- **Power Supply Voltage**: 24VDC ±10%
- **Power Consumption**: 5W
- **Enclosure Housing**: Plastic
- **Mounting**: Panel
- **Weight (Net)**: 0.3 kg (0.66 lbs)

### System Hardware

- **CPU**: RISC 32bits, 200MHz
- **Battery Backup Memory**: 128KB
- **Flash Memory**: 8MB/ 8MB + 128M NAND flash
- **Power-On LED**: Yes
- **Communication LED**: No
- **Front USB Access**: No

### Communication Interface

- **COM1**: RS-232/422/485 (DB9 Female)
- **COM2**: RS-422/485 (5-Pin Plug Connector)
- **COM3**: RS-232 (Com1: Pin5, 7, 8)
- **Ethernet (RJ45)**: 10/100-BaseT (for N1AE model)
- **I/Os**: USB Client Yes, USB Host Yes, Micro-SD Slot Yes (for N1AE model)

## LCD Display and Touchscreen

- **Display Type**: WQVGA TFT LCD
- **Display Size**: 4.3”
- **Max. Resolution**: 480 x 272
- **Max. Colors**: 65,536 colors
- **Luminance (cd/m²)**: 400
- **Backlight Life**: LED, 20,000 hrs
- **Dimming**: Adjustable by touch panel
- **Touchscreen**: 4 wire analog resistive

### Environment

- **Operating Temperature**: 0 – 50°C (32 – 122°F)
- **Storage Temperature**: -20 – 60°C (-4 – 140°F)
- **Humidity**: 10 – 90% RH @ 40°C, non-condensing
- **Ingress Protection**: Front panel: IP66
- **Vibration Protection**: Operating, random vibration 1 Grms (5 – 500 Hz)

## Ordering Information

- **WOP-2040T-S1AE**: 4.3” WQVGA, 32MB (SDRAM), 8MB (NOR)
- **WOP-2040T-N1AE**: 4.3” WQVGA, 32MB (SDRAM), 8MB (NOR) & 128MB (NAND)
WebOP-2040T

**Dimensions**

Panel Cut-out Dimensions: 118.5 x 92.5 mm (4.66" x 3.64")

**Accessories**

- CWOP-P2HFM-AD12E: PC to HMI program download cable, DB9/2m
- CWOP-P2HAB-ADU2E: PC to HMI program download cable, USB/2m
- PWR-247-BE: 63W DC 24V/2.62A Output Power Supply
- 1702002600: Power Cable US Plug 1.8 M
- 1702002605: Power Cable EU Plug 1.8 M
- 1702031801: Power Cable UK Plug 1.8 M
- 1700000596: Power Cable China/Australia Plug 1.8 M

**Communication Links**

**Direct Link**

1-to-1 Connection

<table>
<thead>
<tr>
<th>WebOP</th>
<th>RS-232</th>
<th>PLC</th>
</tr>
</thead>
<tbody>
<tr>
<td>WebOP</td>
<td></td>
<td>PLC</td>
</tr>
<tr>
<td>WebOP</td>
<td>Ethernet</td>
<td>PLC</td>
</tr>
</tbody>
</table>

**In-Direct Link**

2-to-1 Connection

<table>
<thead>
<tr>
<th>WebOP</th>
<th>2-to-1 connection</th>
<th>PLC</th>
</tr>
</thead>
<tbody>
<tr>
<td>WebOP</td>
<td>2-to-1 connection</td>
<td>PLC</td>
</tr>
</tbody>
</table>

**Rear View**

- Ethernet
- Micro SD Slot
- COM1 (RS-232/422/485)
- USB Client
- USB Host
- COM2 (RS-422/485)
- Power Input
WebOP-2050T

5.6" QVGA Operator Panel with WebOP Designer Software

Introduction

To satisfy the stringent standards required in the automation market, especially packaging, label slitting, and motion-based robot dispensing, Advantech offers the WebOP-2000T series with 200MHz ARM9-based RISC CPU’s and 128MB flash memory for application software. The WebOP-2000T series also support a variety of LCD sizes from 4.3" to 10.1" for different applications involving the use of PLCs, motion/thermal controllers, inverters and sensors. The WebOP-2000T series is bundled with WebOP Designer: a software development kit which helps create application solutions for labor-saving, improved efficiency of manufacturing and easy control of every machine in the factory. WebOP Designer offers an outstanding price performance ratio for various markets such as conventional operator panels, HMI + Low mini SCADA systems, and HMI + communication gateways.

Specifications

General

- Certification: CE, BSMI, CCC, UL, FCC Class A
- Dimensions (WxHxD): 188 x 143.3 x 30 mm (7.4" x 5.64" x 1.18")
- Cut-out Dimensions: 175 x 132.5 mm (6.89" x 5.21")
- Front Panel Thickness: 6mm
- Operating System: HMI RTOS, WebOP Designer
- Power Supply Voltage: 24VDC ±10%
- Power Consumption: 10W
- Enclosure Housing: Plastic
- Mounting: Panel
- Weight (Net): 0.51 kg (1.12 lbs)

System Hardware

- CPU: RISC 32bits, 200MHz
- Battery Backup Memory: 128KB
- Flash Memory: 8MB + 128M NAND flash
- Power-On LED: Yes
- Communication LED: No
- Front USB Access: No

Communication Interface

- COM1: RS-232/422/485 (DB9 Female)
- COM2: RS-422/485 (5-Pin Plug Connector)
- COM3: RS-232 (Com1: Pin5,7,8)
- Ethernet (RJ45): None
- I/Os: USB Client: Yes, USB Host: Yes, Micro-SD Slot: Yes

Features

- Various LCD sizes (4.3", 5.6", 7", 8", 10.1")
- Supports ARM9-based CPUs with 200MHz and 128MB flash memory
- Supports RTC, battery backup RAM, and Ethernet-based operator panels
- Supports runtime data downloads through Serial, Ethernet, USB
- Supports adjustable brightness controls via touch panel
- Reliable firmware for 24/7 operation
- Supports Windows XP/Vista-based WebOP Designer development tool
- Easy to switch one application to different LCD sizes in seconds
- Supports vertical and horizontal application screen rotation
- Supports over 400 PLC industrial communication protocols
- Communicates with up to four types of devices
- Panel mounting for machinery
- Front panel is IP66 compliant

LCD Display and Touchscreen

- Display Type: QVGA TFT LCD
- Display Size: 5.6"
- Max. Resolution: 320 x 234
- Max. Colors: 65,536 colors
- Luminance (cd/m²): 330
- Backlight Life: LED, 20,000 hrs
- Dimming: Adjustable by touch panel
- Touchscreen: 4 wire analog resistive

Environment

- Operating Temperature: 0 – 50°C (32 – 122°F)
- Storage Temperature: -20 – 60°C (-4 – 140°F)
- Humidity: 10 – 90% RH @ 40°C, non-condensing
- Ingress Protection: Front panel: IP66
- Vibration Protection: Operating, radom vibration 1 Grms (5 – 500 Hz)

Ordering Information

- WOP-2050T-S1AE: 5.6" QVGA, 32 MB (SDRAM), 8MB (NOR) & 128MB (NAND)
Dimensions

Panel Cut-out Dimensions: 175 x 132.5mm (6.89" x 5.21")

Accessories
- CWOP-P2HFM-AD12E PC to HMI program download cable, DB9/2m
- CWOP-P2HAB-ADU2E PC to HMI program download cable, USB/2m
- PWR-247-6E 63W DC 24V/2 62A Output Power Supply
- 1702000510 Power Cable US Plug 1.8 M
- 1702002605 Power Cable AU Plug 1.8 M
- 1702011601 Power Cable UK Plug 1.8 M
- 1700000506 Power Cable China/Australia Plug 1.8 M

Communication Links

Rear View

Communication Links

Direct Link
1-to-1 Connection

1-to-N Connection

N-to-1 Data Sharing Connection

In-Direct Link
2-to-1 Connection

N-to-1 Connection

2-to-1 Transparent Connection
WebOP-2070T 7” WVGA Operator Panel with WebOP Designer Software

Introduction
To satisfy the stringent standards required in the automation market, especially packaging, label slitting, and motion-based robot dispensing, Advantech offers the WebOP-2000T series with 200MHz ARM9-based RISC CPU’s and 128MB flash memory for application software. The WebOP-2000T series also support a variety of LCD sizes from 4.3” to 10.1” for different applications involving the use of PLCs, motion/thermal controllers, inverters and sensors. The WebOP-2000T series is bundled with WebOP Designer: a software development kit which helps create application solutions for labor-saving, improved efficiency of manufacturing and easy control of every machine in the factory. WebOP Designer offers an outstanding price performance ratio for various markets such as conventional operator panels, HMI + Low mini SCADA systems, and HMI + communication gateways.

Specifications

<table>
<thead>
<tr>
<th>General</th>
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<tr>
<td>Certification</td>
<td>CE, BSMI, CCC, UL, FCC Class A</td>
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<tr>
<td>Dimensions (WxHxD)</td>
<td>188 x 143.3 x 30 mm (7.4” x 5.64” x 1.18”)</td>
</tr>
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<td>Cut-out Dimensions</td>
<td>175 x 132.5 mm (6.89” x 5.21”)</td>
</tr>
<tr>
<td>Front Panel Thickness</td>
<td>6mm</td>
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<tr>
<td>Operating System</td>
<td>HMI RTOS, WebOP Designer</td>
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<tr>
<td>Power Supply Voltage</td>
<td>24VDC ±10%</td>
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<tr>
<td>Power Consumption</td>
<td>10W</td>
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<tr>
<td>Enclosure Housing</td>
<td>Plastic</td>
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<tr>
<td>Mounting</td>
<td>Panel</td>
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<td>Weight (Net)</td>
<td>0.6 kg (1.32 lbs)</td>
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</table>

<table>
<thead>
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<th>System Hardware</th>
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<tbody>
<tr>
<td>CPU</td>
<td>RISC 32 bits, 200 MHz</td>
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<tr>
<td>Battery Backup Memory</td>
<td>128KB</td>
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<tr>
<td>Flash Memory</td>
<td>8MB/ 8MB + 128M NAND flash</td>
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<tr>
<td>Power-On LED</td>
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<td>Communication LED</td>
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<td>Front USB Access</td>
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<table>
<thead>
<tr>
<th>Communication Interface</th>
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<tbody>
<tr>
<td>COM1</td>
<td>RS-232/422/485 (DB9 Female)</td>
</tr>
<tr>
<td>COM2</td>
<td>RS-422/485 (5-Pin Plug Connector)</td>
</tr>
<tr>
<td>COM3</td>
<td>RS-232 (Com1: Pin5,7,8)</td>
</tr>
<tr>
<td>Ethernet (RJ45)</td>
<td>10/100-BaseT (for N2AE model)</td>
</tr>
<tr>
<td>I/Os</td>
<td>USB Client Yes, USB Host Yes, Micro-SD Slot Yes (for N2AE model)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LCD Display and Touchscreen</th>
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</thead>
<tbody>
<tr>
<td>Display Type</td>
<td>WVGA TFT LCD</td>
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<tr>
<td>Display Size</td>
<td>7”</td>
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<tr>
<td>Max. Resolution</td>
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<tr>
<td>Max. Colors</td>
<td>65,536 colors</td>
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<td>Luminance (cd/m²)</td>
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<tr>
<td>Backlight Life</td>
<td>LED, 20,000 hrs</td>
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<tr>
<td>Dimming</td>
<td>Adjustable by touch panel</td>
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<tr>
<td>Touchscreen</td>
<td>4 wire analog resistive</td>
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</table>

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<thead>
<tr>
<th>Environment</th>
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<tbody>
<tr>
<td>Operating Temperature</td>
<td>0 – 50°C (32 – 122°F)</td>
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<tr>
<td>Storage Temperature</td>
<td>-20 – 60°C (-4 – 140°F)</td>
</tr>
<tr>
<td>Humidity</td>
<td>10 – 90% RH @ 40°C, non-condensing</td>
</tr>
<tr>
<td>Ingress Protection</td>
<td>Front panel: IP66</td>
</tr>
<tr>
<td>Vibration Protection</td>
<td>Operating, random vibration 1 Grms (5 – 500 Hz)</td>
</tr>
</tbody>
</table>

Ordering Information

- WOP-2070T-S2AE 7” WVGA, 64MB (SDRAM), 8MB (NOR)
- WOP-2070T-N2AE 7” WVGA, 64MB (SDRAM), 8MB (NOR) & 128MB (NAND)
### Dimensions

Panel Cut Out Dimensions: 175 x 132.5 mm (6.89" x 5.21")

### Accessories
- **CWOP-P2HFM-AD12E** PC to HMI program download cable, DB9/2m
- **CWOP-P2HAB-ADU2E** PC to HMI program download cable, USB/2m
- **PWR-247-BE** 63W DC 24V/2.62A Output Power Supply
- **1702002600** Power Cable US Plug 1.8 M
- **1702002605** Power Cable EU Plug 1.8 M
- **1702031801** Power Cable UK Plug 1.8 M
- **1700000596** Power Cable China/ Australia Plug 1.8 M

### Communication Links

#### Direct Link
- **1-to-1 Connection**
  - WebOP
  - RS-232
  - PLC
  - WebOP
  - Ethernet

#### In-Direct Link
- **2-to-1 Connection**
  - WebOP
  - 2-to-1 selector
  - 2-to-1 master
  - Direct link

#### 1-to-N Connection
- **WebOP**
- **RS-485**
- **PLC**

#### N-to-1 Data Sharing Connection
- **WebOP**
- **PLC**
- **RS-332 / Ethernet**

#### N-to-1 Connection
- **WebOP**
- **PLC**
- **Direct link via N-to-1 connection (Ethernet)**

#### 2-to-1 Transparent Connection
- **WebOP**
- **PLC**
- **2-to-1 Transparent Server**
- **2-to-1 Transparent Client**

### Rear View

- **USB Host**
- **COM2 (RS-422/485)**
- **Power Input**
- **COM1 (RS-232/422/485)**
- **Ethernet**
- **USB Client**
- **Micro SD Slot**
Intelligent Operator Panels

WebOP-2080T

8” SVGA Operator Panel with WebOP Designer Software

Introduction

To satisfy the stringent standards required in the automation market, especially packaging, label slitting, and motion-based robot dispensing, Advantech offers the WebOP-2000T series with 200MHz ARM9-based RISC CPU’s and 128MB flash memory for application software. The WebOP-2000T series also supports a variety of LCD sizes from 4.3” to 10.1” for different applications involving the use of PLCs, motion/thermal controllers, inverters and sensors. The WebOP-2000T series is bundled with WebOP Designer: a software development kit which helps create application solutions for labor-saving, improved efficiency of manufacturing and easy control of every machine in the factory. WebOP Designer offers an outstanding price performance ratio for various markets such as conventional operator panels, HMI + Low mini SCADA systems, and HMI + communication gateways.

Specifications

General
- Certification: CE, BSMI, CCC, UL, FCC Class A
- Dimensions (WxHxD): 231.5 x 174.6 x 37 mm (9.11” x 6.87” x 1.46”)
- Cut-out Dimensions: 221 x 164 mm (8.70” x 6.46”)
- Front Panel Thickness: 6 mm
- Operating System: HMI RTOS, WebOP Designer
- Power Supply Voltage: 24VDC ±10%
- Power Consumption: 10W
- Enclosure Housing: Plastic
- Mounting: Panel
- Weight (Net): 0.93 kg (2.05 lbs)

System Hardware
- CPU: RISC 32bits, 200MHz
- Battery Backup Memory: 128KB
- Flash Memory: 8MB/8MB + 128M NAND flash
- Power-On LED: Yes
- Communication LED: No
- Front USB Access: No

Communication Interface
- COM1: RS-232/422/485 (DB9 Female)
- COM2: RS-422/485 (5-Pin Plug Connector)
- COM3: RS-232 (Com1: Pins 5, 7, 8)
- Ethernet (RJ45): 10/100-BaseT (for N2AE model)
- I/Os: USB Client Yes, USB Host Yes, Micro-SD Slot Yes (for N2AE model)

Ordering Information
- WOP-2080T-S2AE: 8” SVGA, 64MB (SDRAM), 8MB (NOR)
- WOP-2080T-N2AE: 8” SVGA, 64MB (SDRAM), 8MB (NOR) & 128MB (NAND)

Features
- Various LCD sizes (4.3”, 5.6”, 7”, 8”, 10.1”)
- Supports ARM9-based CPUs with 200MHz and 128MB flash memory
- Supports RTC, battery backup RAM, and Ethernet-based operator panels
- Supports runtime data downloads through Serial, Ethernet, USB
- Supports adjustable brightness controls via touch panel
- Reliable firmware for 24/7 operation
- Supports Windows XP/7/Vista-based WebOP Designer development tool
- Easy to switch one application to different LCD sizes in seconds
- Supports vertical and horizontal application screen rotation
- Supports over 400 PLC industrial communication protocols
- Communicates with up to four types of devices
- Panel mounting for machinery
- Front panel is IP66 compliant

LCD Display and Touchscreen
- Display Type: SVGA TFT LCD
- Display Size: 8”
- Max. Resolution: 800 x 600
- Max. Colors: 65,536 colors
- Luminance (cd/m²): 250
- Backlight Life: LED, 30,000 hrs
- Dimming: Adjustable by touch panel
- Touchscreen: 4 wire analog resistive

Environment
- Operating Temperature: 0 – 50°C (32 – 122°F)
- Storage Temperature: -20 – 60°C (-4 – 140°F)
- Humidity: 10 – 90% RH @ 40°C, non-condensing
- Ingress Protection: Front panel: IP66
- Vibration Protection: Operating, random vibration 1Gms (5 – 500 Hz)
Dimensions

Panel Cut-out Dimensions: 221 x 164 mm (8.70" x 6.46")

Accessories
- CWOP-P2HFM-AD12E: PC to HMI program download cable, DB9/2m
- CWOP-P2HAB-ADU2E: PC to HMI program download cable, USB/2m
- PWR-247-BE: 63W DC 24V/2.62A Output Power Supply
- 1702002600: Power Cable US Plug 1.8 M
- 1702002605: Power Cable EU Plug 1.8 M
- 1702031801: Power Cable UK Plug 1.8 M
- 1700000596: Power Cable China/Australia Plug 1.8 M

Communication Links

Direct Link
1-to-1 Connection

1-to-N Connection

N-to-1 Data Sharing Connection

In-Direct Link
2-to-1 Connection

N-to-1 Connection

2-to-1 Transparent Connection
WebOP-2100T

10.1 WSVGA Operator Panel with WebOP Designer Software

Features
- Various LCD sizes (4.3", 5.6", 7", 8", 10.1")
- Supports ARM9-based CPUs with 200MHz and 128MB flash memory
- Supports RTC, battery backup RAM, and Ethernet-based operator panels
- Supports runtime data downloads through Serial, Ethernet, USB
- Supports adjustable brightness controls via touch panel
- Reliable firmware for 24/7 operation
- Supports Windows XP/Vista-based WebOP Designer development tool
- Easy to switch one application to different LCD sizes in seconds
- Supports vertical and horizontal application screen rotation
- Supports over 400 PLC industrial communication protocols
- Communicates with up to four types of devices
- Panel mounting for machinery
- Front panel is IP66 compliant

Introduction
To satisfy the stringent standards required in the automation market, especially packaging, label slitting, and motion-based robot dispensing, Advantech offers the WebOP-2000T series with 200MHz ARM9-based RISC CPU’s and 128MB flash memory for application software. The WebOP-2000T series also support a variety of LCD sizes from 4.3” to 10.1” for different applications involving the use of PLCs, motion/thermal controllers, inverters and sensors. The WebOP-2000T series is bundled with WebOP Designer: a software development kit which helps create application solutions for labor-saving, improved efficiency of manufacturing and easy control of every machine in the factory. WebOP Designer offers an outstanding price performance ratio for various markets such as conventional operator panels, HMI + Low mini SCADA systems, and HMI + communication gateways.

Specifications

General
- Certification: CE, BSMI, CCC, UL, FCC Class A
- Dimensions (WxTxD): 269.8 x 212 x 37.4mm (10.62” x 8.35” x 1.47”)
- Cut-out Dimensions: 259.5 x 201.5 mm (10.22” x 7.93”)
- Front Panel Thickness: 6mm
- Operating System: HMI RTOS, WebOP Designer
- Power Supply Voltage: 24VDC ±10%
- Power Consumption: 10W
- Enclosure Housing: Plastic
- Mounting: Panel
- Weight (Net): 1.2 kg (2.64 lbs)

System Hardware
- CPU: RISC 32bits, 200MHz
- Battery Backup Memory: 128KB
- Flash Memory: 8MB/8MB + 128M NAND flash
- Power-On LED: Yes
- Communication LED: No
- Front USB Access: No

Communication Interface
- COM1: RS-232/422/485 (DB9 Female)
- COM2: RS-422/485 (5-Pin Plug Connector)
- COM3: RS-232 (Com1: Pins 5, 7, 8)
- Ethernet (RJ45): 10/100 BASE-T (for N2AE model)
- I/Os: USB Client: Yes
- USB Host: Yes
- Micro-SD Slot: Yes (for N2AE model)

LCD Display and Touchscreen
- Display Type: WSVGA TFT LCD
- Display Size: 10.1"
- Max. Resolution: 1024 x 600
- Max. Colors: 65,536 colors
- Luminance (cd/m²): 250
- Backlight Life: LED, 20,000 hrs
- Dimming: Adjustable by touch panel
- Touchscreen: 4 wire analog resistive

Environment
- Operating Temperature: 0 – 50°C (32 – 122°F)
- Storage Temperature: -20 – 60°C (-4 – 140°F)
- Humidity: 10 – 90% RH @ 40°C, non-condensing
- Ingress Protection: Front panel: IP66
- Vibration Protection: Operating, random vibration 1 Grms (5 – 500 Hz)

Ordering Information
- WOP-2100T-S2AE: 10.1” WSVGA, 64MB (SDRAM), 8MB (NOR)
- WOP-2100T-N2AE: 10.1” WSVGA, 64MB (SDRAM), 8MB (NOR) & 128MB (NAND)
**Dimensions**

![Diagram showing dimensions of WebOP-2100T]

Panel Cut-out Dimensions: 259.5 x 201.5 mm (10.22" x 7.93")

**Accessories**

- CWOP-P2HFM-AD12E: PC to HMI program download cable, DB9/2m
- CWOP-P2HAB-ADU2E: PC to HMI program download cable, USB/2m
- PWR-247-BE: 63W DC 24V/2.62A Output Power Supply
- 170202600: Power Cable US Plug 1.8 M
- 170202605: Power Cable EU Plug 1.8 M
- 1702031801: Power Cable UK Plug 1.8 M
- 1700000596: Power Cable China/Australia Plug 1.8 M

**Communication Links**

- **Direct Link**
  - 1-to-1 Connection
  
- **In-Direct Link**
  - 2-to-1 Connection

- **1-to-N Connection**
  - RS-485

- **N-to-1 Data Sharing Connection**
  - Serial Link via N-to-1 connection (Ethernet)

- **2-to-1 Transparent Connection**
  - PC 2-to-1 Transparent Server WebOP

**Rear View**

- USB Host
- COM2 (RS-422/485)
- Ethernet
- USB Client Micro SD Slot
- Power Input COM1 (RS-232/422/485)
## Introduction
To satisfy the stringent standards required in the automation market, especially packaging, label slitting, and motion-based robot dispensing, Advantech offers the WebOP-2000V series which are designed with ARM9-based RISC CPU with 70~200MHz and 4~16MB flash memory for application software. The WebOP-2000V series also support a variety of LCD size from 3.5” to 12.1” for different applications involving the use of PLCs, motion/thermal controllers, inverters and sensors. WebOP Designer is a software development kit which helps create application solutions for labor-saving, improved efficiency of manufacturing and easy control of every machine in the factory. The WebOP-2000V series is bundled with WebOP Designer offering an outstanding price performance ratio for various markets such as conventional operator panels, HMI + Low mini SCADA systems, and HMI + communication gateways.

## Specifications

### General
- **Certification**: CE, BSMI, CCC, UL, FCC Class A
- **Dimensions (WxHxD)**: 315 x 241 x 54.5 mm (12.4” x 9.48” x 2.14”)
- **Cut-out Dimensions**: 301.5 x 228 mm (11.87” x 8.97”)
- **Front Panel Thickness**: 6mm
- **Operating System**: HMI RTOS, WebOP Designer
- **Power Supply Voltage**: 24VDC ±10%
- **Power Consumption**: 25W
- **Enclosure Housing**: Plastic
- **Mounting**: Panel
- **Weight (Net)**: 1.55 kg (3.41 lbs)

### System Hardware
- **CPU**: RISC 32bits, 200MHz
- **Battery Backup Memory**: 128KB
- **Flash Memory**: 16MB
- **Power-On LED**: Yes
- **Communication LED**: COM1, COM2 and COM3
- **Front USB Access**: No

### Communication Interface
- **COM1**: RS-232/422/485 (DB9 Female)
- **COM2**: RS-232/422/485 (DB9 Male & 5-Pin Plug Connector)
- **COM3**: RS-232 (6-Pin Plug Connector)
- **Ethernet (RJ45)**: 10/100-BaseT
- **I/Os**: USB Client No, USB Host Yes, Micro-SD Slot No

### LCD Display and Touchscreen
- **Display Type**: SVGA TFT LCD
- **Display Size**: 12.1”
- **Max. Resolution**: 800 x 600
- **Max. Colors**: 65,536 colors
- **Luminance (cd/m²)**: 350
- **Backlight Life**: CCFL, 30,000 hours
- **Dimming**: Adjustable by touch panel
- **Touchscreen**: 8 wire analog resistive

### Environment
- **Operating Temperature**: 0 ~ 50°C (32 ~ 122°F)
- **Storage Temperature**: -20 ~ 60°C (-4 ~ 140°F)
- **Humidity**: 10 ~ 95% RH @ 40°C, non-condensing
- **Ingress Protection**: Front panel: IP65
- **Vibration Protection**: Operating, random vibration 1 Grms (5 ~ 500 Hz)

### Ordering Information
- **WOP-2121V-N4AE**: 12.1” SVGA, 16MB, RS-232/422/485, Ethernet
WebOP-2121V

Dimensions

Panel Cut-out Dimensions: 301.5 x 228 mm (11.87” x 8.97”)

Accessories

- CWOP-P2HFM-AD12E  PC to HMI program download cable, DB9/2m
- CWOP-P2HAB-ADU2E  PC to HMI program download cable, USB/2m
- PWR-247-BE  63W DC 24V/2.62A Output Power Supply
- 1702002600  Power Cable US Plug 1.8 M
- 1702002605  Power Cable EU Plug 1.8 M
- 1702031801  Power Cable UK Plug 1.8 M
- 1700000596  Power Cable China/Australia Plug 1.8 M

Rear View

Communication Links

Direct Link
1-to-1 Connection

1-to-N Connection

N-to-1 Data Sharing Connection

In-Direct Link
2-to-1 Connection

N-to-1 Connection

2-to-1 Transparent Connection
Supported PLC
Controllers
Brand
A&D Company Ltd.
ABIDO Automation Co., Ltd.

Model
AD-4401 Weighing Indicator
ACR420 984 Device/Slave (RTU)
MS/AP/AS Series Inverter (RTU)
ADLEE POWERTRONIC CO., LTD.
BL/D305 Series (RTU)
Null PLC
Advantech
ADAM (Modbus RTU)
ADAM-4000 (ASCII)
AIGO Technologies Corporation
SE500 Series (Modbus RTU)
Micrologix 1000/1500
SLC 5/03, 5/04
Allen Bradley
DH-485 (COM)
PLC-5
SLC 5/03, 5/04 (CRC)
ARICO Technology
FC Type(Modbus)
Modbus Master (RTU)
Modbus Device/Slave (RTU)
Astraada HMI
Modicon Device/Slave (RTU, Quantum)
Modbus Master (RTU; Non-volatile slave data)
Automation Technology Co., Ltd.
BLDC NLV/KLV Series
Banner Engineering Int'l Inc.
BSP01 Series
Bosch Rexroth Group
Convo CVF-MN3 (RS485 Model)
CAPAC
TC
CHINO Corporation
DB1000 Digital Indicating Controller (ASCII)
NF0 Controllers
FCT Controllers
CMZ Sistemi Elettronici
SD Drivers
SDS Drivers
MDM Drivers
CTB Technologies Corporation
IMS Servo Controller
Danfoss Group
VLT 2800 Series (FC Protocol)
Modbus RTU (COM port)
DEIF A/S
WSS/WSS-L
DVP-ES/SS/EP/EH
DVP-ES/SS/EP/EH (No block read)
VFD-M Inverter (ASCII)
VFD-B Inverter (ASCII)
Delta Corporation
DTC1000/2000 Temperature (ASCII)
ASDA-A Servo Controller (ASCII)
ASDA-B Servo Controller (ASCII)
ASDA-A2 Servo Controller (ASCII)
DRS2000 Series Inverter
Dirise Electric Technology Co.,Ltd.
DRS2800 M Series Inverter
EC Series (RTU)
Emerson Network Power
EV1000 Series Variable Speed Driver
Epson Corporate
Epson LQ Matrix Printer
Eura EF1S/1N
Eura EF2N
Eura Inverter (Modbus RTU)
Eura Inverter ( Modbus ASCII )
Eura EF200-CPU202(Modbus RTU)
Eura EF200-CPU202XP/CPU204(Modbus RTU)
Eura EF200-CPU204XP/CPU206(Modbus RTU)
Eura EF300-CPU304(Modbus RTU)
Eura Drivers Electric Corp.
Eura EF300-CPU306(Modbus RTU)
Eura Servo Drive ( Modbus RTU )
Eura Servo Drive ( Modbus ASCII )
Eura HFR1000 ( Modbus RTU )
Eura HFR1000 ( Modbus ASCII )
Eura HFR2000 ( Modbus RTU )
Eura HFR2000 ( Modbus ASCII )
Fatek Automation Corp.
FATEK FBs/FBe
Festo Corporation
FPC/FEC Series
NB Series
PXR Series Temperature (RTU)
Fuji Electric Corporation
FRENIC-VP (RTU)
FRENIC5000G11/P11 (Fuji)
FRENIC-Mini/Eco/Multi/Mega(RTU)
FVK Automation Co., Ltd.
F Series Inverter
90 Series SNP
VersaMax Series (SNP)
GE Corporation
90 and RX3i Series (SNP)
90 Series CCM
SE5000
Gigarise Technology Co., Ltd.
GA400 Temperature (RTU)
GOFAST Corporation
NC Series
Haiwell Technology Co., Ltd
HW Series (RTU)
Hanbell Precise Machinery
Air Screw Compressor
Co., Ltd.

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IntelligentPanels
Operator
Operator Panels

Driver
CAD401
C2C032
CAPINV
CAPIPM
C00000
C2C031
CM4000
C87001
C10001
C10002
C10003
C10005
C10006
Carfc01
C2C021
C2C031
C2C081
C2C121
CAK200
C51011
C49001
CCAP01
CCDB1k
CCMZ051
CCMZ151
CCMZ251
CCMZ351
CCMZ451
CAA001
CDAVLT
C2C082
CDEI01
C16001
C16001
C16011
C16021
C16031
C16041
C16051
C16061
C15101
CFDSR01
C81001
C81011
CEPSON0
C2B001
C2B041
C5A003
C5A004
C5A005
C5A006
C5A007
C5A007
C5A007
C5A00A
C5A00B
C5A00C
C5A00D
C5A00E
C5A00F
C1A001
C1C001
C1D001
C1D011
C1D021
C1D031
C1D051
CFDSR01
C1E001
C1E001
C1E001
C1E011
C87002
C90012
C42001
CHW001
CHANASC

Communication Port (COM)
Brand
Hitachi Industrial Equipment
Systems Co., Ltd

Hitech
HOLIP ELECTRONIC
TECHNOLOGY CO., LTD
Honeywell
Hunjoen Electronic Co., Ltd.
HUST Automation Inc.
Idec Corporation
IECCO
Inovance Control Technology
Co., Ltd.
Integrated Flow Systems
Invt Auto-Control Technology
JETTER
Joint Peer Systec Corp.

Keyence Corp.
Kinco Automation Ltd.
Klockner Moeller Corporation
Koyo Electric Corp.
Lenze Drive Systems GmbH

LG Industrial Systems

LG System
Liyan Electric Industrial Ltd.
Lust Antriebstechnik GmbH
Matsushita Electric Works
Maxtech
Maxthermo
Mean Well Enterprises Co., Ltd.
Megmeet
Micro Trend Corporation
MIKOM ELECTRICAL
TECHNOLOGY
Mirle Automation Corporation

Mitsubishi Electric Corp.

Model
SJ200 Inverter
H/EH Series
EHV Series (Procedure 1)
H-252C
AD Series Servo Drives
Computer as Slave (COM)
Computer as Master (COM)
Computer as Slave V2 (COM)
Computer as Master V2 (COM)

Driver
C1F001
C1F020
C1F021
C1F022
CHA04LS
C02001
C02011
C02021
C02031

HLP-C+/CP

CHLP01

BACnet/MSTP
BACnet
Modbus Device/Slave (RTU, 255)
Modbus Device/Slave (RTU, 255, NoBlock)
H_Tech PID CONTROLLER
CNC Controller
FC Series
Sinus Penta Inverter (RTU)
H2u (CPU Port)
MD Series Inverter (RTU)
MD Series Inverter (RTU-1)
IS Servo (RTU)
iPurge Source Controller
IVC Series
NANO Series
JetControl 24x Series
IRIS Series
JUPITER Series
PDAN Series
PDS Series
KV Series
KV-1000
KV-L20V
KV-3000
Kinco ED Series
PS4-201-MM1
SUCONET K
K Sequence Series
Direct Logic Series
Direct 06 Series (K Sequence)
Direct 06 Series (DirectNET)
93xx Servo Controllers (LECOM A/B)
Master-K Series CNet
K120S CPU Port
Master-K Loader
GLOFA GM Series CNet
XBM-DR16S
GLOFA GM Loader
XEC/XGI CNet
XGT/XGK (CPU)
XGL-C22A
LGA Series(as Slave)
LGA Series (as Master)
EX Series (CPU Port)
LustBus ServoC/CDE Series
LustBus CDD Series
FP Series Computer Link
VF0C Series Inverter
VF100 Series Inverter
MC2 PID Controller
MC 5738 (RTU)
PRETA
MC Series (RTU)
UTC Servo Controller

cbacmst
cbacnet
CHON01
CHON01
Chtech1
CHCNC01
C22001
Ciecco
C2B041
C2C051
C2C051
C2C051
CIF001
C81003
C24001
C24011
C2C031
C2C031
C2C031
C2C031
C25001
C25011
C25021
C25031
CKIN01
C26001
CSUK01
C27001
C27011
C27021
C27031
CLZ001
C28001
C28011
C28011
C28021
C28031
C28041
C28051
C28061
C28071
CLGLGA
CLGLGB
C2B141
Clust1
Clust1
C29001
C29011
C29011
C85001
C86001
CMSMTN
C81002
C91001

MX Series PLC

CMIK01

nDX Controller
Melsec-FX (CPU Port)
Melsec-Q/QnA (Link Port)
Melsec-Q00/01 (CPU Port)
Melsec-Q02H (CPU Port)
Melsec-Q02 (CPU Port)
Melsec-Q02U (CPU Port)
Melsec-Q00J (CPU Port)
Melsec-FX2n (CPU Port)
Melsec-FX3U (CPU Port)
Melsec-FX3U (Link Port)
Melsec-AnN/AnS (Link Port)

C2A001
C2B001
C2B011
C2B012
C2B021
C2B022
C2B191
C2B031
C2B041
C2B051
C2B052
C2B061


# Communication Ports (COM)

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<th>Driver</th>
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[Note: This is a partial listing of communication ports (COM) for various brands and models. The complete list is extensive and not fully transcribed here.]
## Supported PLC Controllers

### Communication Port (Ethernet)

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<th>Brand</th>
<th>Model</th>
<th>Driver</th>
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<td>Advantech</td>
<td>ADAM-6000 (Modbus TCP/IP)</td>
<td>CM6M00</td>
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<td>Allen Bradley</td>
<td>MicroLogic 1000/1500 via 1761-NET-EN</td>
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<td>CompactLogix/ControlLogix Ethernet/IP Tag</td>
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<td>Astraada HMI</td>
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<td>ModBus Device/Slave (TCP/IP; Type 2)</td>
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<td>ModBus Device/Slave (TCP/IP; Type 2)</td>
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<td>FCT Controllers/TCP/IP; Type 2</td>
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<td>DEIF A/S</td>
<td>TCP/IP Modbus Ethernet port</td>
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<td>Fafeik Automation Corp.</td>
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<td>Fama SoftPLC Ethernet</td>
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<td>Sysmac CS/CJ Series FINS/TCP</td>
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<td>N-to-1 Slave (Ethernet)</td>
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<td>Data Sharer (UDP)</td>
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<td>Saia Burgess</td>
<td>PCD Series (Ether-S-Bus)</td>
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<td>Simatic S7-300 Ethernet Module (CP343)</td>
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<td>SIMATIC S7 (Ethernet)</td>
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<td>TPM</td>
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<td>N-to-1 Master (Ethernet)</td>
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<td>N-to-1 Slave (Ethernet)</td>
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<td>WAGO-I/O-SYSTEM 750</td>
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<td>Yaskawa Corporation</td>
<td>ModBus Device/Slave (TCP/IP)</td>
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<td>Extended MEMORBUS</td>
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<td>Yokogawa Electric Corporation</td>
<td>FA-M3 Series (UDP)</td>
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<td>FA-M3 Series (TCP)</td>
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### Note:
- * The listing brand names are in alphabetical order.
- * Driver Programs may be updated at any time, please contact with your Advantech representative at any time to confirm latest information.

### Key Features:
- * High-performance discrete drive to support high data acquisition.
- * The Communication speed of Simatic S7-300 (MPI port) can reach 187.5 kbps without adapter.
## Automation Panel PCs

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| Embedded Panel Computers with Expansion Selection Guide | 6-3 |
| Embedded Panel Computers Selection Guide | 6-4 |
| Domain-focus Platform Selection Guide | 6-5 |

### Wide Screen Panel Computers

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPC-1881WP</td>
<td>18.5” HD TFT LED LCD Intel® 4th Generation Core i3/i7 Multi-Touch Panel Computer</td>
</tr>
<tr>
<td>TPC-1581WP</td>
<td>15.6” HD TFT LED LCD Intel® 4th Generation Core i3 Multi-Touch Panel Computer</td>
</tr>
<tr>
<td>TPC-2140WP</td>
<td>21.5” Full HD TFT LED LCD Touch Panel Computer with AMD Dual-core processor</td>
</tr>
<tr>
<td>TPC-1840WP</td>
<td>18.5” WXGA TFT LED LCD Multi-Touch Panel Computer with AMD Dual-core processor</td>
</tr>
<tr>
<td>SPC-2140WP</td>
<td>21.5” Full HD TFT LED LCD stationary Multi-Touch Panel Computer with AMD dual-core processor</td>
</tr>
<tr>
<td>SPC-1840WP</td>
<td>18.5” WXGA TFT LED LCD stationary Multi-Touch Panel Computer with AMD dual-core processor</td>
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### Embedded Panel Computers with Expansion

<table>
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<tr>
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<tbody>
<tr>
<td>TPC-1782H</td>
<td>17” SXGA TFT LED LCD Intel® 4th Generation Core i3 Touch Panel Computer</td>
</tr>
<tr>
<td>TPC-1582H</td>
<td>15” XGA TFT LED LCD Intel® 4th Generation Core i3 Touch Panel Computer</td>
</tr>
<tr>
<td>TPC-1771H</td>
<td>17” SXGA TFT LED LCD Intel® Atom™ Dual-Core D525 Touch Panel Computer</td>
</tr>
<tr>
<td>TPC-1571H</td>
<td>15” XGA TFT LED LCD Intel® Atom™ Dual-Core D525 Touch Panel Computer</td>
</tr>
<tr>
<td>TPC-1271H</td>
<td>12.1” SVGA TFT LED LCD Intel® Atom™ Dual-Core D525 Touch Panel Computer</td>
</tr>
<tr>
<td>TPC-1071H</td>
<td>10.4” SVGA TFT LED LCD Intel® Atom™ Dual-Core D525 Touch Panel Computer</td>
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### Embedded Panel Computers

<table>
<thead>
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<th>Model</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>TPC-1551T</td>
<td>15” XGA TFT LED LCD Intel® Atom™ Thin Client Terminals</td>
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<tr>
<td>TPC-1251T</td>
<td>12.1” TFT LED LCD Intel® Atom™ Thin Client Terminals</td>
</tr>
<tr>
<td>TPC-1750H</td>
<td>17” SXGA TFT LED LCD Intel® Atom™ Thin Client Terminals</td>
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<tr>
<td>TPC-1550H</td>
<td>15” XGA TFT LED LCD Intel® Atom™ Thin Client Terminals</td>
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<tr>
<td>TPC-1250H</td>
<td>12.1” SVGA TFT LED LCD Intel® Atom™ Thin Client Terminals</td>
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<tr>
<td>TPC-650H</td>
<td>5.7” VGA TFT LED LCD Intel® Atom™ Thin Client Terminals</td>
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### Domain-focus Platform

<table>
<thead>
<tr>
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<th>Description</th>
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</thead>
<tbody>
<tr>
<td>TPC-8100TR</td>
<td>10.4” EN50155 Railway Panel Computer</td>
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To view all of Advantech's Automation Panel PCs, please visit http://www.advantech.com/
Wide Screen Panel Computers

<table>
<thead>
<tr>
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<th>TPC-1618WP</th>
<th>TPC-1818WP</th>
<th>TPC-2140WP</th>
<th>TPC-1840WP</th>
<th>SPC-2140WP</th>
<th>SPC-1840WP</th>
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<td>4GB DDR3L</td>
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<td>4GB SO-DIMM DDR3</td>
<td>4GB SO-DIMM DDR3</td>
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<tr>
<td>HDD (Optional)</td>
<td>2.5&quot; SATA HDD</td>
<td>2.5&quot; SATA HDD</td>
<td>Full HD TFT LED LCD</td>
<td>Full HD TFT LED LCD</td>
<td>WXGA TFT LED LCD</td>
<td>WXGA TFT LED LCD</td>
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<tr>
<td>Display Size</td>
<td>15.6&quot; x 18.5&quot;</td>
<td>15.6&quot; x 18.5&quot;</td>
<td>21.5&quot; x 18.5&quot;</td>
<td>21.5&quot; x 18.5&quot;</td>
<td>21.5&quot; x 18.5&quot;</td>
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<td>WXGA TFT LED LCD</td>
<td>WXGA TFT LED LCD</td>
<td>WXGA TFT LED LCD</td>
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<td>Max. Resolution</td>
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<td>1366 x 768</td>
<td>1920 x 1080</td>
<td>1920 x 1080</td>
<td>1366 x 768</td>
<td>1366 x 768</td>
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<td>Max. Colors</td>
<td>16.7M</td>
<td>16.7M</td>
<td>16.7M</td>
<td>16.7M</td>
<td>16.7M</td>
<td>16.7M</td>
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<td>300 nits</td>
<td>300 nits</td>
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<td>50,000 hrs</td>
<td>50,000 hrs</td>
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<td>Touchscreen</td>
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<td>Projected capacitive touch</td>
<td>Projected capacitive touch</td>
<td>Projected capacitive touch</td>
<td>Projected capacitive touch</td>
<td>Projected capacitive touch</td>
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<tr>
<td>Network (LAN)</td>
<td>10/100/1000 Base-T x 2</td>
<td>10/100/1000 Base-T x 2</td>
<td>10/100/1000 Base-T x 2</td>
<td>10/100/1000 Base-T x 2</td>
<td>10/100/1000 Base-T x 2</td>
<td>10/100/1000 Base-T x 2</td>
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<td>I/O Ports</td>
<td>RS-232/422/485 x 1 USB 3.0 x 2, Audio Line out x 1, USB 2.0 x 1</td>
<td>RS-232/422/485 x 1 USB 3.0 x 2, Audio Line out x 1, USB 2.0 x 1</td>
<td>RS-232 x 3 USB 2.0 (Host) x 2 Mic in x 1 Line out x 1</td>
<td>RS-232 x 3 USB 2.0 (Host) x 2 Mic in x 1 Line out x 1</td>
<td>RS-232 x 3 USB 2.0 (Host) x 2 Mic in x 1 Line out x 1</td>
<td>RS-232 x 3 USB 2.0 (Host) x 2 Mic in x 1 Line out x 1</td>
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<tr>
<td>Display Size</td>
<td>2.5&quot; SATA HDD</td>
<td>2.5&quot; SATA HDD</td>
<td>2.5&quot; SATA HDD</td>
<td>2.5&quot; SATA HDD</td>
<td>2.5&quot; SATA HDD</td>
<td>2.5&quot; SATA HDD</td>
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<td>Intelligent Keys</td>
<td>Quick access through built-in front bezel function and home key button</td>
<td>Quick access through built-in front bezel function and home key button</td>
<td>Quick access through built-in front bezel function and home key button</td>
<td>Quick access through built-in front bezel function and home key button</td>
<td>Quick access through built-in front bezel function and home key button</td>
<td>Quick access through built-in front bezel function and home key button</td>
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<td>Compact/Flash Slots</td>
<td>CFast slot x 1</td>
<td>CFast slot x 1</td>
<td>CFast slot x 1</td>
<td>CFast slot x 1</td>
<td>CFast slot x 1</td>
<td>CFast slot x 1</td>
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<td>DC Power Input (Voltage)</td>
<td>24VDC ± 20%</td>
<td>24VDC ± 20%</td>
<td>18 ~ 32V</td>
<td>18 ~ 32V</td>
<td>24VDC</td>
<td>24VDC</td>
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<td>Mounting</td>
<td>Panel Mount</td>
<td>Panel Mount</td>
<td>Panel Mount</td>
<td>Panel Mount</td>
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<td>Panel mount</td>
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<tr>
<td>Operating Temperature</td>
<td>0 ~ 55°C (32 ~ 131°F)</td>
<td>0 ~ 55°C (32 ~ 131°F)</td>
<td>0 ~ 55°C (32 ~ 131°F)</td>
<td>0 ~ 55°C (32 ~ 131°F)</td>
<td>0 ~ 55°C (32 ~ 131°F)</td>
<td>0 ~ 55°C (32 ~ 131°F)</td>
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<td>-20 ~ 60°C (-4 ~ 140°F)</td>
<td>-20 ~ 60°C (-4 ~ 140°F)</td>
<td>-20 ~ 60°C (-4 ~ 140°F)</td>
<td>-20 ~ 60°C (-4 ~ 140°F)</td>
<td>-20 ~ 60°C (-4 ~ 140°F)</td>
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<td>419.7 x 269 x 56.7 mm (16.52&quot; x 10.59&quot; x 2.23&quot;)</td>
<td>488.1 x 309.1 x 56.7 mm (19.22&quot; x 12.20&quot; x 2.27&quot;)</td>
<td>580.7 x 356.5 x 56.7 mm (23.00&quot; x 14.06&quot; x 2.24&quot;)</td>
<td>488.1 x 309.1 x 56.7 mm (19.22&quot; x 12.20&quot; x 2.27&quot;)</td>
<td>558.4 x 349.8 x 65 mm (22.00&quot; x 13.73&quot; x 2.56&quot;)</td>
<td>488.1 x 309.1 x 56.7 mm (19.22&quot; x 12.20&quot; x 2.27&quot;)</td>
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<td>7 kg (15.44 lbs)</td>
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<td>8 kg (17.64 lbs)</td>
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<td>6-6</td>
<td>6-8</td>
<td>6-10</td>
<td>6-12</td>
<td>6-14</td>
<td>6-16</td>
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<tr>
<td>Model</td>
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<td>TPC-1771H</td>
<td>TPC-1571H</td>
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<td>Intel® Atom™ D525 1.8 GHz</td>
<td>Intel® Atom™ D525 1.8 GHz</td>
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<td>Intel® Atom™ Z510 1.1GHz</td>
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<td>4GB DDR3L 1600MHz SO-DIMM SDRAM</td>
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<td>17”</td>
<td>15”</td>
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<td>1280 x 1024</td>
<td>1024 x 768</td>
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<td>Max. Colors</td>
<td>262 K</td>
<td>3.5 kg (7.72 lbs)</td>
<td>262 K</td>
<td>3.5 kg (7.72 lbs)</td>
<td>262 K</td>
<td>3.5 kg (7.72 lbs)</td>
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<td>350 nits</td>
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<td>350 nits</td>
<td>400 nits</td>
<td>450 nits</td>
<td>400 nits</td>
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<td>Viewing Angle (H/V°)</td>
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<td>160/140</td>
<td>170/160</td>
<td>160/140</td>
<td>160/140</td>
<td>120/100</td>
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<td>50,000 hrs</td>
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<td>Touchscreen</td>
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<td>Resistive</td>
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<td>Resistive</td>
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<td>2.5” SATA HDD x 1</td>
<td>2.5” SATA HDD x 1</td>
<td>2.5” SATA HDD x 1</td>
<td>2.5” SATA HDD x 1</td>
<td>2.5” SATA HDD x 1</td>
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<tr>
<td>Network(LAN)</td>
<td>10/100/1000 Base-T x 2 (one port supports (AMT))</td>
<td>10/100/1000 Base-T x 2 (one port supports (AMT))</td>
<td>10/100/1000 Base-T x 2</td>
<td>10/100/1000 Base-T x 2</td>
<td>10/100/1000 Base-T x 2</td>
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<td>CompactFlash</td>
<td>CompactFlash® slot x 1</td>
<td>CompactFlash® slot x 1</td>
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<td>Expansion Slots</td>
<td>Half-size PCI-E and Full-size Mini PCI-E</td>
<td>Half-size PCI-E and Full-size Mini PCI-E</td>
<td>Mini PCI-E x 1 or PCI-E x 1</td>
<td>Mini PCI-E x 1 or PCI-E x 1</td>
<td>Mini PCI-E x 1 or PCI-E x 1</td>
<td>Mini PCI-E x 1 or PCI-E x 1</td>
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<td>Digital Input / Outputs</td>
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<td>-</td>
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<tr>
<td>DC Power Input (Voltage)</td>
<td>24VDC ± 20%</td>
<td>24VDC ± 20%</td>
<td>10–29V</td>
<td>10–29V</td>
<td>10–29V</td>
<td>10–29V</td>
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<td>Dimensions</td>
<td>414 x 347.5 x 84 mm (16.3” x 13.68” x 3.31”)</td>
<td>383 x 307 x 78.5 mm (15.08” x 12.09” x 3.09”)</td>
<td>414 x 347.5 x 84 mm (16.3” x 13.68” x 3.31”)</td>
<td>383 x 307 x 78.5 mm (15.08” x 12.09” x 3.09”)</td>
<td>311 x 237 x 71.6 mm (12.24” x 9.33” x 2.82”)</td>
<td>287 x 227 x 72.3 mm (11.30” x 9.04” x 2.85”)</td>
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<td>6 kg (13.23 lbs)</td>
<td>5.5 kg (12.13 lbs)</td>
<td>4.57 kg (10.07 lbs)</td>
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<td>Front bezel: Die-cast Aluminum alloy</td>
<td>Front bezel: Die-cast Aluminum alloy</td>
<td>Front bezel: Die-cast Aluminum alloy</td>
<td>Front bezel: Die-cast Aluminum alloy</td>
<td>Front bezel: PC/ABS Resin</td>
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<tr>
<td>Operating Temperature</td>
<td>0 ~ 55°C (32 ~ 131°F)</td>
<td>0 ~ 55°C (32 ~ 131°F)</td>
<td>0 ~ 55°C (32 ~ 131°F)</td>
<td>0 ~ 55°C (32 ~ 131°F)</td>
<td>0 ~ 55°C (32 ~ 131°F)</td>
<td>0 ~ 55°C (32 ~ 131°F)</td>
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<td>IP65</td>
<td>IP65</td>
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<tr>
<td>Operating System</td>
<td>Microsoft® Windows 7/8/ 7/8/Linux</td>
<td>Microsoft® Windows 7/8/ 7/8/Linux</td>
<td>Microsoft® Windows 7/8/ 7/8/Linux</td>
<td>Microsoft® Windows 7/8/ 7/8/Linux</td>
<td>Microsoft® Windows 7/8/ 7/8/Linux</td>
<td>Microsoft® Windows 7/8/ 7/8/Linux</td>
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<tr>
<td>Page</td>
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<td>6-24</td>
<td>6-26</td>
<td>6-28</td>
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## Embedded Panel Computers

### New Features

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<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>CPU</td>
<td>Intel® Atom™ E3827 1.75 GHz Processor</td>
<td>Intel® Atom™ E3827 1.75 GHz Processor</td>
<td>Intel® Atom™ N270 1.6 GHz</td>
<td>Intel® Atom™ N270 1.6 GHz</td>
<td>Intel® Atom™ Z520 1.33 GHz</td>
<td>Intel® Atom™ Z520 1.33 GHz</td>
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<td>4GB (8GB optional) DDR3L 1600MHz SO-DIMM SDRAM</td>
<td>2GB SO-DIMM DDR2 SDRAM</td>
<td>1GB SO-DIMM DDR2 SDRAM</td>
<td>1GB SO-DIMM DDR2 SDRAM</td>
<td>1GB SO-DIMM DDR2 SDRAM</td>
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<td>XGA TFT LED LCD</td>
<td>SVGA XGA XGA SGXGA TFT LED LCD</td>
<td>VGA TFT LED LCD</td>
<td>VGA TFT LED LCD</td>
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<td>Display Size</td>
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<td>12.1” 15”/17”</td>
<td>5.7” 12.1”</td>
<td>5.7” 12.1”</td>
<td>5.7” 12.1”</td>
<td>5.7” 12.1”</td>
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<td>Max. Resolution</td>
<td>1024 x 768</td>
<td>1024 x 768</td>
<td>800 x 600 / 1024 x 768 / 1280 x 1024</td>
<td>640 x 480</td>
<td>640 x 480</td>
<td>640 x 480</td>
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<tr>
<td>Max. Colors</td>
<td>262 K</td>
<td>262 K</td>
<td>262 K</td>
<td>262 K</td>
<td>262 K</td>
<td>262 K</td>
</tr>
<tr>
<td>Luminance cd/m²</td>
<td>400 nits</td>
<td>600 nits</td>
<td>450/350/350 nits</td>
<td>700 nits</td>
<td>450/350/350 nits</td>
<td>700 nits</td>
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<tr>
<td>Viewing Angle (°)</td>
<td>160/140</td>
<td>160/140</td>
<td>160/140</td>
<td>160/140</td>
<td>160/140</td>
<td>160/140</td>
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<tr>
<td>Backlight MTBF (hrs)</td>
<td>50,000 hrs</td>
<td>50,000 hrs</td>
<td>50,000 hrs</td>
<td>50,000 hrs</td>
<td>50,000 hrs</td>
<td>50,000 hrs</td>
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<tr>
<td>Touchscreen</td>
<td>Resistive</td>
<td>Resistive</td>
<td>Resistive</td>
<td>Resistive</td>
<td>Resistive</td>
<td>Resistive</td>
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<tr>
<td>HDD (Optional)</td>
<td>2.5” SATA x 1</td>
<td>2.5” SATA x 1</td>
<td>2.5” SATA x 1</td>
<td>2.5” SATA x 1</td>
<td>2.5” SATA x 1</td>
<td>2.5” SATA x 1</td>
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<tr>
<td>Network (LAN)</td>
<td>10/100/1000Base-T x 2</td>
<td>10/100/1000Base-T x 2</td>
<td>10/100/1000Base-T x 2</td>
<td>10/100/1000Base-T x 2</td>
<td>10/100/1000Base-T x 2</td>
<td>10/100/1000Base-T x 2</td>
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<tr>
<td>I/O ports</td>
<td>RS-232 x 1, RS-232/422/485 x 1 USB 3.0 x 1 USB 2.0 x 1</td>
<td>RS-232 x 1, RS-232/422/485 x 1 USB 3.0 x 1 USB 2.0 x 1</td>
<td>RS-232 x 2, PS/2 x 1 USB 2.0 x 2</td>
<td>RS-232 x 2, PS/2 x 1 USB 2.0 x 2</td>
<td>RS-232 x 2, PS/2 x 1 USB 2.0 x 2</td>
<td>RS-232 x 2, PS/2 x 1 USB 2.0 x 2</td>
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<td>CompactFlash</td>
<td>CFast slot x 1</td>
<td>CFast slot x 1</td>
<td>CFast slot x 1</td>
<td>CompactFlash® slot x 1</td>
<td>CompactFlash® slot x 1</td>
<td>CompactFlash® slot x 1</td>
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<td>Expansion Slots</td>
<td>Full-size Mini PCI-E</td>
<td>Full-size Mini PCI-E</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Digital Input / Output</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>DC Power Input</td>
<td>24Vdc ± 20%</td>
<td>24Vdc ± 20%</td>
<td>18 – 28V / 18 – 32V (TPC-1750H)</td>
<td>18 – 28V</td>
<td>18 – 32V</td>
<td>18 – 32V</td>
</tr>
<tr>
<td>Dimensions</td>
<td>383.20 x 307.30 x 61.10 mm (15.09” x 12.10” x 2.41”)</td>
<td>311.80 x 238 x 57.2 mm (12.28” x 9.37” x 2.25”)</td>
<td>311 x 237 x 54 mm (12.24” x 9.33” x 2.13&quot;) / 383 x 307 x 58.1 mm (15.08” x 12.09” x 2.29&quot;) / 413.7 x 347.2 x 63.8 mm (16.28” x 13.68&quot; x 2.5&quot;)</td>
<td>195 x 148 x 58 mm (7.68” x 5.83” x 2.28&quot;)</td>
<td>311 x 237 x 54 mm (12.24” x 9.33” x 2.13&quot;) / 383 x 307 x 58.1 mm (15.08” x 12.09” x 2.29&quot;) / 413.7 x 347.2 x 63.8 mm (16.28” x 13.68&quot; x 2.5&quot;)</td>
<td>195 x 148 x 58 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>3.9KG</td>
<td>2.5KG</td>
<td>2.5kg/3kg/3.5kg</td>
<td>1.43 kg</td>
<td>2.5kg/3kg/3.5kg</td>
<td>1.43 kg</td>
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<tr>
<td>Front cover</td>
<td>Front bezel: Die-cast Aluminum alloy</td>
<td>Front bezel: Die-cast Aluminum alloy</td>
<td>Front bezel: Die-cast Aluminum alloy</td>
<td>Front bezel: PC + ABS</td>
<td>Front bezel: PC + ABS</td>
<td>Front bezel: PC + ABS</td>
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<tr>
<td>Operating Temperature</td>
<td>-20 – 60°C (-4 – 140°F)</td>
<td>-20 – 60°C (-4 – 140°F)</td>
<td>0 – 55°C (32 – 113°F)</td>
<td>0 – 55°C (32 – 113°F)</td>
<td>-20 – 60°C (-4 – 140°F)</td>
<td>-20 – 60°C (-4 – 140°F)</td>
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<tr>
<td>Ingress Protection (Front Panel)</td>
<td>IP66</td>
<td>IP66</td>
<td>IP66</td>
<td>IP65</td>
<td>IP65</td>
<td>IP65</td>
</tr>
<tr>
<td>Page</td>
<td>6-30</td>
<td>6-32</td>
<td>6-33/6-36/6-34</td>
<td>6-40</td>
<td>online</td>
<td>online</td>
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# Domain-focus Platform

<table>
<thead>
<tr>
<th>Model</th>
<th>TPC-1251SR/1551SR</th>
<th>FPM-3151SR</th>
<th>TPC-8100TR</th>
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<tbody>
<tr>
<td>CPU</td>
<td>Intel Atom 1.33 GHz with 512KB cache</td>
<td>-</td>
<td>Intel ATOM N2600 Dual core processor 1.6G</td>
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<tr>
<td>Memory</td>
<td>1GB SO-DIMM DDR2 667 SDRAM</td>
<td>-</td>
<td>4GB SO-DIMM DDR3 SDRAM</td>
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<td>Display</td>
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<td></td>
<td></td>
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<tr>
<td>Display Type</td>
<td>SVGA / XGA</td>
<td>XGA</td>
<td>SVGA</td>
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<tr>
<td>Display Size</td>
<td>12.1&quot;/15&quot;</td>
<td>15&quot;</td>
<td>10.4&quot;</td>
</tr>
<tr>
<td>Max. Resolution</td>
<td>800 x 600 / 1024 x 768</td>
<td>1024x768</td>
<td>800 / 600</td>
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<tr>
<td>Max. Colors</td>
<td>262 K</td>
<td>16.2 M</td>
<td>262 K</td>
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<tr>
<td>Luminance cd/m²</td>
<td>1000 nits</td>
<td>1000 nits</td>
<td>400 nits</td>
</tr>
<tr>
<td>Viewing Angle</td>
<td>110/160 / 120/140</td>
<td>125/140</td>
<td>160/140</td>
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<tr>
<td>MTBF (hrs)</td>
<td>50,000 hrs</td>
<td>50,000 hrs</td>
<td>50,000 hrs</td>
</tr>
<tr>
<td>Touchscreen</td>
<td>internal USB</td>
<td>Combo</td>
<td>internal USB</td>
</tr>
<tr>
<td>Network(LAN)</td>
<td>10/100/1000Base-T x 2</td>
<td>-</td>
<td>RS-232 x 2(connection: M12 A-coded, 8-pin male)</td>
</tr>
<tr>
<td>I/O ports</td>
<td></td>
<td></td>
<td>RS-422/485 x 2( with isolation, connection: M12 A-coded, 8-pin male)</td>
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<tr>
<td>CPU</td>
<td></td>
<td></td>
<td>USB 2.0 x 2(connection: M12 A-coded, 8-pin female)</td>
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<tr>
<td>Memory</td>
<td></td>
<td></td>
<td>Audio x 1( with Internal Buzzer, Line out, connection: M12 A-coded, 8-pin male)</td>
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<tr>
<td>HDD (Optional)</td>
<td>-</td>
<td>-</td>
<td>Power connector x 1( connection: M12 A-coded, 5-pin male)</td>
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<tr>
<td>OSD (onscreen display)</td>
<td>-</td>
<td>On front panel with lockable function</td>
<td>-</td>
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<tr>
<td>CompactFlash Slots</td>
<td>CompactFlash Slot x 1</td>
<td>-</td>
<td>build in 16G Clast</td>
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<tr>
<td>Expansion Slots</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>DC Power Input</td>
<td>18~32v</td>
<td>12v &amp; 24v</td>
<td>110v</td>
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<tr>
<td>Ingress Protection (Front Panel)</td>
<td>IP65</td>
<td>IP65</td>
<td>all around IP65</td>
</tr>
<tr>
<td>Mounting</td>
<td>Panel, wall, desktop, VESA arm</td>
<td>Panel, wall, desktop, VESA arm</td>
<td>Panel, VESA arm</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-20~60°C</td>
<td>-20~60°C</td>
<td>-30~70°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-30~80°C</td>
<td>-30~80°C</td>
<td>-30~70°C</td>
</tr>
<tr>
<td>Dimensions</td>
<td>311 x 237 x 54 mm</td>
<td>383 x 307 x 58.1 mm</td>
<td>422 x 310 x 70 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>2.5 kg / 3 kg</td>
<td>7.73 kg</td>
<td>5 kg</td>
</tr>
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<td>Certification</td>
<td>BSMI, CCC, CE, FCC Class A, UL</td>
<td>CE, FCC Class A, CCC, UL, Energy Star</td>
<td>CE, FCC Class A, CCC, UL, EN50155</td>
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<td>Operating System</td>
<td>Windows XP/WES7/XPe/CE/Linux</td>
<td>Windows 2000, XP, Vista, 7, 8, XPe, CE and Linux</td>
<td>Windows XP, 7, 8, WES 2009, WES7, CE 6.0 and Linux</td>
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<tr>
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<td>online</td>
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<td>6-42</td>
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Introduction
With growing up in Multi-Touch technology, the TPC-1881WP features Intel 4th Generation Core i3-4010U/i7-4650U 1.7GHz processor with 4GB/8GB DDR3L SDRAM provides the high computing performance. To enhance reliability and durability, built-in 7H hardness Anti-scratch surface on high resolution 18.5” HD display with Multi-Touch in 16:9 format. Through the Mini-PCIe slot, Advantech iDoor technology can provide more I/O connectors, Isolated Digital IO, the Fieldbus Protocol, 3G/GPS/GPRS/WiFi Communication and Battery-backup MRAM. A 2nd monitor and speaker can be attached via the integrated HDMI and Audio port.

Specifications

General
- **BIOS** AMI UEFI
- **Certification** BSMI, CCC, CE, FCC Class A, UL
- **Cooling System** Fanless design
- **Dimensions (W x H x D)** 488.1 x 309.1 x 56.7 mm (19.2” x 12.2” x 2.2”)
- **Enclosure** Front bezel: Die-cast Aluminum alloy
Back housing: PC/ABS Resin
- **Mounting** Panel Mount
- **OS Support** Microsoft® Windows WES7 32bit/64bit /WES8 64bit / Windows 7 32bit/64bit / Windows 8 64bit/Linux Kernel 3.x
- **Power Consumption** 28W Typical, 60W Max. (Without Add-on card)
- **Power Input** 24VDC +/- 20%
- **Watchdog Timer** 1 – 255 sec (system)
- **Weight (Net)** 7kg (15.44 lbs)

System Hardware
- **CPU** Intel 4th Generation Core i7-4650U 1.7GHz
Intel 4th Generation Core i3-4010U 1.7GHz
- **Chipset** Lynx Point-LP
- **Memory** 4GB DDR3L 1600MHz SODIMM SDRAM
- **LAN** 10/100/1000 Base-T x 2 (one port supports AMT)
- **Expansion Slots** Full-size Mini PCI-E
- **Storage** CFast slot x 1
2.5” SATA SSD slot x 1
RS-232/422/485 x 1
USB 3.0 x 2, HDMI 1.4 x 1
Audio Line out x 1, USB 2.0 x 1 (optional)
Audio MIC x 1 (optional)

Features
- **Industrial 18.5 HD TFT LCD with 50K Lifetime LED Backlight**
- **Intel 4th Generation Core i3-4010U/i7-4650U with 4GB/8GB DDR3L SDRAM**
- **16:9 Wide Screen with PCT Multi-Touch**
- **IP66 Approved Front Protection & Panel Mounting**
- **Built-in Intelligent Home key and i Key for Intuitive UI**
- **Front LED Indicator to Show Operating Status**
- **Diverse system IO and Isolated Digital IO by iDoor Technology**
- ** Supports Fieldbus Protocol by iDoor Technology**
- **3G/GPS/GPRS/WiFi Communication by iDoor Technology**
- **Supports Battery-backup MRAM by iDoor Technology**
- **Chassis Grounding Protection**
- **HDMI and Audio Multimedia Support**
- **Anti-scratch surface: 7H hardness**

LCD Display
- **Display Type** HD TFT LED LCD
- **Display Size** 18.5"
- **Max. Resolution** 1396 x 768
- **Max. Colors** 16.7M
- **Luminance cd/m²** 300
- **Viewing Angle (H/V°)** 170/160
- **Backlight Life** 50,000 hrs
- **Contrast Ratio** 500:1

Touchscreen
- **Light Transmission** ≥88%
- **Resolution** 4096 x 4096 dot
- **Type** Projected capacitive

Environment
- **Humidity** 10 – 95% RH @ 40°C, non-condensing
- **Ingress Protection** Front panel: IP66
- **Operating Temperature** 0 – 55°C (32 – 131°F)
- **Storage Temperature** -20 – 60°C (-4 – 140°F)
- **Vibration Protection** With HDD: 1 Gms (5 – 500 Hz)
(Operating, random vibration)

Rear View

a. 24VDC Power
b. HDMI
c. GbE
d. USB3.0
e. Audio Line out
f. COM Port RS-232/422/485
g. Expansion I/O (iDoor)
h. 2.5” SATA SSD, CFast and Mini PCIe Slot
i. SMA Connector for Antenna
TPC-1881WP

**Application Software**

Version : V2.1 or above
An innovative remote device management software, allowing efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.

Version : V7.1 or above
WebAccess, as the core of Advantech’s IoT solution, is full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.

Version : V2.0.3.8 or above
Panel Express, a windows based HMI mini SCADA, realizes the cross platform flexibility offered by WebOP Designer to switch hardware for the consideration of cost and performance become an easy job. Panel Express software provides the best economic and express solution for data intensive high-end HMI applications.

Version : V2.0.3.8 or above
An easy to use integrated development tool featuring solution-oriented screen objects, high-end graphics, Windows fonts for multi-language applications. WebOP runtime, a part of WebOP Designer, guarantees reliability and performance because of the minimum system overhead, high communication data rates, and sub-second screen switching.

**Ordering Information**

- **TPC-1881WP-433AE**
  - 18.5” HD Multi-Touch Panel PC, Intel i3-4010U, 4GB, iDoor
- **TPC-1881WP-473AE**
  - 18.5” HD Multi-Touch Panel PC, Intel i7-4650U, 4GB, iDoor
- **WA-TPC1881WP**
  - TPC-1881WP-433AE with WebAccess software

**Accessories**

- **PWR-248-AE**
  - 150W DC 24V/6.25A Output Power Supply
- **1702002600**
  - Power Cable US Plug 1.8 M
- **1702002605**
  - Power cable EU Plug 1.8 M
- **1702031801**
  - Power cable UK Plug 1.8 M
- **1700000596**
  - EWM-W151HD01
  - 802.11bgn RTL8188EE 1T1R, Half-size Mini-PCIe (also need 9655EW0GE)
- **9655EW0GE**
  - Half-size miniPCIe to Full-size miniPCIe bracket set
- **1750000318**
  - EMI Antenna 2DBi 2.4GHz SMA CONN for ARK-3384
- **1750003222**
  - 802.11b/g 5dBi Dipole Antenna
- **1750003418**
  - Wireless Antenna AN2400-5901RS R/P SMA M9dB
- **PCM-2300MR-AE**
  - MR4A16B, 2MByte
- **PCM-26D1PB-AE**
  - Hilscher netX100 FieldBus, ProliBus, DB9 x 1
- **PCM-26D2CA-AE**
  - SJ1A000 CANbus, CANopen, DB9 x 1
- **PCM-24D2RA-4E**
  - LPCie-952 UART, Isolated RS-422/485, DB9 x 2
- **PCM-24D2BR2-AE**
  - LPCie-952 UART, Isolated RS-232, DB9 x 2
- **PCM-24D2RA4-AE**
  - LPCie-954 UART, Non-Isolated RS-422/485, DB37 x 1
- **PCM-24D4R2-AE**
  - LPCie-954, UART, Non-Isolated RS-232, DB37 x 1
- **PCM-27D24DI-AE**
  - Digital I/O, 16DI / 8DO, DB37 x 1

**Automation Software**

- **968WEXP003X**
  - PanelExpress V2.0 300 tags S/W license
- **968WEXP015X**
  - PanelExpress V2.0 1500 tags S/W license
- **968WEXP050X**
  - PanelExpress V2.0 5000 tags S/W license
- **968WEXP2USB**
  - PanelExpress V2.0 S/W USB dongle

**iDoor Modules**

- **PCM-2300MR-AE**
- **PCM-26D1PB-AE**
- **PCM-26D2CA-AE**
- **PCM-24D2RA-4E**
- **PCM-24D2BR2-AE**
- **PCM-24D2RA4-AE**
- **PCM-24D4R2-AE**
- **PCM-27D24DI-AE**

**Dimensions**

Panel Cut-out Dimensions: 479.3 (18.9")±1 x 300.3 (11.8")±0.7 mm
15.6 HD TFT LED LCD Intel® 4th Generation Core i3 Multi-Touch Panel Computer

Introduction

With growing up in Multi-Touch technology, the TPC-1581WP features Intel 4th Generation Core i3-4010U 1.7GHz processor with 4GB DDR3L SDRAM provides the high computing performance. To enhance reliability and durability, built-in 7H hardness Anti-scrath surface on high resolution 15.6” HD display with Multi-Touch in 16:9 format. Through the Mini-PCIe slot, Advantech iDoor technology can provide more I/O connectors, Isolated Digital IO, the Fieldbus Protocol, 3G/GPS/GPRS/WiFi Communication and Battery-backup MRAM. A 2nd monitor and speaker can be attached via the integrated HDMI and Audio port.

Specifications

General

- **BIOS**: AMI UEFI
- **Certification**: BSMI, CCC, CE, FCC Class A, UL
- **Cooling System**: Fanless design
- **Dimensions (W x H x D)**: 419.7 x 269 x 56.7 mm (16.52" x 10.59" 2.23")
- **Enclosure**: Front bezel: Die-cast Aluminum alloy
  Back housing: PC/ABS Resin
- **Mounting**: Panel Mount
- **OS Support**: Microsoft® Windows WES7 32bit/64bit /WES8 64bit / Windows 7 32bit/64bit / Windows 8 64bit/Linux Kernel 3.x
- **Power Consumption**: 18W Typical, 60W Max. (Without Add-on card)
- **Power Input**: 24Vdc +/- 20%
- **Watchdog Timer**: 1 – 255 sec (system)
- **Weight (Net)**: 6 kg (13.22 lbs)

System Hardware

- **CPU**: Intel 4th Generation Core i3-4010U 1.7GHz
- **Chipset**: Lynx Point-LP
- **Memory**: 4GB DDR3L 1600MHz SO-DIMM SDRAM
- **LAN**: 10/100/1000 Base-T x 2 (one port supports iAMT)
- **Expansion Slots**: Full-size Mini PCI-E
- **Storage**: CFast slot x 1
  2.5” SATA SSD slot x 1
- **I/O**: RS-232/422/485 x 1
  USB 3.0 x 2, HDMI 1.4 x 1
  Audio Line out x 1, USB 2.0 x 1 (optional)
  Audio MIC x 1 (optional)

LCD Display

- **Display Type**: HD TFT LED LCD
- **Display Size**: 15.6
- **Max. Resolution**: 1366 x 768
- **Max. Colors**: 16.7M
- **Luminance cd/m²**: 300
- **Viewing Angle (H/V°)**: 170/160
- **Backlight Life**: 50,000 hrs
- **Contrast Ratio**: 500:1

Touchscreen

- **Light Transmission**: ≥88%
- **Resolution**: 4096 x 4096 dot
- **Type**: Projected capacitive

Environment

- **Humidity**: 10 – 95% RH @ 40°C, non-condensing
- **Ingress Protection**: Front panel: IP66
- **Operating Temperature**: 0 – 55°C (32 – 131°F)
- **Storage Temperature**: -20 – 60°C (-4 – 140°F)
- **Vibration Protection**: With HDD: 1 Gms (5 – 500 Hz) (Operating, random vibration)

Rear View

- **a. 24Vdc Power**
- **b. HDMI**
- **c. GbE**
- **d. USB3.0**
- **e. Audio Line out**
- **f. COM Port RS-232/422/485**
- **g. Expansion I/O (iDoor)**
- **h. 2.5” SATA SSD, CFast and Mini PCIe Slot**
- **i. SMA Connector for Antenna**
TPC-1581WP

Dimensions

Panel Cut-out Dimensions: 261.7 ±0.4 x 412.4 ±7 mm

Ordering Information

- **TPC-1581WP-433AE** 15.6” HD Multi-Touch Panel PC, Intel i3-4010U, 4GB, iDoor
- **WA-TPC1581WP** TPC-1581WP-433AE with WebAccess software

Accessories

- **PWR-248-AE** 150W DC 24V/6.25A Output Power Supply
- **170202600** Power Cable US Plug 1.8 M
- **170202605** Power cable EU Plug 1.8 M
- **1702031801** Power cable UK Plug 1.8 M
- **170000596** Power Cable China/Australia Plug 1.8 M
- **EWM-W151H01E** 802.11b/g/n RTL8188EE 1T1R, Half-size MiniPCIe (also need 9655EWG00E)
- **9655EWG00E** Half-size miniPCIe to Full-size miniPCIe bracket set
- **1750000318** EMI Antenna 2DBI 2.4GHz SMA CONN for ARK-3384
- **1750003222** 802.11b/g/5dBi Dipole Antenna
- **1750003418** Wireless Antenna AN2400-5901RS R/P SMA.9dB

Automation Software

- **968WEXP003X** PanelExpress V2.0 300 tags S/W license
- **968WEXP015X** PanelExpress V2.0 1500 tags S/W license
- **968WEXP050X** PanelExpress V2.0 5000 tags S/W license
- **968WEXP2USB** PanelExpress V2.0 S/W USB dongle

iDoor Modules

- **PCM-2300MR-AE** MR4A16B, 2Byte
- **PCM-26D1PB-AE** Hilscher netX100 FieldBus, ProfiBus, DB9 x 1
- **PCM-26D2CA-AE** SJA1000 CANBus, CANOpen, DB9 x 1
- **PCM-24D2R4-AE** OXPCie-952 UART, Isolated RS-422/485, DB9 x 2
- **PCM-24D2R2-AE** OXPCie-952 UART, Isolated RS-232, DB9 x 2
- **PCM-24D4R4-AE** OXPCie-954 UART, Non-Isolated RS-422/485, DB37 x 1
- **PCM-24D4R2-AE** OXPCie-954, UART, Non-Isolated RS-232, DB37 x 1
- **PCM-27D24DI-AE** Digital I/O, 16DI / 8DO, DB37 x 1

Application Software

**SUSIAccess**

Version: V2.1 or above
An innovative remote device management software, allowing efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.

**WebAccess**

Version: V7.1 or above
WebAccess, as the core of Advantech’s IoT solution, is full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.

**PanelExpress**

Version: V2.0.3.8 or above
Panel Express, a windows based HMI mini SCADA, realizes the cross platform flexibility offered by WebOP Designer to switch hardware for the consideration of cost and performance become an easy job. Panel Express software provides the best economic and express solution for data intensive high-end HMI applications.

**WebOP Designer**

Version: V2.0.3.8 or above
An easy to use integrated development tool featuring solution-oriented screen objects, high-end graphics, Windows fonts for multi-language applications. WebOP runtime, a part of WebOP Designer, guarantees reliability and performance because of the minimum system overhead, high communication data rates, and sub-second screen switching.
TPC-2140WP

NEW

21.5" Full HD TFT LED LCD Touch Panel Computer with AMD Dual-core processor

Introduction

With a brand-new ID design, the TPC-2140WP provides a high resolution 21.5" display and PCT multi-touch in 16:9 wide format. By embedding an AMD T56E 1.65GHz processor with independent GPU, the TPC-2140WP can support advanced graphical performance in more complex applications. Built-in function and home key button for greater user usability and operating safety. The TPC-2140WP also supports a mini-PCIe slot for communication function expansion. The opening side cover is designed for easy maintenance of CFast/HDD/Mini-PCIe components.

Specifications

General
- BIOS: AMI 32Mbit
- Certification: BSMI, CCC, CE, FCC Class A, UL
- Cooling System: Fanless design
- Dimensions (W x H x D): 558.4 x 349.8 x 56.7 (22.86" x 13.99" x 2.23")
- Enclosure: Front bezel: Die-cast Magnesium alloy, Back housing: PC/ABS Resin
- Mounting: Panel Mount
- OS Support: Microsoft® Win8/WES7P/XP/WES2009/Linux
- Power Consumption: 35 W Typical
- Power Input: 18 ~ 32 V DC
- Watchdog Timer: 1 ~ 255 sec (system)
- Weight (Net): 8.5 kg (18.74 lbs)

System Hardware
- CPU: AMD G-series T56E 1.65GHz
- Chipset: AMD A50M FCH
- Memory: 4GB SO-DIMM DDR3 SDRAM
- LAN: 10/100/1000Base-T x 2
- Expansion Slots: Full-sized Mini PCI-E x 1
- Storage: CFast slot x 1
- 2.5" SATA HDD x 1 (optional)
- I/O: RS-232 x 3, RS-422 / 485 x 1
- USB 2.0 x 2(Host), HDMI x 1, Mic in x 1, Line out x 1

LCD Display
- Display Type: Full HD TFT LED LCD
- Display Size: 21.5"
- Max. Resolution: 1920 x 1080
- Max. Colors: 16.7 M
- Luminance cd/m²: 300
- Viewing Angle (H/V°): 178/178
- Backlight Life: 50,000 hrs

Touchscreen
- Light Transmission: ≥88%
- Resolution: 4096*4096 dot
- Type: Projected capacitive

Environment
- Humidity: 10 ~ 95% RH @ 40°C, non-condensing
  Note: Tested for 48hrs
- Ingress Protection: Front panel: IP66
- Operating Temperature: 0 ~ 55°C (32 ~ 131°F)
- Storage Temperature: -20 ~ 60°C (-4 ~ 140°F)
- Vibration Protection: With HDD: 1 G rms (5 ~ 50 Hz)
  (Operating, random vibration)

Rear View

Features
- 21.5" Full HD TFT LED LCD display
- AMD dual-core T56E 1.65GHz with independent GPU, advanced graphical performance
- 16:9 wide screen with PCT multi-touch
- Built-in function and home key button used for intuitive UI
- Anti-scratch surface: 7H hardness
- Easy Maintenance of CFast/HDD/Mini-PCIe components by opening side cover
- Support Mini-PCIe expansion slot
- Support HDMI for second display application
- HD Audio supports for alarm application
- Front LED indicator to show operating status
- IP66 compliant true flat screen
- Compact design with Die-cast Magnesium alloy front bezel
- Fanless cooling system
- Winner of the 2013 iF product design award

Advantech Automation Panel PCs

6-10
Dimensions

Panel Cut-out Dimensions: 550.3mm (21.7")±1mm x 341.8 (13.5")mm±0.7mm

Ordering Information
- TPC-2140WP-T3AE  21.5" full-HD Multi-Touch Panel PC, AMD T56E, 4GB
- WA-TPC2140WP   TPC-2140WP-T3AE with WebAccess software

Accessory
- PWR-247-6E  63W DC 24V/2.62A Output Power Supply
- 1702002600  Power Cable US Plug 1.8 M
- 1702002605  Power Cable EU Plug 1.8 M
- 1702031801  Power Cable UK Plug 1.8 M
- 1700005096  Power Cable China/Australia Plug 1.8 M

Automation Software
- 968WEXP003X  PanelExpress V2.0 300 tags S/W license
- 968WEXP015X  PanelExpress V2.0 1500 tags S/W license
- 968WEXP050X  PanelExpress V2.0 5000 tags S/W license
- 968WEXP2USB  PanelExpress V2.0 S/W USB dongle

Application Software

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<th>SUSIAccess</th>
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</tbody>
</table>
TPC-1840WP

Multi-Touch Panel Computer with AMD Dual-core processor

Introduction

With a brand-new ID design, the TPC-1840WP provides a high resolution 18.5" display and PCT multi-touch in 16:9 wide format. By embedding an AMD T56E 1.65GHz processor with independent GPU, the TPC-1840WP can support advanced graphical performance in more complex applications. Built-in function and home key button for greater user usability and operating safety. The TPC-1840WP also supports a mini-PCIe slot for communication function expansion. The opening side cover is designed for easy maintenance of Cfast/HDD/Mini-PCIe components.

Specifications

General
- BIOS: AMI 32Mbit
- Certification: BSMI, CCC, CE, FCC Class A, UL
- Cooling System: Fanless design
- Dimensions (W x H x D): 488.1 x 309.1 x 56.7 (19.22" x 12.17" x 2.23")
- Enclosure: Front bezel: Die-cast Magnesium alloy
  Back housing: PC/ABS Resin
- Mounting: Panel Mount
- OS Support: Microsoft® Win8/WES7P/XP/WES2009/Linux
- Power Consumption: 35 W Typical
- Power Input: 18 ~ 32 V DC
- Watchdog Timer: 1 ~ 255 sec (system)
- Weight (Net): 7kg (15.44 lbs)

System Hardware
- CPU: AMD G-series T56E 1.65GHz
- Chipset: AMD A50M FCH
- Memory: 4GB SO-DIMM DDR3 SDRAM
- LAN: 10/100/1000Base-T x 2
- Expansion Slots: Full-sized Mini PCI-E x 1
- Storage: CFast slot x 1
  2.5" SATA HDD x 1(optional)
- I/O: RS-232 x 3, RS-422 / 485 x1
  USB 2.0 x 2(Host)
  HDMI x 1, Mic in x 1, Line out x 1

LCD Display
- Display Type: WXGA TFT LED LCD
- Display Size: 18.5"
- Max. Resolution: 1366 x 768
- Max. Colors: 16.7 M
- Luminance cd/m²: 300
- Viewing Angle (H/V°): 170/160
- Backlight Life: 50,000 hrs

Features
- 18.5" WXGA TFT LED LCD display
- AMD dual-core T56E 1.65GHz with independent GPU, advanced graphical performance
- 16:9 wide screen with PCT multi-touch
- Built-in function and home key button used for intuitive UI
- Anti-scratch surface: 7H hardness
- Easy Maintenance of Cfast/HDD/Mini-PCIe components by opening side cover
- Support Mini-PCIe expansion slot
- Support HDMI for second display application
- HD Audio supports for alarm application
- Front LED indicator to show operating status
- IP66 compliant true flat screen
- Compact design with Die-cast Magnesium alloy front bezel
- Fanless cooling system
- Winner of the 2013 iF product design award

Touchscreen
- Light Transmission: ≥88%
- Resolution: 4096*4096 dot
- Type: Projected capacitive

Environment
- Humidity: 10 ~ 95% RH @ 40°C, non-condensing
  Note: Tested for 48hrs
- Ingress Protection: Front panel: IP66
- Operating Temperature: 0 ~ 55°C (32 ~ 131°F)
- Storage Temperature: -20 ~ 60°C (-4 ~ 140°F)
- Vibration Protection: With HDD: 1 Grms (5 ~ 500 Hz)
  (Operating, random vibration)

Rear View

a. COM 1 & 2 (RS-232)
b. Audio (Line out, Mic in)
c. HDMI
d. USB 2.0
e. LAN (10/100/1000)
f. Power Receptor
g1. COM3 (RS-232)
g2. COM4 (RS-422/485)
h. Mini PCI-E slot
i. 2.5" SATA HDD Housing
### Dimensions

![Dimensions Diagram]

Panel Cut-out Dimensions: 479.3mm (18.9")±1mm x 300.3mm (11.8")±0.7mm

### Ordering Information

- **TPC-1840WP-T3AE**
  - 18.5" WXGA Multi-Touch Panel PC, AMD T56E, 4GB
- **WA-TPC1840WP**
  - TPC-1840WP-T3AE with WebAccess software

### Accessories

- **PWR-247-BE**
  - 63W DC 24V/2.62A Output Power Supply
- **1702002600**
  - Power Cable US Plug 1.8 M
- **1702002605**
  - Power Cable EU Plug 1.8 M
- **1702031801**
  - Power Cable UK Plug 1.8 M
- **1700000596**
  - Power Cable China/Australia Plug 1.8 M

### Automation Software

- **968WEXP003X**
  - PanelExpress V2.0 300 tags S/W license
- **968WEXP015X**
  - PanelExpress V2.0 1500 tags S/W license
- **968WEXP050X**
  - PanelExpress V2.0 5000 tags S/W license
- **968WEXP2USB**
  - PanelExpress V2.0 S/W USB dongle

### Application Software

#### SUSIAccess

- Version: V2.1 or above
- An innovative remote device management software, allowing efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.

#### WebAccess

- Version: V7.1 or above
- WebAccess, as the core of Advantech’s IoT solution, is full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.

#### PanelExpress

- Version: V2.0.3.8 or above
- Panel Express, a windows based HMI mini SCADA, realizes the cross platform flexibility offered by WebOP Designer to switch hardware for the consideration of cost and performance become an easy job. Panel Express software provides the best economic and express solution for data intensive high-end HMI applications.

#### WebOP

- Version: V2.0.3.8 or above
- An easy to use integrated development tool featuring solution-oriented screen objects, high-end graphics, Windows fonts for multi-language applications. WebOP runtime, a part of WebOP Designer, guarantees reliability and performance because of the minimum system overhead, high communication data rates, and sub-second screen switching.
Introduction

With a brand-new ID design, the SPC-2140WP series provide high resolution 21.5” display and PCT multi-touch in 16:9 wide format. By embedding an AMD T56N 1.6GHz processor with independent GPU, the SPC-2140WP can support advanced graphical performance in more complex applications. Built-in function and home key button for greater user usability and operating safety. The SPC-2140WP also support Mini-PCIe slot for communication function expansion. Moreover, the SPC-2140WP includes an all around IP66 waterproof design with M12 connectors. With this vertical I/O connector, cable routing can be an easy job in stationary / VESA Arm applications.

Specifications

<table>
<thead>
<tr>
<th>General</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certification</td>
<td>BSMI, CCC, CE, FCC Class A, UL</td>
</tr>
<tr>
<td>Cooling System</td>
<td>Fanless design</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>558.4 x 349.8 x 65 mm (21.98” x 13.77” x 2.56”)</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Front bezel: Die-cast Aluminium alloy Back housing: Die-cast Aluminium alloy</td>
</tr>
<tr>
<td>Mounting</td>
<td>VESA Arm</td>
</tr>
<tr>
<td>OS Support</td>
<td>Microsoft® Win7/8/WES7P/XP/WES2009/Linux</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>35 W Typical</td>
</tr>
<tr>
<td>Power Input</td>
<td>24 Vζ</td>
</tr>
<tr>
<td>Weight (Net)</td>
<td>9 kg (19.8 lbs)</td>
</tr>
</tbody>
</table>

System Hardware

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>AMD G-series T56N 1.6GHz</td>
</tr>
<tr>
<td>Chipset</td>
<td>AMD A50M FCH</td>
</tr>
<tr>
<td>Memory</td>
<td>4GB SO-DIMM DDR3 SDRAM</td>
</tr>
<tr>
<td>LAN</td>
<td>10/100/1000Base-T x 2 (connection:M12 A-coded, 8-pin female)</td>
</tr>
<tr>
<td>Expansion Slots</td>
<td>Full-sized Mini PCIe slot x 1 (optional)</td>
</tr>
<tr>
<td>Storage</td>
<td>2.5” SATA HDD bracket x 1 (optional)</td>
</tr>
<tr>
<td>I/O</td>
<td>RS-232 x1 (connection:M12 A-coded, 8-pin male)</td>
</tr>
<tr>
<td></td>
<td>USB 2.0 x1 (connection:M12 A-coded, 8-pin female)</td>
</tr>
<tr>
<td></td>
<td>24 Vζ power input (connection:M12 A-coded, 5-pin male)</td>
</tr>
</tbody>
</table>

LCD Display

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Type</td>
<td>Full HD TFT LED LCD</td>
</tr>
<tr>
<td>Display Size</td>
<td>21.5”</td>
</tr>
<tr>
<td>Max. Resolution</td>
<td>1920 x 1080</td>
</tr>
<tr>
<td>Max. Colors</td>
<td>16.7</td>
</tr>
<tr>
<td>Luminance cd/m²</td>
<td>300</td>
</tr>
<tr>
<td>Viewing Angle (H/V°)</td>
<td>170/178</td>
</tr>
<tr>
<td>Backlight Life</td>
<td>50,000 hrs</td>
</tr>
</tbody>
</table>

Features

- 21.5" Full HD TFT LED LCD display
- AMD dual-core 1.6GHz processor with independent GPU, advanced graphical performance
- 16:9 wide screen with PCT multi-touch
- Built-in function and home key button used for intuitive UI
- Anti-scratch touch surface: 7H hardness
- All around IP66 with waterproof M12 connector
- Support Mini-PCIe expansion slot
- Front LED indicator to show operating status
- Fanless cooling system
- Winner of the 2013 iF product design award

Touchscreen

- Light Transmission ≥88%
- Resolution 4096*4096 dot
- Type Projected capacitive

Environment

- Humidity 10 – 95% RH @ 40°C, non-condensing
- Ingress Protection All around IP66
- Operating Temperature 0 – 55°C (32 – 131°F)
- Storage Temperature -20 – 60°C (-4 – 140°F)
- Vibration Protection With HDD: 1 Grms (5 – 500 Hz) (Operating, random vibration)

Rear View

a. USB 2.0 with M12 connector  b. COM (RS-232) with M12 connector  c. LAN 1 with M12 connector  d. LAN 2 with M12 connector  e. 24 Vζ input with M12 connector
### Ordering Information

- **SPC-2140WP-T3AE**  
  21.5” full-HD stationary Multi-Touch Panel PC, 4GB
- **WA-SPC2140WP**  
  SPC-2140WP-T3AE with WebAccess software

### Accessories

- **PWR-247-BE**  
  63W DC 24V/2.62A Output Power Supply
- **1702002600**  
  Power Cable US Plug 1.8 M
- **1702002605**  
  Power Cable EU Plug 1.8 M
- **1702031801**  
  Power Cable UK Plug 1.8 M
- **1700000596**  
  Power Cable China/Australia Plug 1.8 M
- **EWM-W151H01E**  
  802.11bn RTL8188EE 1T1R, Half-size Mini-PCIe (also need 9656EWMGO0E)
- **9656EWMG00E**  
  Half-size miniPCIe to Full-size miniPCIe bracket set
- **1750000318**  
  EMI Antenna 20Dbi 2.4GHz SMA CONN for ARK-3384
- **1750003222**  
  802.11b/g 5dbi Dipole Antenna
- **1750003418**  
  Wireless Antenna AN2400-5901RS R/P SMA M9dB
- **SPC-1840WP-MCKE**  
  M12 cable accessory kit for SPC series
- **SPC-1840WP-MOKE**  
  M12 Connector accessory kit for SPC series

### Automation Software

- **968WEXP003X**  
  PanelExpress V2.0 300 tags S/W license
- **968WEXP015X**  
  PanelExpress V2.0 1500 tags S/W license
- **968WEXP050X**  
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- **968WEXP2USB**  
  PanelExpress V2.0 S/W USB dongle

### Application Software

#### SUSIAccess

- **Version**: V2.1 or above
- **Description**: An innovative remote device management software, allowing efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.

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#### PANEL EXPRESS

- **Version**: V2.0.3.8 or above
- **Description**: Panel Express, a windows based HMI mini SCADA, realizes the cross platform flexibility offered by WebOP Designer to switch hardware for the consideration of cost and performance become an easy job. Panel Express software provides the best economic and express solution for data intensive high-end HMI applications.

#### WebOP

- **Version**: V2.0.3.8 or above
- **Description**: An easy to use integrated development tool featuring solution-oriented screen objects, high-end graphics, Windows fonts for multi-language applications. WebOP runtime, a part of WebOP Designer, guarantees reliability and performance because of the minimum system overhead, high communication data rates, and sub-second screen switching.
SPC-1840WP

Features
- 18.5" WXGA TFT LED LCD display
- AMD dual-core 1.65GHz processor with independent GPU, advanced graphical performance
- 16:9 wide screen with PCT multi-touch
- Built-in function and home key button used for intuitive UI
- Anti-scratch touch surface: 7H hardness
- All around IP66 with waterproof M12 connector
- Support Mini-PCIe expansion slot
- Front LED indicator to show operating status
- Fanless cooling system
- Winner of the 2013 iF product design award

Introduction
With a brand-new ID design, the SPC-1840WP series provide high resolution 18.5" display and PCT multi-touch in 16:9 wide format. By embedding an AMD T56N 1.65GHz processor with independent GPU, the SPC-1840WP can support advanced graphical performance in more complex applications. Built-in function and home key button for greater user usability and operating safety. The SPC-1840WP also supports Mini-PCIe slot for communication function expansion. Moreover, the SPC-1840WP includes an all around IP66 waterproof design with M12 connectors. With this vertical I/O connector, cable routing can be an easy job in stationary / VESA Arm applications.

Specifications

General
- Certification
  BSMI, CCC, CE, FCC Class A, UL
- Cooling System
  Fanless design
- Dimensions (W x H x D)
  488 x 309 x 65mm (19.21" x 12.17" x 2.56")
- Enclosure
  Front bezel: Die-cast Aluminium alloy
  Back housing: Die-cast Aluminium alloy
- Mounting
  VESA Arm
- OS Support
  Microsoft® Win8/WES7P/XP/WES2009/Linux
- Power Consumption
  35 W Typical
- Power Input
  24 VDC
- Weight (Net)
  8 kg (17.64 lbs)

System Hardware
- CPU
  AMD G-series T56N 1.65GHz
- Chipset
  AMD A50M FCH
- Memory
  4GB SO-DIMM DDR3 SDRAM
- LAN
  10/100/1000Base-T x 2 (connection:M12 A-coding, 8-pin female)
- Expansion Slots
  Full-sized Mini-PCI-E x 1 (optional)
- Storage
  2.5" SATA HDD
- I/O
  RS-232 x1 (connection:M12 A-coding, 8-pin male)
  USB 2.0 x1 (connection:M12 A-coding, 8-pin female)
  24 VDC power input (connection:M12 A-coding, 5-pin male)

LCD Display
- Display Type
  WXGA TFT LED LCD
- Display Size
  18.5"
- Max. Resolution
  1366 x 768
- Max. Colors
  16.7 M
- Luminance cd/m²
  300
- Viewing Angle (H/V°)
  170/160
- Backlight Life
  50,000 hrs

Touchscreen
- Light Transmission
  ≥88%
- Resolution
  4096*4096 dot
- Type
  Projected capacitive

Environment
- Humidity
  10 ~ 95% RH @ 40°C, non-condensing
  Note: Tested for 48hrs
- Ingress Protection
  All around IP66
- Operating Temperature
  0 ~ 55°C (32 ~ 131°F)
- Storage Temperature
  -20 ~ 60°C (-4 ~ 140°F)
- Vibration Protection
  With HDD: 1 Grms (5 ~ 500 Hz (Operating, random vibration)

Rear View

a. USB 2.0 with M12 connector
d. LAN 2 with M12 connector
b. COM (RS-232) with M12 connector
e. 24 VDC input with M12 connector
c. LAN 1 with M12 connector
### Ordering Information

- **SPC-1840WP-T3AE**: 18.5" WXGA stationary Multi-Touch Panel PC, 4GB
- **WA-SPC1840WP**: SPC-1840WP-T3AE with WebAccess software

### Accessories

- **PWR-247-EB**: 63W DC 24V/2.62A Output Power Supply
- **1702002600**: Power Cable US Plug 1.8 M
- **1702002605**: Power Cable EU Plug 1.8 M
- **1702031801**: Power Cable UK Plug 1.8 M
- **1700000596**: Power Cable China/Australia Plug 1.8 M
- **EWM-W151H01E**: 802.11bgn RTL8188EE 1T1R, Half-size Mini-PCle (also need 9656EWMG00E)
- **9656EWMG00E**: Half-size miniPCle to Full-size miniPCle bracket set
- **1750000318**: EMI Antenna 2DBi 2.4GHz SMA CONN for ARK-3384
- **1750003222**: 802.11b/g 5dB Antenna
- **1750003418**: Wireless Antenna AN2400-5901RS R/P SMA M9dB
- **SPC-1840WP-MCKE**: M12 cable accessory kit for SPC series
- **SPC-1840WP-MOKE**: M12 Connector accessory kit for SPC series

### Automation Software

- **968WEXP003X**: PanelExpress V2.0 300 tags S/W license
- **968WEXP015X**: PanelExpress V2.0 1500 tags S/W license
- **968WEXP050X**: PanelExpress V2.0 5000 tags S/W license
- **968WEXP2USB**: PanelExpress V2.0 S/W USB dongle

### Application Software

#### SUSIACCESS

**Version**: V2.1 or above

An innovative remote device management software, allowing efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.

#### WebAccess

**Version**: V7.1 or above

WebAccess, as the core of Advantech’s IoT solution, is full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.

#### PANEL EXPRESS

**Version**: V2.0-3.8 or above

Panel Express, a windows based HMI mini SCADA, realizes the cross platform flexibility offered by WebOP Designer to switch hardware for the consideration of cost and performance become an easy job. Panel Express software provides the best economic and express solution for data intensive high-end HMI applications.

#### WebOP

**Version**: V2.0-3.8 or above

An easy to use integrated development tool featuring solution-oriented screen objects, high-end graphics, Windows fonts for multi-language applications. WebOP runtime, a part of WebOP Designer, guarantees reliability and performance because of the minimum system overhead, high communication data rates, and sub-second screen switching.
**TPC-1782H**

17" SXGA TFT LED LCD Intel® 4th Generation Core i3 Touch Panel Computer

**Features**
- Industrial 17" SXGA TFT LCD with 50K Lifetime LED Backlight
- Intel 4th Generation Core i3 1.7GHz with 4GB DDR3L SDRAM
- Compact Fanless Embedded System with Aluminum Alloy Front Bezel
- IP65 Approved Front Protection & Panel Mounting
- More Durable 5-wire Resistive Touch Screen
- PCIe and Mini PCIe Expansion Support
- Diverse system IO and Isolated Digital IO by iDoor Technology
- Supports Fieldbus Protocol by iDoor Technology
- 3G/GPS/GPRS/WiFi Communication by iDoor Technology
- Supports Battery-backup MRAM by iDoor Technology
- Chassis Grounding Protection
- HDMI and Audio Multimedia Support
- Support Advantech SusiAccess Remote Device Management Software

**Introduction**

The TPC-1782H touch panel computer with a 17" SXGA LCD, low power embedded Intel 4th Generation Core i3 1.7GHz processor and 4GB DDR3L SDRAM provides the high computing performance in a compact fanless system. To enhance its durability, the TPC-1782H is designed with IP65 front protection, die-cast Al Alloy front bezel and 5-wire resistive touch. It also includes PCIe slot and Mini-pcie slots to extend the functionality and meet a variety of automation applications needs. Through the Mini-PCIe slot, Advantech iDoor technology can provide more I/O connectors, Isolated Digital IO, the Fieldbus Protocol, 3G/GPS/GPRS/WiFi Communication and Battery-backup MRAM. A 2nd monitor and speaker can be attached via the integrated HDMI and Audio port.

The pre-loaded SusiAccess is a smart, unique and ready-to-use remote device management software for you to centralize monitoring and managing of remote embedded devices in real-time. You can focus more on your own applications and let SusiAccess do the rest - configure systems, monitor device health, and recover from any system failures. It's cloud-based and provides on-demand software services so you can easily download and upgrade applications when you need.
TPC-1782H

Dimensions

Panel Cut-out Dimensions: 374.5 x 298.5 mm (14.98” x 11.94”)

Ordering Information

- TPC-1782H-433AE 17” SXGA Panel PC, Intel i3-4010U, 4GB, iDoor, PCIe
- WA-TPC1782H TPC-1782H-433AE with WebAccess software

Accessories

- PWR-248-AE 150W DC 24V/6.25A Output Power Supply
- 1702002600 Power Cable US Plug 1.8 M
- 1702002605 Power Cable EU Plug 1.8 M
- 1700000596 Power Cable China/Australia Plug 1.8 M
- TPC-1000H-WMKE TPC VESA Mounting Kit from 10” to 17” TPC
- TPC-1000H-SMKE TPC Stand kit from 10” to 17” TPC
- EWM-W151H01E 802.11bg RTL8188EE 1T1R, Half-size Mini-PCIe
- 9656EWMD00E Half-size miniPCIe to Full-size miniPCIe bracket set
- 1700000318 EMI Antenna 2DBi 2.4GHz SMA CONN for ARK-3384
- 1700003222 802.11b/g 5Dbi Dipole Antenna
- 1750003418 Wireless Antenna AN2400-5901RS R/P SMA.M9dB

Automation Software

- 968WEXP003X PanelExpress V2.0 300 tags S/W license
- 968WEXP015X PanelExpress V2.0 1500 tags S/W license
- 968WEXP050X PanelExpress V2.0 5000 tags S/W license
- 968WEXP2USB PanelExpress V2.0 S/W USB dongle

iDoor Modules

- PCM-2300MR-AE MR4A16B, 2MByte
- PCM-261D1P8-AE Hilscher netX100 FieldBus, ProfiBus, DB9 x 1
- PCM-26D2CA-AE SJA1000 CANBus, CANopen, DB9 x 1
- PCM-24D2R4-AE OXPCie-952 UART, Isolated RS-422/485, DB9 x 2
- PCM-24D2R2-AE OXPCie-952 UART, Isolated RS-232, DB9 x 2
- PCM-24D4R4-AE OXPCie-954 UART, Non-Isolated RS-422/485, DB37 x 1
- PCM-24D4R2-AE OXPCie-954 UART, Non-Isolated RS-232, DB37 x 1
- PCM-27D24D1-AE Digital I/O, 16DI / 8DO, DB37 x 1

Application Software

- SUSIXAccess
  Version : V2.1 or above
  An innovative remote device management software, allowing efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.

- WebAccess
  Version : V7.1 or above
  WebAccess, as the core of Advantech’s IoT solution, is full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.

- PanelExpress
  Version : V2.0.3.8 or above
  Panel Express, a windows based HMI mini SCADA, realizes the cross platform flexibility offered by WebOP Designer to switch hardware for the consideration of cost and performance become an easy job. Panel Express software provides the best economic and express solution for data intensive high-end HMI applications.

- WebOP
  Version : V2.0.3.8 or above
  An easy to use integrated development tool featuring solution-oriented screen objects, high-end graphics, Windows fonts for multi-language applications. WebOP runtime, a part of WebOP Designer, guarantees reliability and performance because of the minimum system overhead, high communication data rates, and sub-second screen switching.
TPC-1582H

15” XGA TFT LED LCD Intel® 4th Generation Core i3 Touch Panel Computer

**Features**
- Industrial 15" XGA TFT LCD with 50K Lifetime LED Backlight
- Intel® 4th Generation Core i3 1.7GHz with 4GB DDR3 SDRAM
- Compact Fanless Embedded System with Al Alloy Front Bezel
- IP65 Approved Front Protection & Panel Mounting
- More Durable 5-wire Resistive Touch Screen
- PCIe and Mini PCIe Expansion Support
- Diverse system IO and Isolated Digital IO by iDoor Technology
- Supports Fieldbus Protocol by iDoor Technology
- 3G/GPS/GPRS/WiFi Communication by iDoor Technology
- Supports Battery-backup MRAM by iDoor Technology
- Chassis Grounding Protection
- HDMI and Audio Multimedia Support
- Support Advantech SusiAccess Remote Device Management Software

**Introduction**
The TPC-1582H touch panel computer with a 15” XGA LCD, low power embedded Intel 4th Generation Core i3 1.7GHz processor and 4GB DDR3 SDRAM provides the high computing performance in a compact fanless system. To enhance its durability, the TPC-1582H is designed with IP65 front protection, die-cast Al Alloy front bezel and 5-wire resistive touch. It also includes PCIe slot and Mini-pcie slots to extend the functionality and meet a variety of automation applications needs. Through the Mini-PCIe slot, Advantech iDoor technology can provide more I/O connectors, Isolated Digital IO, the Fieldbus Protocol, 3G/GPS/GPRS/WiFi Communication and Battery-backup MRAM. A 2nd monitor and speaker can be attached via the integrated HDMI and Audio port.

The pre-loaded SusiAccess is a smart, unique and ready-to-use remote device management software for you to centralize monitoring and managing of remote embedded devices in real-time. You can focus more on your own applications and let SusiAccess do the rest - configure systems, monitor device health, and recover from any system failures. It’s cloud-based and provides on-demand software services so you can easily download and upgrade applications when you need.

**Specifications**

**General**
- BIOS: AMI UEFI
- Certification: BSMI, CCC, CE, FCC Class A, UL
- Cooling System: Fanless design
- Dimensions (W x H x D): 383 x 307 x 78.5 mm (15.08” x 12.09” x 3.09”)
- Enclosure: Front bezel: Die-cast Aluminum alloy
  
  Back housing: PC/ABS Resin
- Mounting: Desktop, Wall or Panel Mount
- OS Support: Microsoft® Windows WES7 32bit/64bit /WES8 64bit / Windows 7 32bit/64bit / Windows 8 64bit Linux Kernel
- Power Consumption: 18W Typical, 60W Max. (Without Add-on card)
- Power Input: 24Vdc +/- 20%
- Watchdog Timer: 1 – 255 sec (system)
- Weight (Net): 5.5 kg (12.13 lbs)

**System Hardware**
- CPU: Intel 4th Generation Core i3-4010U 1.7GHz
- Chipset: Lynx Point-LP
- Memory: 4GB DDR3L 1600MHz
- LAN: 10/100/1000 Base-T x 2 (one port supports iAMT)
- Expansion Slots: Half-size PCI-E and Full-size Mini PCI-E
- Storage: CFast slot x 1
  
  2.5" SATA SSD slot x 1
  
  RS-232 x 1, RS-232/422/485 x 1
  
  USB 3.0 x 2, HDMI 1.4 x 1
  
  Audio Line-out x 1, USB 2.0 x 1 (optional)
  
  Audio MIC x 1 (optional)
- I/O: CFast
  
  a. CFast
  
  b. PCI-E Slot
  
  c. 24Vdc Power
  
  d. COM (RS-232)
  
  e. HDMI
  
  f. LAN
  
  g. USB3.0
  
  h. Audio Line Out
  
  i. COM (RS-232/422/485)
  
  j. iDoor
  
  k. SMA Connector for Antenna
  
  l. 2.5" SATA SSD Slot and Mini-PCIe Slot
- LCD Display
  
  Display Type: XGA TFT LED LCD
  
  Display Size: 15"
  
  Max. Resolution: 1024 x 768
- System Hardware
  
  a. CFast
  
  b. PCI-E Slot
  
  c. 24Vdc Power
  
  d. COM (RS-232)
  
  e. HDMI
  
  f. LAN
  
  g. USB3.0
  
  h. Audio Line Out
  
  i. COM (RS-232/422/485)
  
  j. iDoor
  
  k. SMA Connector for Antenna
  
  l. 2.5" SATA SSD Slot and Mini-PCIe Slot

**Touchscreen**
- Lifespan: 36 million touches at single point
- Light Transmission: Above 75%
- Resolution: Linearity
- Type: 5-wire, analog resistive

**Environment**
- Humidity: 10 – 95% RH @ 40°C, non-condensing
- Front panel: IP65
- Operating Temperature: 0 – 55°C (32 – 131°F)
- Storage Temperature: -20 – 60°C (-4 ~ 140°F)
- Vibration Protection: With HDD: 1 Grms (5 – 500 Hz) (Operating, random vibration)

**Rear View**

**Features**
- Industrial 15" XGA TFT LCD with 50K Lifetime LED Backlight
- Intel® 4th Generation Core i3 1.7GHz with 4GB DDR3 SDRAM
- Compact Fanless Embedded System with Al Alloy Front Bezel
- IP65 Approved Front Protection & Panel Mounting
- More Durable 5-wire Resistive Touch Screen
- PCIe and Mini PCIe Expansion Support
- Diverse system IO and Isolated Digital IO by iDoor Technology
- Supports Fieldbus Protocol by iDoor Technology
- 3G/GPS/GPRS/WiFi Communication by iDoor Technology
- Supports Battery-backup MRAM by iDoor Technology
- Chassis Grounding Protection
- HDMI and Audio Multimedia Support
- Support Advantech SusiAccess Remote Device Management Software

**Introduction**

The TPC-1582H touch panel computer with a 15” XGA LCD, low power embedded Intel 4th Generation Core i3 1.7GHz processor and 4GB DDR3 SDRAM provides the high computing performance in a compact fanless system. To enhance its durability, the TPC-1582H is designed with IP65 front protection, die-cast Al Alloy front bezel and 5-wire resistive touch. It also includes PCIe slot and Mini-pcie slots to extend the functionality and meet a variety of automation applications needs. Through the Mini-PCIe slot, Advantech iDoor technology can provide more I/O connectors, Isolated Digital IO, the Fieldbus Protocol, 3G/GPS/GPRS/WiFi Communication and Battery-backup MRAM. A 2nd monitor and speaker can be attached via the integrated HDMI and Audio port.

The pre-loaded SusiAccess is a smart, unique and ready-to-use remote device management software for you to centralize monitoring and managing of remote embedded devices in real-time. You can focus more on your own applications and let SusiAccess do the rest - configure systems, monitor device health, and recover from any system failures. It’s cloud-based and provides on-demand software services so you can easily download and upgrade applications when you need.
Panel Cut-out Dimensions: 374.5 x 298.5 mm (14.98" x 11.94")

**Ordering Information**

- **TPC-1582H-433AE**  15" XGA Panel PC, Intel i3-4010U, 4GB, iDoor, PCIe
- **WA-TPC1582H**  TPC-1582H-433AE with WebAccess software

**Accessories**

- **PWR-248-AE**  150W DC 24V/6.25A Output Power Supply
- **1702002600**  Power Cable US Plug 1.8 M
- **1702002605**  Power Cable EU Plug 1.8 M
- **1700000596**  Power Cable China/Australia Plug 1.8 M
- **TPC-1000H-WMKE**  TPC VESA Mounting Kit from 10" to 17" TPC
- **TPC-1000H-SMKE**  TPC Stand kit from 10" to 17" TPC
- **EW9-W151H01E**  Half-size miniPCIe to Full-size miniPCIe (also need 9656EWM00E)
- **9656EWM00E**  Half-size miniPCIe bracket set
- **175000318**  EMI Antenna 2DBi 2.4GHz SMA CONN for ARK-3384
- **1750003222**  802.11b/g 5dBi Dipole Antenna
- **1750003418**  Wireless Antenna AN2400-5901RS R/P SMA M9dB

**Automation Software**

- **968WEXP003X**  PanelExpress V2.0 300 tags S/W license
- **968WEXP015X**  PanelExpress V2.0 1500 tags S/W license
- **968WEXP050X**  PanelExpress V2.0 5000 tags S/W license
- **968WEXP2USB**  PanelExpress V2.0 S/W USB dongle

**iDoor Modules**

- **PCM-2300MR-AE**  MR4A16B, 2MBYTE
- **PCM-26D1PB-AE**  Hiilscher netX100 FieldBus, ProfiBus, DB9 x 1
- **PCM-26D2CA-AE**  SJA1000 CANBus, CANopen, DB9 x 1
- **PCM-24D2R4-AE**  OXPCie-952 UART, Isolated RS-422/485, DB9 x 2
- **PCM-24D2R2-AE**  OXPCie-952 UART, Isolated RS-232, DB9 x 2
- **PCM-24D4R4-AE**  OXPCie-954 UART, Non-Isolated RS-422/485, DB37 x 1
- **PCM-24D4R2-AE**  OXPCie-954, UART, Non-Isolated RS-232, DB37 x 1
- **PCM-27D24DI-AE**  Digital I/O, 16DI / 8DO, DB37 x 1

**Application Software**

- **SUSIAccess**  Version : V2.1 or above
  An innovative remote device management software, allowing efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.

- **WebAccess**  Version : V7.1 or above
  WebAccess, as the core of Advantech's IoT solution, is full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.

- **PanelExpress**  Version : V2.0.3.8 or above
  Panel Express, a windows based HMI mini SCADA, realizes the cross platform flexibility offered by WebOP Designer to switch hardware for the consideration of cost and performance become an easy job. Panel Express software provides the best economic and express solution for data intensive high-end HMI applications.

  - **968WEXP003X**  PanelExpress V2.0 300 tags S/W license
  - **968WEXP015X**  PanelExpress V2.0 1500 tags S/W license
  - **968WEXP050X**  PanelExpress V2.0 5000 tags S/W license
  - **968WEXP2USB**  PanelExpress V2.0 S/W USB dongle
TPC-1771H

17” SXGA TFT LED LCD Intel® Atom™ Dual-Core D525 Touch Panel Computer

Features
- Intel® Atom™ D525 1.8 GHz processor
- 17” SXGA TFT LED LCD
- Compact design with die-cast Al alloy front bezel
- Fanless cooling system
- IP65 approved front panel
- PCIe and Mini PCIe expansion support
- Supports 4 GB DDR3 SDRAM
- Integrated 16-channel Digital I/O with isolation
- 1 MB Battery-backed SRAM
- Serial port isolation protection
- Supports Microsoft® WEST/XP/WES/WinCE
- Supports external antenna for wireless communication
- Supports field-bus communication for PLC connectivity

Introduction
The TPC-1771H features a fanless low power consuming Intel® Atom™ Dual Core 1.8GHz processor 4GB DDR3 SDRAM and Resistive touch screen, and multiple I/O ports 2 x RS-232 with isolation, 1 x RS-422/485 with isolation. For data storage the fanless TPC devices also include: 1 x Compact Flash Slot and 1 x 2.5” SATA HDD. To expand function, this model provides PCIe and mini-PCIe expansion slots, an integrated 16-channel Digital I/O with isolation and 1MB Battery-backed SRAM.

Specifications

General
- BIOS AMI 8Mbit
- Certification BSMI, CCC, CE, FCC Class A, UL
- Cooling System Fanless design
- Dimensions (W x H x D) 414±1 x 347.5±1 x 84±1.5 mm (16.3” x 13.68” x 3.31”)
- Enclosure Front bezel: Die-cast Aluminum alloy
- Back housing: PC/ABS Resin
- Mounting Desktop, Wall or Panel Mount
- OS Support Microsoft® Windows 7/WES7/WES 2009/XPE/CE 6.0/
  Linux /Android
- Power Consumption 24 W (typical)
- Power Input 10–29 Vdc
- Watchdog Timer 1 – 255 sec (system)
- Weight (Net) 6 kg (13.23 lbs)

System Hardware
- CPU Intel® Atom™ D525 1.8 GHz with 1MB cache
- Chipset Ich8M
- Memory 4GB SO-DIMM DDR3 SDRAM
- LAN 10/100/1000Base-T x 2
- Expansion Slots Half-size PCI-E or full-size Mini PCI-E
- Storage CompactFlash® slot x 1
  2.5” SATA HDD x 1 (Optional)
- I/O RS-232 x 2 (COM1, 2) with isolation
  RS-422/485 x 1 (COM3) with isolation and auto data
  flow control
  USB 2.0 x 2 (Host)
  PS/2 x 1
- DI/DO & backup SRAM 8 x DI/DO with isolation and backup 1MB SRAM

LCD Display
- Display Type SXGA TFT LED LCD
- Display Size 17”
- Max. Resolution 1280 x 1024
- Max. Colors 262 K
- Luminance cd/m2 350
- Viewing Angle (H/V°) 170°/160°
- Backlight Life 50,000 hrs
- Contrast Ratio 1000:1

Touchscreen
- Lifespan 36 million touches at single point
- Light Transmission Above 75%
- Resolution Linearity
- Type 5-wire, analog resistive

Environmental
- Humidity 10 – 95% RH @ 40°C, non-condensing
- Ingress Protection Front panel: IP65
- Operating Temperature 0 – 55°C (32 – 131°F)
- Storage Temperature -20 – 60°C (-4 – 140°F)
- Vibration Protection With HDD: 1 G rms (5 – 500 Hz)
  (Operating, random vibration)

Rear View
a. CompactFlash
b. PCI-E slot
c. COM (RS-422/485)
d. COM (RS-232)
e. LAN (10/100/1000)
f. USB 2.0
g. PS/2
h. Power Receptor
i. DI/DO ports
j. Mini PCI-E slot
TPC-1771H

Ordering Information
- TPC-1771H-D3AE: 17” SXGA Touch Panel PC, D525 1.8 GHz, 4GB
- WA-TPC1771: TPC-1771H-D3AE with WebAccess software

Accessories
- PWR-247-6E: 63W DC 24V/2.62A Output Power Supply
- 1702002600: Power Cable US Plug 1.8 M
- 1702002605: Power Cable EU Plug 1.8 M
- 1702031801: Power Cable UK Plug 1.8 M
- 1700000596: Power Cable China/Australia Plug 1.8 M
- EWM-W1S1H0E: 802.11bgn RTL8188EE 1T1R, Half-size Mini-PCle (also need 9656EWMG00E)
- 9656EWMG00E: Half-size miniPCIe to Full-size miniPCIe bracket set
- 1750003118: EMI Antenna 20Bi 2.4GHz SMA CONN for ARK-3384
- 1750003222: 802.11b/g 6dB Dipole Antenna
- 1750003418: Wireless Antenna AN2400-5901RS R/P SMA.M9dB
- TPC-1000H-WMKE: TPC VESA Mounting Kit from 10” to 17” TPC
- TPC-1000H-SMKI: TPC Stand kit from 10” to 17” TPC
- 1750003118: EMI Antenna 20Bi 2.4GHz SMA CONN for ARK-3384
- 1750003418: Wireless Antenna AN2400-5901RS R/P SMA.M9dB
- 1750000396: EMI Antenna 2DBI 2.4GHz SMA CONN for ARK-3384
- 1750003222: 802.11b/g 6dB Dipole Antenna
- 1750003418: Wireless Antenna AN2400-5901RS R/P SMA.M9dB

* VESA support via a wall mounting kit

Automation Software
- 968WEXP003X: PanelExpress V2.0 300 tags S/W license
- 968WEXP015X: PanelExpress V2.0 1500 tags S/W license
- 968WEXP050X: PanelExpress V2.0 5000 tags S/W license
- 968WEXP2USB: PanelExpress V2.0 S/W USB dongle

Application Software
- Version: V2.1 or above
  An innovative remote device management software, allowing efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.

- Version: V7.1 or above
  WebAccess, as the core of Advantech’s IoT solution, is full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.

- Version: V2.0.3.8 or above
  PanelExpress, a windows based HMI mini SCADA, realizes the cross platform flexibility offered by WebOP Designer to switch hardware for the consideration of cost and performance become an easy job. PanelExpress software provides the best economic and express solution for data intensive high-end HMI applications.

- Version: V2.0.3.8 or above
  WebOP, an easy to use integrated development tool featuring solution-oriented screen objects, high-end graphics, Windows fonts for multi-language applications. WebOP runtime, a part of WebOP Designer, guarantees reliability and performance because of the minimum system overhead, high communication data rates, and sub-second screen switching.
**TPC-1571H**

**15” XGA TFT LED LCD Intel® Atom™ Dual-Core D525 Touch Panel Computer**

**Features**
- Intel® Atom™ D525 1.8 GHz processor
- 15” XGA TFT LED LCD
- Compact design with die-cast Al alloy front bezel
- Fanless cooling system
- IP65 approved front panel
- PCIe and Mini PCIe expansion support
- Supports 4 GB DDR3 SDRAM
- Integrated 16-channel Digital I/O with isolation
- 1 MB Battery-backed SRAM
- Serial port isolation protection
- Supports Microsoft® WES7/XP/WES/WinCE
- Supports external antenna for wireless communication
- Supports field-bus communication for PLC connectivity

**Introduction**

The TPC-1571H features a fanless low power consuming Intel® Atom™ Dual Core 1.8GHz processor 4GB DDR3 SDRAM and Resistive touch screen, and multiple I/O ports 2 x RS-232 with isolation, 1 x RS-422/485 with isolation. For data storage the fanless TPC devices also include: 1 x Compact Flash Slot and 1 x 2.5” SATA HDD. To expand function, this model provides PCIe and mini-PCIe expansion slots, an integrated 16-channel Digital I/O with isolation and 1MB Battery-backed SRAM.

**Specifications**

**General**
- BIOS: AMI 8Mbit
- Certification: BSMI, CCC, CE, FCC Class A, UL
- Cooling System: Fanless design
- Dimensions (W x H x D): 383 x 307 x 78.5 mm (15.08” x 12.09” x 3.09”)
- Enclosure: Front bezel: Die-cast Aluminum alloy
- Mounting: Desktop, Wall or Panel Mount
- OS Support: Microsoft® Windows 7/WES7/WES 2009/XPE/CE 6.0/Linux /Android
- Power Consumption: 21 W (typical)
- Power Input: 10~29 VDC
- Watchdog Timer: 1 – 255 sec (system)
- Weight (Net): 5.5 kg (12.13 lbs)

**System Hardware**
- CPU: Intel® Atom™ D525 1.8 GHz with 1MB cache
- Chipset: ICH8M
- Memory: 4GB SO-DIMM DDR3 SDRAM
- LAN: 10/100/1000Base-T x 2
- Expansion Slots: Half-size PCI-E or full-size Mini PCI-E
- Storage: CompactFlash® slot x 1 2.5” SATA HDD x 1 (Optional)
- I/O: RS-232 x 2 (COM1, 2) with isolation RS-422/485 x 1 (COM3) with isolation and auto data flow control USB 2.0 x 2 (Host) PS/2 x 1
- DI/DO & backup SRAM: 8 x DI/DO with isolation and backup 1MB SRAM

**LCD Display**
- Display Type: XGA TFT LED LCD
- Display Size: 15”
- Max. Resolution: 1024 x 768
- Max. Colors: 262 K
- Luminance cd/m²: 350
- Viewing Angle (H/V°): 160/140
- Backlight Life: 50,000 hrs
- Contrast Ratio: 700:1

**Touchscreen**
- Lifespan: 36 million touches at single point
- Light Transmission: Above 75%
- Resolution: Linearity
- Type: 5-wire, analog resistive

**Environment**
- Humidity: 10 ~ 95% RH @ 40°C, non-condensing
- Ingress Protection: Front panel: IP65
- Operating Temperature: 0 ~ 55°C (32 ~ 131°F)
- Storage Temperature: -20 ~ 60°C (-4 ~ 140°F)
- Vibration Protection: With HDD: 1 Grms (5 ~ 500 Hz) (Operating, random vibration)

**Rear View**
- a. CompactFlash
- b. PCI-E slot
- c. COM (RS-422/485)
- d. COM (RS-232)
- e. LAN (10/100/1000)
- f. USB 2.0
- g. PS/2
- h. Power Receptor
- i. DI/DO ports
- j. Mini PCI-E slot
Dimensions

**TPC-1571H**

**Ordering Information**
- **TPC-1571H-D3AE** 15” XGA Touch Panel PC, D525 1.8 GHz, 4GB
- **WA-TPC1571** TPC-1571H-D3AE with WebAccess software

**Accessories**
- **PWR-247-BE** 63W DC 24V/2.62A Output Power Supply
- **1702002600** Power Cable US Plug 1.8 M
- **1702002605** Power Cable EU Plug 1.8 M
- **1702031801** Power Cable UK Plug 1.8 M
- **1700000596** Power Cable China/Australia Plug 1.8 M
- **EWM-W151H01E** 802.11bg RTL8188EE 1T1R, Half-size Mini-PCIe (also need 9656EWMG00E)
- **9656EWMG00E** Half-size miniPCIe to Full-size miniPCIe bracket set
- **1750000318** EMI Antenna 20dBi 2.4GHz SMA CONN for ARK-3384
- **1750003222** 802.11b/g 5dB Dipole Antenna
- **1750003418** Wireless Antenna AN2400-5901RS R/P SMA,M9dB
- **TPC-1000H-WMKE** TPC VESA Mounting Kit from 10” to 17” TPC
- **>TPC-1000H-SMKE** TPC Stand kit from 10” to 17” TPC
- **1750000318** EMI Antenna 20dBi 2.4GHz SMA CONN for ARK-3384
- **1750003222** 802.11b/g 5dB Dipole Antenna
- **1750003418** Wireless Antenna AN2400-5901RS R/P SMA,M9dB

* VESA support via a wall mounting kit

**Automation Software**
- **PanelExpress V2.0.3.8 or above** Panel Express, a windows based HMI mini SCADA, realizes the cross platform flexibility offered by WebOP Designer to switch hardware for the consideration of cost and performance become an easy job. Panel Express software provides the best economic and express solution for data intensive high-end HMI applications.
- **WebOP** An easy to use integrated development tool featuring solution-oriented screen objects, high-end graphics, Windows fonts for multi-language applications. WebOP runtime, a part of WebOP Designer, guarantees reliability and performance because of the minimum system overhead, high communication data rates, and sub-second screen switching.

**Application Software**
- **PanelExpress V2.0.3.8 or above** An innovative remote device management software, allowing efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.
- **WebAccess** Version : V7.1 or above
  WebAccess, as the core of Advantech’s IoT solution, is full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.

Panel Cut-out Dimensions: 374.5 x 298.5 mm (14.98” x 11.94”)
TPC-1271H

12.1” SVGA TFT LED LCD Intel® Atom™ Dual-Core D525 Touch Panel Computer

Features
- Intel® Atom™ D525 1.8 GHz processor
- 12.1” SVGA TFT LED LCD
- Compact design with die-cast Al alloy front bezel
- Fanless cooling system
- IP66 approved front panel
- PCIe and Mini PCIe expansion support
- Supports 4 GB DDR3 SDRAM
- Integrated 16-channel Digital I/O with isolation
- 1 MB Battery-backed SRAM
- Serial port isolation protection
- Automatic data flow control RS-485
- Supports external antenna for wireless communication
- Supports field-bus communication for PLC connectivity

Introduction
The TPC-1271H features a fanless low power consuming Intel® Atom™ Dual Core 1.8GHz processor 4GB DDR3 SDRAM and Resistive touch screen, and multiple I/O ports 2 x RS-232 with isolation, 1 x RS-422/485 with isolation. For data storage the fanless TPC devices also include: 1 x Compact Flash Slot and 1 x 2.5” SATA HDD. To expand function, this model provides PCIe and mini-PCIe expansion slots, an integrated 16-channel Digital I/O with isolation and 1MB Battery-backed SRAM.

Specifications

General
- BIOS
  - AMI 8Mbit
- Certification
  - BSMI, CCC, CE, FCC Class A, UL
- Cooling System
  - Fanless design
- Dimensions (W x H x D)
  - 311 x 237 x 71.6 mm (12.24” x 9.33” x 2.82”)
- Enclosure
  - Front bezel: Die-cast Aluminum alloy
  - Back housing: PC/ABS Resin
- Mounting
  - Desktop, Wall or Panel Mount
- OS Support
  - Microsoft® Windows 7/WES7/WES 2009/XPE/CE 6.0/
  - Linux / Android
- Power Consumption
  - 20W (typical)
- Power Input
  - 10–29 VDC
- Watchdog Timer
  - 1 ~ 255 sec (system)
- Weight (Net)
  - 4.57 kg (10.07 lbs)

System Hardware
- CPU
  - Intel® Atom™ D525 1.8 GHz with 1MB cache
- Chipset
  - ICH8M
- Memory
  - 4GB SO-DIMM DDR3 SDRAM
- LAN
  - 10/100/1000Base-T x 2
- Expansion Slots
  - Half-size PCI-E or full-size Mini PCI-E
- Storage
  - CompactFlash® slot x 1
  - 2.5” SATA HDD x 1 (Optional)
- I/O
  - RS-232 x 2 (COM1, 2) with isolation
  - RS-422/485 x 1 (COM3) with isolation and auto data flow control
  - USB 2.0 x 2 (Host)
  - PS/2 x 1
- DI/DO & backup SRAM
  - 8 x DI/DO with isolation and backup 1MB SRAM

LCD Display
- Display Type
  - SVGA TFT LED LCD
- Display Size
  - 12.1”
- Max. Resolution
  - 800 x 600
- Max. Colors
  - 262 K
- Luminance cd/m²
  - 450
- Viewing Angle (H/V°)
  - 160/140
- Backlight Life
  - 50,000 hrs
- Contrast Ratio
  - 700:1

Touchscreen
- Lifespan
  - 10 million touches at single point
- Light Transmission
  - Above 75%
- Resolution
  - Linearity
- Type
  - 5-wire, analog resistive

Environment
- Humidity
  - 10 – 95% RH @ 40°C, non-condensing
- Ingress Protection
  - Front panel: IP65
- Operating Temperature
  - 0 – 55°C (32 – 131°F)
- Storage Temperature
  - -20 – 60°C (-4 – 140°F)
- Vibration Protection
  - With HDD: 1 Gms (5 – 500 Hz)
  - (Operating, random vibration)

Rear View

Illustration of TPC-1271H with labels for various components and connections.
**TPC-1271H**

### Dimensions

Panel Cut-out Dimensions: 302 x 228 mm (12.08” x 9.12”)

### Ordering Information

- **TPC-1271H-D3AE**: 12.1” SVGA Touch Panel PC, D525 1.8 GHz, 4GB
- **WA-TPC1271**: TPC-1271H-D3AE with WebAccess software

### Accessories

- **PWR-247-BE**: 63W DC 24V/2.62A Output Power Supply
- **1702002600**: Power Cable US Plug 1.8 M
- **1702002605**: Power Cable EU Plug 1.8 M
- **1702031801**: Power Cable UK Plug 1.8 M
- **1700000596**: Power Cable China/Australia Plug 1.8 M
- **EWM-W151H01E**: 802.11b/gn RTL8188EE 1T1R, Half-size Mini-PCIe (also need 9656EWMG00E)
- **9656EWMG00E**: Half-size miniPCIe to Full-size miniPCIe bracket set
- **175000318**: EMI Antenna 20Bi 2.4GHz SMA CONN for ARK-3384
- **1750003222**: 802.11b/g 5dBi Dipole Antenna
- **1750003418**: Wireless Antenna AN2400-5901RS R/P SMA M9dB
- **TPC-100H-WMKE**: TPC VESA Mounting Kit from 10” to 17” TPC
- **TPC-100H-SMKE**: TPC Stand kit from 10” to 17” TPC
- **1750000318**: EMI Antenna 20Bi 2.4GHz SMA CONN for ARK-3384
- **1750003222**: 802.11b/g 5dBi Dipole Antenna
- **1750003418**: Wireless Antenna AN2400-5901RS R/P SMA M9dB

* VESA support via a wall mounting kit

### Application Software

#### SUSIAccess

- **Version**: V2.1 or above
- An innovative remote device management software, allowing efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.

#### WebAccess

- **Version**: V7.1 or above
- WebAccess, as the core of Advantech’s IoT solution, is full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.

#### PanelExpress

- **Version**: V2.0.3.8 or above
- PanelExpress, a windows based HMI mini SCADA, realizes the cross platform flexibility offered by WebOP Designer to switch hardware for the consideration of cost and performance become an easy job. Panel Express software provides the best economic and express solution for data intensive high-end HMI applications.

#### WebOP

- **Version**: V2.0.3.8 or above
- An easy to use integrated development tool featuring solution-oriented screen objects, high-end graphics, Windows fonts for multi-language applications. WebOP runtime, a part of WebOP Designer, guarantees reliability and performance because of the minimum system overhead, high communication data rates, and sub-second screen switching.

### Automation Software

- **968WEXP003X**: PanelExpress V2.0 300 tags S/W license
- **968WEXP015X**: PanelExpress V2.0 1500 tags S/W license
- **968WEXP050X**: PanelExpress V2.0 5000 tags S/W license
- **968WEXP2USB**: PanelExpress V2.0 S/W USB dongle
### TPC-1071H

**10.4”SVGA TFT LED LCD Intel® Atom™ Dual-Core D525 Touch Panel Computer**

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**Introduction**

The TPC-1071H features a fanless low power consuming Intel® Atom™ Dual Core 1.8 GHz processor, 4 GB DDR3 SDRAM, and a Resistive touch screen, along with multiple I/O ports: 2 x RS-232 with isolation, 1 x RS-422/485 with isolation. For data storage, the fanless TPC devices also include: 1 x Compact Flash Slot and 1 x 2.5” SATA HDD. To expand functionality, this model provides PCIe and mini-PCIe expansion slots, an integrated 16-channel Digital I/O with isolation, and 1 MB Battery-backed SRAM.

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**Specifications**

**General**

- **BIOS**: AMI 8Mbit
- **Certification**: BSMI, CCC, CE, FCC Class A, UL
- **Cooling System**: Fanless design
- **Dimensions (W x H x D)**: 287.0 ±0.5 x 227.0±0.5 x 72.3±1.0 mm (11.30” x 8.94” x 2.85”)
- **Enclosure**: Front bezel: Die-cast Aluminum alloy, Back housing: PC/ABS Resin
- **Mounting**: Desktop, Wall or Panel Mount
- **OS Support**: Microsoft® Windows 7/WES7/WES 2009/XPE/CE 6.0/Linux / Android
- **Power Consumption**: 17W
- **Power Input**: 10~29 VDC
- **Watchdog Timer**: 1 ~ 255 sec (system)
- **Weight (Net)**: TPC-1071H: 3.5 kg (7.72 lbs)

**System Hardware**

- **CPU**: Intel® Atom™ D525 1.8 GHz with 1 MB cache
- **Chipset**: ICH8M
- **Memory**: 4 GB SO-DIMM DDR3 SDRAM
- **LAN**: 10/100/1000Base-T x 2
- **Expansion Slots**: Half-size PCI-E or full-size Mini PCI-E
- **Storage**: CompactFlash® slot x 1, 2.5” SATA HDD x 1 (Optional)
- **I/O**: RS-232 x 2 (COM1, 2) with isolation, RS-422/485 x 1 (COM3) with isolation and auto data flow control, USB 2.0 x 2 (Host), PS/2 x 1
- **DI/DO & backup SRAM**: 8 x DI/DO with isolation and backup 1 MB SRAM

**LCD Display**

- **Display Type**: SVGA TFT LED LCD
- **Display Size**: 10.4”
- **Max. Resolution**: 800 x 600
- **Max. Colors**: 262 K
- **Luminance cd/m²**: 240
- **Viewing Angle (H/V°)**: 120/100
- **Backlight Life**: 50,000 hrs
- **Contrast Ratio**: 400:1

**Touchscreen**

- **Lifespan**: 10 million touches at single point
- **Light Transmission**: Above 75%
- **Resolution**: Linearity
- **Type**: 5-wire, analog resistive

**Environment**

- **Humidity**: 10 ~ 95% RH @ 40°C, non-condensing
- **Ingress Protection**: Front panel: IP65
- **Operating Temperature**: 0 ~ 55°C (32 ~ 131°F)
- **Storage Temperature**: -20 ~ 60°C (-4 ~ 140°F)
- **Vibration Protection**: With HDD: 1 Gms (5 ~ 500 Hz) (Operating, random vibration)

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**Rear View**

- a. HDD
- b. CompactFlash
- c. PCI-E slot
- d1. COM3 (RS-422/485)
- d2. COM2 (RS-232)
- e. COM1 (RS-232)
- f. LAN (10/100/1000)
- g. USB 2.0
- h. PS/2
- i. Power Receptor
- j. DI/DO ports
- k. Mini PCI-E slot

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**Features**

- Intel® Atom™ D525 1.8 GHz processor
- 10.4” SVGA TFT LED LCD
- Compact design with die-cast Al alloy front bezel
- Fanless cooling system
- IP65 approved front panel
- PCIe and Mini PCIe expansion support
- Supports 4 GB DDR3 SDRAM
- Integrated 16-channel Digital I/O with isolation
- 1 MB Battery-backed SRAM
- Serial port isolation protection
- Supports Microsoft® WES7/XP/WES/WinCE
- Supports external antenna for wireless communication
- Supports field-bus communication for PLC connectivity
TPC-1071H

Dimensions

Panel Cut-out Dimensions: 279.5±0.5x219.5±0.5mm (11.18” x 8.76”)

Ordering Information

- **TPC-1071H-D3AE**: 10.4” SVGA Touch Panel PC, D525 1.8 GHz, 4GB
- **WA-TPC1071**: TPC-1071H-D3AE with WebAccess software

Accessories

- **PWR-247-ER**: 63W DC 24V/2.62A Output Power Supply
- **1702002600**: Power Cable US Plug 1.8 M
- **1702002605**: Power Cable EU Plug 1.8 M
- **1702031801**: Power Cable UK Plug 1.8 M
- **1700000596**: Power Cable China/Australia Plug 1.8 M
- **EWM-W151H01E**: 802.11bgn RTL8188EE 1T1R, Half-size Mini-PCIe (also need 9656EWMGO0E)
- **9656EWMGO0E**: Half-size miniPCIe to Full-size miniPCIe bracket set
- **175000318**: EMI Antenna 20Bi 2.4GHz SMA CONN for ARK-3384
- **1750003222**: 802.11b/g 5dBi Dipole Antenna
- **1750003418**: Wireless Antenna AN2400-5901RS R/P SMA.M9dB
- **TPC-1000H-WMKE**: TPC VESA Mounting Kit from 10” to 17” TPC
- **TPC-1000H-SMKE**: TPC Stand kit from 10” to 17” TPC
- **175000318**: EMI Antenna 20Bi 2.4GHz SMA CONN for ARK-3384
- **1750003222**: 802.11b/g 5dBi Dipole Antenna
- **1750003418**: Wireless Antenna AN2400-5901RS R/P SMA.M9dB

* VESA support via a wall mounting kit

Automation Software

- **PanelExpress**: PanelExpress V2.0 300 tags S/W license
- **PanelExpress V2.0 1500 tags S/W license**
- **PanelExpress V2.0 5000 tags S/W license**
- **PanelExpress V2.0 S/W USB dongle**

Application Software

**SusiAccess**

Version: V2.1 or above

An innovative remote device management software, allowing efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.

**WebAccess**

Version: V7.1 or above

WebAccess, as the core of Advantech’s IoT solution, is a full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.

**PanelExpress**

Version: V2.0.3.8 or above

Panel Express, a Windows-based HMI mini SCADA, realizes the cross platform flexibility offered by WebOP Designer to switch hardware for the consideration of cost and performance become an easy job. Panel Express software provides the best economic and express solution for data intensive high-end HMI applications.

**WebOP**

Version: V2.0.3.8 or above

An easy to use integrated development tool featuring solution-oriented screen objects, high-end graphics, Windows fonts for multi-language applications. WebOP runtime, a part of WebOP Designer, guarantees reliability and performance because of the minimum system overhead, high communication data rates, and sub-second screen switching.
TPC-1551T

15" XGA TFT LED LCD Intel® Atom™ Thin Client Terminals

Introduction
The TPC-1551T thin client terminal with a 15" XGA LCD, low power embedded Intel® Atom™ E3827 1.75 GHz Processor and 4GB (8GB optional) DDR3L SDRAM provides computing performance in a compact fanless system. To enhance its durability, the TPC-1551T is true-flat touch screen designed with IP65 front protection, die-cast Al Alloy front bezel and 5-wire resistive touch. Also provide TPC-1551H non-flat model with traditional TPC looking for existing customers. It supports wide operating temperatures -20~60°C and includes full size mini-PCIe slot to extend the functionality and meet a variety of automation applications needs. Through the Mini-PCIe slot, Advantech iDoor technology (optional) can provide more I/O connectors, Isolated Digital I/O, the Fieldbus Protocol, 3G/GPS/GPRS/WiFi Communication and Battery-backup MRAM.

Specifications

General
- BIOS: AMI UEFI
- Certification: BSMI, CCC, CE, FCC Class A, UL
- Cooling System: Fanless design
- Dimensions (W x H x D): 383.20 x 307.30 x 61.10 mm (15.09" x 12.10" x 2.41")
- Enclosure: Front bezel: Die-cast Aluminum alloy; Back housing: SECC
- Mounting: Desktop, Wall or Panel Mount
- OS Support: Microsoft® Windows WES7 32bit/64bit / WES8 64bit / Windows 7 32bit/64bit / Windows 8 32bit/64bit Linux Kernel 3.x
- Power Consumption: 18W (typical)
- Power Input: 24VDC +/− 20%
- Watchdog Timer: 1 ~ 255 sec (system)
- Weight (Net): 3.9KG

System Hardware
- CPU: Intel® Atom™ E3827 1.75 GHz Processor
- Memory: 4GB (8GB optional) DDR3L 1600MHz S0-DIMM SDRAM
- LAN: 10/100/1000 Base-T x 2
- Expansion Slots: Full-size Mini PCIe
- Storage: 2.5" SATA SSD slot x 1, optional
- I/O: RS-232 x 1, RS-232/422/485 x 1
  - USB 3.0 x 1
  - USB 2.0 x 1

LCD Display
- Display Type: XGA TFT LED LCD
- Display Size: 15"
- Max. Resolution: 1024 x 768
- Max. Colors: 262k
- Luminance cd/m²: 400
- Viewing Angle (H/V°): 160/140
- Backlight Life: 50,000 hrs
- Contrast Ratio: 700:1

Touchscreen
- Lifespan: 36 million touches at single point
- Light Transmission: Above 75%
- Resolution: Linearity
- Type: 5-wire, analog resistive

Environment
- Humidity: 10 ~ 95% RH @ 40°C, non-condensing
- Ingress Protection: Front panel: IP66
- Operating Temperature: -20 ~ 60°C (-4 ~ 140°F)
- Storage Temperature: -30 ~ 70°C (-22 ~ 158°F)
- Vibration Protection: With CFast: 2 Grms (5~500 Hz)
  - With HDD: 1 Grms (5~500 Hz)
  - (Operating, random vibration)

Rear View

A. External HDD/iDoor kit (TPC-1251T-EHKE) (Optional)
B. CFast
C. COM (RS-232, RS-422/485)
D. USB 3.0 & 2.0
E. LAN (10/100/1000)
F. Power Receptor
Application Software

- **WebAccess**
  - Version: V2.1 or above
  - An innovative remote device management software, allowing efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.

- **Panel Express**
  - Version: V7.1 or above
  - WebAccess, as the core of Advantech’s IoT solution, is full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.

- **WebOP Designer**
  - Version: V2.0.3.8 or above
  - An easy to use integrated development tool featuring solution-oriented screen objects, high-end graphics, Windows fonts for multi-language applications. WebOP runtime, a part of WebOP Designer, guarantees reliability and performance because of the minimum system overhead, high communication data rates, and sub-second screen switching.

Accessories

- **TPC-1551T-E3AE**
  - 15" XGA Panel PC, Intel® Atom™ E3827 1.75 GHz Processor, 4GB (True-flat touch screen)
- **TPC-1551H-E3AE**
  - 15" XGA Panel PC, Intel® Atom™ E3827 1.75 GHz Processor, 4GB (Non-flat touch screen)
- **WA-TPC1551T**
  - TPC-1551T-E23AE with WebAccess software

**TPC-1551T**

Panel Cut-out Dimensions: 374.5 x 298.5 mm (14.74" x 11.75")
TPC-1251T

12.1" TFT LED LCD Intel® Atom™ Thin Client Terminals

Introduction
The TPC-1251T thin client terminal with a 12.1" XGA LCD, low power embedded Intel® Atom™ E3827 1.75 GHz Processor and 4GB (8GB optional) DDR3L SDRAM provides computing performance in a compact fanless system. To enhance its durability, the TPC-1251T is true-flat touch screen designed with IP65 front protection, die-cast Al Alloy front bezel and 5-wire resistive touch. Also provide TPC-1251H non-flat model with traditional TPC looking for existing customers. It supports wide operating temperatures -20~60°C and includes full size mini-PCIe slot to extend the functionality and meet a variety of automation applications needs. Through the Mini-PCIe slot, Advantech iDoor technology (optional) can provide more I/O connectors, Isolated Digital I/O, the Fieldbus Protocol, 3G/GPS/GPRS/WiFi Communication and Battery-backup MRAM.

Specifications

General
- BIOS: AMI UEFI
- Certification: BSMI, CCC, CE, FCC Class A, UL
- Cooling System: Fanless design
- Dimensions (W x H x D): 311.80 x 238 x 57.2 mm (12.28" x 9.37" x 22.52")
- Enclosure: Front bezel: Die-cast Aluminum alloy
  Back housing: SECC
- Mounting: Desktop, Wall or Panel Mount
- OS Support: Microsoft® Windows WES7 32bit/64bit /WES8 64bit /Windows 7 32bit/64bit / Windows 8 64bit Linux Kernel 3.x
- Power Consumption: 18W (Typical)
- Power Input: 24VDC +/- 20%
- Watchdog Timer: 1 ~ 255 sec (system)
- Weight (Net): 2.5KG

System Hardware
- CPU: Intel® Atom™ E3827 1.75 GHz Processor
- Memory: 4GB (8GB optional) DDR3L 1600MHz SO-DIMM SDRAM
- LAN: 10/100/1000 Base-T x 2
- Expansion Slots: Full-size Mini PCI-E
- Storage: 2.5" SATA SSD slot x 1 (optional)
- I/O: RS-232 x 1, RS-232/422/485 x 1
- USB 3.0 x 1
  USB 2.0 x 1

LCD Display
- Display Type: XGA TFT LED LCD
- Display Size: 12.1"
- Max. Resolution: 1024 x 768
- Max. Colors: 262k
- Luminance cd/m²: 600
- Viewing Angle (H/V°): 160/140
- Backlight Life: 50,000 hrs
- Contrast Ratio: 700:1

Touchscreen
- Lifespan: 36 million touches at single point
- Light Transmission: Above 75%
- Resolution: Linearity
- Type: 5-wire, analog resistive

Environment
- Humidity: 10 ~ 95% RH @ 40°C, non-condensing
- Ingress Protection: Front panel: IP66
- Operating Temperature: -20 ~ 60°C (-4 ~ 140°F)
- Storage Temperature: -30 ~ 70°C (-22 ~ 158°F)
- Vibration Protection: With CFast: 2 Grms (5~500 Hz)
  With HDD: 1 Grms (5 ~ 500 Hz)

Rear View
- A. External HDD/iDoor kit (TPC-1251T-EHKE) (Optional)
- B. CFast
- C. COM (RS-232, RS-422/485)
- D. USB 3.0 & 2.0
- E. LAN (10/100/1000)
- F. Power Receptor
**TPC-1251T**

### Ordering Information
- **TPC-1251T-E3AE**
  12” XGA Panel PC, Intel® Atom™ E3827 1.75 GHz Processor, 4GB (True-flat touch screen)
- **TPC-1251H-E3AE**
  12” XGA Panel PC, Intel® Atom™ E3827 1.75 GHz Processor, 4GB (Non-flat touch screen)
- **WA-TPC1251T**
  TPC-1251T-E23AE with WebAccess software

### Accessories
- **PWR-247-GE**
  63W DC 24V/2.62A Output Power Supply
- **TPC-651T-EHKE**
  HDD and iDoor extension kit
- **1702002600**
  Power Cable US Plug 1.8 M
- **1702002605**
  Power Cable EU Plug 1.8 M
- **1702031801**
  Power Cable UK Plug 1.8 M
- **170000596**
  Power Cable China/Australia Plug 1.8 M
- **TPC-1000H-WMKE**
  TPC VESA Mounting Kit from 10” to 17” TPC
- **TPC-1000H-SMKE**
  TPC Stand kit from 10” to 17” TPC

### Automation Software
- **968WEXP003X**
  PanelExpress V2.0 300 tags S/W license
- **968WEXP015X**
  PanelExpress V2.0 1500 tags S/W license
- **968WEXP050X**
  PanelExpress V2.0 5000 tags S/W license
- **968WEXP2USB**
  PanelExpress V2.0 S/W USB dongle

### iDoor Modules
- **PCM-2300MR-AE**
  MR4A16B, 2MByte
- **PCM-26D1PB-AE**
  Hilscher netX100 FieldBus, ProfiBus, DB9 x 1
- **PCM-26D2CA-AE**
  SJA1000 CANBus, CANOpen, DB9 x 1
- **PCM-24D2R4-AE**
  PXPCie-952 UART, Isolated RS-422/485, DB9 x 2
- **PCM-24D2R2-AE**
  PXPCie-952 UART, Isolated RS-232, DB9 x 2
- **PCM-24D4R4-AE**
  PXPCie-954 UART, Non-Isolated RS-422/485, DB37 x 1
- **PCM-24D4R2-AE**
  PXPCie-954 UART, Non-Isolated RS-232, DB37 x 1
- **PCM-27D24DI-AE**
  Digital I/O, 16DI / 8DO, DB37 x 1

### Dimensions

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Dimensions

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<td>247.20</td>
</tr>
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<td>57.20</td>
<td>301.6</td>
</tr>
</tbody>
</table>
```

Panel Cut-out Dimensions: 303 x 229 mm (11.93” x 9.02”)

### Application Software

- **SUSAccess**
  Version : V2.1 or above
  An innovative remote device management software, allowing efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.

- **WebAccess**
  Version : V7.1 or above
  WebAccess, as the core of Advantech’s IoT solution, is full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.

- **PanelExpress**
  Version : V2.0.3.8 or above
  Panel Express, a windows based HMI mini SCADA, realizes the cross platform flexibility offered by WebOP Designer to switch hardware for the consideration of cost and performance become an easy job. Panel Express software provides the best economic and express solution for data intensive high-end HMI applications.

- **WebOP Designer**
  Version : V2.0.3.8 or above
  An easy to use integrated development tool featuring solution-oriented screen objects, high-end graphics, Windows fonts for multi-language applications. WebOP runtime, a part of WebOP Designer, guarantees reliability and performance because of the minimum system overhead, high communication data rates, and sub-second screen switching.
Introduction

TPC-1750H touch panel computer with a 17" SVGA LCD, low power embedded Intel Atom N270 1.6GHz processor and 2GB DDR2 SDRAM targets at low-power, essential and economical requirements. The compact fanless design still provide the sufficient I/O connectors. Except for Compact Flash storage, data storage of TPC-1750H can be expanded by optional SATA HDD kit. To enhance its durability, TPC-1750H is designed with IP65 front protection, die-cast Al Alloy front bezel and 5-wire resistive touch. The requirement of VESA, Wall mounting or Desktop mounting can be fulfilled by the optional mounting kit.

Specifications

**General**
- **BIOS**
  - Award® 4Mbit
- **Certification**
  - BSMI, CCC, CE, FCC Class A, UL
- **Cooling System**
  - Fanless design
- **Dimensions (W x H x D)**
  - 413.7 x 347.2 x 63.8 (16.28" x 13.68" x 2.5")
- **Enclosure**
  - Front bezel: Die-cast aluminum alloy
  - Back housing: SECC
- **Mounting**
  - Desktop, Wall or Panel Mount
- **OS Support**
  - Microsoft® Windows® 7/XPE/WES
  - Windows CE 5.0/6.0 with Java Script
  - Linux with Firefox explorer and Java Script plugin
- **Power Consumption**
  - 43W (typical)
- **Power Input**
  - 18 – 32 VDC
- **Watchdog Timer**
  - 1 – 255 sec (system)
- **Weight (Net)**
  - 3.5 kg (7.71 lb)

**System Hardware**
- **CPU**
  - Intel® Atom™ N270 1.6 GHz
- **Chipset**
  - Intel® 945GSE+ICH7M
- **Memory**
  - 2GB SO-DIMM DDR2 667 SDRAM
- **LAN**
  - 10/100/1000Base-T x 2
- **Storage**
  - CFast slot x 1
  - Optional, external 2.5" SATA HDD kit
- **I/O**
  - RS-232 x1, RS-232/422/485 x 1
  - USB 2.0 x 2 (Host)

**LCD Display**
- **Display Type**
  - SXGA TFT LED LCD
- **Display Size**
  - 17"
- **Max. Resolution**
  - 1280 x 1024
- **Max. Colors**
  - 262 K
- **Contrast Ratio**
  - 1000:1

**Features**
- Industrial 17" SXGA TFT LCD with 50K Lifetime LED Backlight
- Intel Atom N270 1.6GHz Ultra Low Voltage processor
- Compact Fanless Embedded System & Energy Star approved
- Low-power and Economical panel pc with sufficient I/O connectors
- IP65 Approved Front Protection & Panel Mounting
- More Durable 5-wire Resistive Touch Screen
- Al Alloy Front Bezel and Steel rear cover
- Support Windows, Linux and Android
- Data Storage can be expanded by optional SATA HDD kit
- Support VESA, Desktop and Wall Mounting by optional mounting kit

**Touchscreen**
- **Lifespan**
  - 10 million touches at single point
- **Light Transmission**
  - Above 75%
- **Resolution**
  - Linearity
- **Type**
  - 5-wire, analog resistive

**Environment**
- **Humidity**
  - 10 – 95% RH @ 40°C, non-condensing
- **Ingress Protection**
  - Front panel: IP65
- **Operating Temperature**
  - 0 ~ 55°C (32 ~ 131°F)
- **Storage Temperature**
  - -20 ~ 60°C (-4 ~ 140°F)
- **Vibration Protection**
  - 2 Grms (5 – 500 Hz)
  - (Operating, random vibration)

**Rear View**

- a. COM (RS-232, RS-422/485)
- b. USB 2.0
- c. LAN (10/100/1000)
- d. Power Receptor
- e. CFast
TPC-1750H

Dimensions

Panel Cut-out Dimensions: TPC-1750H: 400.8 x 334.3 mm (16.03" x 13.37")

Ordering Information

- TPC-1750H-N2BE
  17" SXGA, Touch Panel PC, Atom™ N270 1.6GHz, 2GB
- WA-TPC1750
  TPC-1750H-N2BE with WebAccess software

Accessories

- PWR-247-BE
  63W DC 24V/2.62A Output Power Supply
- TPC-651H-EHKE
  HDD extension kit
- 1702002600
  Power Cable US Plug 1.8 M
- 1702002605
  Power Cable EU Plug 1.8 M
- 1702031801
  Power Cable UK Plug 1.8 M
- 1700000596
  Power Cable China/Australia Plug 1.8 M
- TPC-1000H-WMKE
  TPC VESA Mounting Kit from 10" to 17" TPC
- TPC-1000H-SMKE
  TPC Stand kit from 10" to 17" TPC

Automation Software

- 968WEXP003X
  PanelExpress V2.0 300 tags S/W license
- 968WEXP015X
  PanelExpress V2.0 1500 tags S/W license
- 968WEXP050X
  PanelExpress V2.0 5000 tags S/W license
- 968WEXP2USB
  PanelExpress V2.0 S/W USB dongle

Application Software

**SUSIACCESS**

Version : V2.1 or above
An innovative remote device management software, allowing efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.

**WebAccess**

Version : V7.1 or above
WebAccess, as the core of Advantech’s IoT solution, is full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.

**PanelExpress**

Version : V2.0.3.8 or above
Panel Express, a windows based HMI mini SCADA, realizes the cross platform flexibility offered by WebOP Designer to switch hardware for the consideration of cost and performance become an easy job. Panel Express software provides the best economic and express solution for data intensive high-end HMI applications.

**WebOP**

Version : V2.0.3.8 or above
An easy to use integrated development tool featuring solution-oriented screen objects, high-end graphics, Windows fonts for multi-language applications. WebOP runtime, a part of WebOP Designer, guarantees reliability and performance because of the minimum system overhead, high communication data rates, and sub-second screen switching.
Introduction
TPC-1550H touch panel computer with a 15” SVGA LCD, low power embedded Intel Atom N270 1.6GHz processor and 2GB DDR2 SDRAM targets at low-power, essential and economical requirements. The compact fanless design still provide the sufficient I/O connectors. Except for Compact Flash storage, data storage of TPC-1550H can be expanded by optional SATA HDD kit. To enhance its durability, TPC-1550H is designed with IP65 front protection, die-cast Al Alloy front bezel and 5-wire resistive touch. The requirement of VESA, Wall mounting or Desktop mounting can be fulfilled by the optional mounting kit.

Specifications

General
- BIOS: Award® 4Mbit
- Certification: BSMI, CCC, CE, FCC Class A, UL
- Cooling System: Fanless design
- Dimensions (W x H x D): 383 x 307 x 58.1 mm (15.08” x 12.09” x 2.29”)
- Enclosure: Front bezel: Die-cast aluminum alloy
- Mounting: Desktop, Wall or Panel Mount
- OS Support: Windows CE 5.0/6.0 with Java Script
- Power Consumption: 40 W (typical)
- Power Input: 18 ~ 28 VDC
- Watchdog Timer: 1 ~ 255 sec (system)
- Weight (Net): 3 kg (6.61 lb)

System Hardware
- CPU: Intel® Atom™ N270 1.6 GHz
- Chipset: Intel® 945GSE+ICH7M
- Memory: 2GB SO-DIMM DDR2 SDRAM
- LAN: 10/100/1000Base-T x 2
- Storage: CFast slot x 1
- I/O: Optional, external 2.5” SATA HDD kit
- Display: XGA TFT LED LCD
- Display Size: 15”
- Max. Resolution: 1024 x 768
- Max. Colors: 262 K
- Luminance cd/m²: 350
- Viewing Angle (H/V°): 160/140
- Backlight Life: 50,000 hrs
- Contrast Ratio: 700:1

Touchscreen
- Lifespan: 10 million touches at single point
- Light Transmission: Above 75%
- Resolution: Linearity
- Type: 5-wire, analog resistive

Environment
- Humidity: 10 ~ 95% RH @ 40°C, non-condensing
- Ingress Protection: Front panel: IP65
- Operating Temperature: 0 ~ 55°C (32 ~ 131°F)
- Storage Temperature: -20 ~ 60°C (-4 ~ 140°F)
- Vibration Protection: 2 Gms (5 ~ 500 Hz) (Operating, random vibration)

Rear View

Features
- Industrial 15” XGA TFT LCD with 50K Lifetime LED Backlight
- Intel Atom N270 1.6GHz Ultra Low Voltage processor
- Compact Fanless Embedded System & Energy Star approved
- Low-power and Economical panel pc with sufficient I/O connectors
- IP65 Approved Front Protection & Panel Mounting
- More Durable 5-wire Resistive Touch Screen
- Al Alloy Front Bezel and Steel rear cover
- Support Windows, Linux and Android
- Data Storage can be expanded by optional SATA HDD kit
- Support VESA, Desktop and Wall Mounting by optional mounting kit

Advanced Panel PCs

Automation Panel PCs
TPC-1550H

Dimensions

Panel Cut-out Dimensions: 374.5 x 298.5 mm (14.98" x 11.94")

Ordering Information

- TPC-1550H-N2BE
  - 15" XGA Touch Panel PC, Atom™ N270 1.6GHz, 2GB
- WA-TPC1550
  - TPC-1550H-N2BE with WebAccess software

Accessories

- PWR-247-BE
  - 63W DC 24V/2.62A Output Power Supply
- TPC-651H-EHKE
  - HDD extension kit
- 1702002600
  - Power Cable US Plug 1.8 M
- 1702002605
  - Power Cable EU Plug 1.8 M
- 1702031801
  - Power Cable UK Plug 1.8 M
- 1700000596
  - Power Cable China/Australia Plug 1.8 M
- TPC-1000H-WMKE
  - TPC VESA Mounting Kit from 10" to 17" TPC
- TPC-1000H-SMKE
  - TPC Stand kit from 10" to 17" TPC

Automation Software

- 968WEXP003X
  - PanelExpress V2.0 300 tags S/W license
- 968WEXP015X
  - PanelExpress V2.0 1500 tags S/W license
- 968WEXP050X
  - PanelExpress V2.0 5000 tags S/W license
- 968WEXP2USB
  - PanelExpress V2.0 S/W USB dongle

Application Software

- SUSIACCESS
  - Version: V2.1 or above
  - An innovative remote device management software, allowing efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.

- WebAccess
  - Version: V7.1 or above
  - WebAccess, as the core of Advantech’s IoT solution, is full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.

- PanelExpress
  - Version: V2.0.3.8 or above
  - Panel Express, a windows based HMI mini SCADA, realizes the cross platform flexibility offered by WebOP Designer to switch hardware for the consideration of cost and performance become an easy job. Panel Express software provides the best economic and express solution for data intensive high-end HMI applications.

- WebOP
  - Version: V2.0.3.8 or above
  - An easy to use integrated development tool featuring solution-oriented screen objects, high-end graphics, Windows fonts for multi-language applications. WebOP runtime, a part of WebOP Designer, guarantees reliability and performance because of the minimum system overhead, high communication data rates, and sub-second screen switching.
Introduction

TPC-1250H touch panel computer with a 12.1" SVGA LCD, low power embedded Intel Atom N270 1.6GHz processor and 2GB DDR2 SDRAM targets at low-power, essential and economical requirements. The compact fanless design still provide the sufficient I/O connectors. Except for Compact Flash storage, data storage of TPC-1250H can be expanded by optional SATA HDD kit. To enhance its durability, TPC-1250H is designed with IP65 front protection, die-cast Al Alloy front bezel and 5-wire resistive touch. The requirement of VESA, Wall mounting or Desktop mounting can be fulfilled by the optional mounting kit.

Specifications

General
- BIOS: Award® 4Mbit
- Certification: BSMI, CCC, CE, FCC Class A, UL
- Cooling System: Fanless design
- Dimensions (W x H x D): 311 x 237 x 54 mm (12.24" x 9.33" x 2.13")
- Enclosure: hbgFront bezel: Die-cast aluminum alloy
- Back housing: SECC
- Mounting: Desktop, Wall (single point of Panel Mount
- OS Support: Microsoft® Windows® 7/XPE/WES
  - Windows CE 5.0/6.0 with Java Script
  - Linux with Firefox explorer and Java Script plugin
- Power Consumption: 35 W (typical)
- Power Input: 18 ~ 28 VDC
- Watchdog Timer: 1 ~ 255 sec (system)
- Weight (Net): 2.5 kg (5.51 lb)

System Hardware
- CPU: Intel® Atom™ N270 1.6 GHz
- Chipset: Intel® 945GSE+ICH7M
- Memory: 2GB SO-DIMM DDR2 667 SDRAM
- LAN: 10/100/1000Base-T x 2
- Storage: CFast slot x 1
- I/O: Optional, external 2.5" SATA HDD kit
- Display: RS-232 x 1, RS-232/422/485 x 1
- USB 2.0 x 2 (Host)

LCD Display
- Display Type: SVGA TFT LED LCD
- Display Size: 12.1"
- Max. Resolution: 800 x 600
- Max. Colors: 262 K
- Luminance cd/m²: 250
- Viewing Angle (H/V°): 160/140
- Backlight Life: 50,000 hrs
- Contrast Ratio: 700:1

Features
- Industrial 12.1" SVGA TFT LCD with 50K Lifetime LED Backlight
- Intel Atom N270 1.6GHz Ultra Low Voltage processor
- Compact Fanless Embedded System & Energy Star approved
- Low-power and Economical panel pc with sufficient I/O connectors
- IP65 Approved Front Protection & Panel Mounting
- More Durable 5-wire Resistive Touch Screen
- Al Alloy Front Bezel and Steel rear cover
- Support Windows, Linux and Android
- Data Storage can be expanded by optional SATA HDD kit
- Support VESA, Desktop and Wall Mounting by optional mounting kit

Touchscreen
- Lifespan: 10 million touches at single point
- Light Transmission: Above 75%
- Resolution: Linearity
- Type: 5-wire, analog resistive

Environment
- Humidity: 10 ~ 95% RH @ 40°C, non-condensing
- Ingress Protection: Front panel: IP65
- Operating Temperature: 0 ~ 55°C (32 ~ 131°F)
- Storage Temperature: -20 ~ 60°C (-4 ~ 140°F)
- Vibration Protection: 2 Grms (5 ~ 500 Hz)
  (Operating, random vibration)

Rear View

a. COM (RS-232, RS-422/485)
b. USB 2.0
c. LAN (10/100/1000)
d. Power Receptor
e. CFast
TPC-1250H

Dimensions

Unit: mm

Panel Cut-out Dimensions: 302.5 x 228.5 mm (12.1” x 9.14”)

Ordering Information

- **TPC-1250H-N2BE**: 12.1” SVGA Touch Panel PC, Atom™ N270 1.6GHz, 2GB
- **WA-TPC1250**: TPC-1250H-N2BE with WebAccess software

Accessories

- **PWR-247-BE**: 63W DC 24V/2.62A Output Power Supply
- **TPC-651H-EHKE**: HDD extension kit
- **1702002600**: Power Cable US Plug 1.8 M
- **1702002605**: Power Cable EU Plug 1.8 M
- **1702031801**: Power Cable UK Plug 1.8 M
- **1700000596**: Power Cable China/Australia Plug 1.8 M
- **TPC-1000H-WMKE**: TPC VESA Mounting Kit from 10” to 17” TPC
- **TPC-1000H-SMKE**: TPC Stand kit from 10” to 17” TPC

Automation Software

- **968WEXP003X**: PanelExpress V2.0 300 tags S/W license
- **968WEXP015X**: PanelExpress V2.0 1500 tags S/W license
- **968WEXP050X**: PanelExpress V2.0 5000 tags S/W license
- **968WEXP2USB**: PanelExpress V2.0 S/W USB dongle

Application Software

<table>
<thead>
<tr>
<th>Software</th>
<th>Version</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUSI-Access</td>
<td>V2.1 or above</td>
<td>An innovative remote device management software, allowing efficient remote monitoring, quick recovery &amp; backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.</td>
</tr>
<tr>
<td>WebAccess</td>
<td>V7.1 or above</td>
<td>WebAccess, as the core of Advantech’s IoT solution, is full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.</td>
</tr>
<tr>
<td>PanelExpress</td>
<td>V2.0.3.8 or above</td>
<td>Panel Express, a windows based HMI mini SCADA, realizes the cross platform flexibility offered by WebOP Designer to switch hardware for the consideration of cost and performance become an easy job. Panel Express software provides the best economic and express solution for data intensive high-end HMI applications.</td>
</tr>
<tr>
<td>WebOP Designer</td>
<td>V2.0.3.8 or above</td>
<td>An easy to use integrated development tool featuring solution-oriented screen objects, high-end graphics, Windows fonts for multi-language applications. WebOP runtime, a part of WebOP Designer, guarantees reliability and performance because of the minimum system overhead, high communication data rates, and sub-second screen switching.</td>
</tr>
</tbody>
</table>
## Features
- Industrial 5.7” VGA TFT LCD with 50K Lifetime LED Backlight
- Intel Atom N270 1.6GHz Ultra Low Voltage processor
- Compact Fanless Embedded System & Energy Star approved
- Low-power and Economical panel pc with sufficient I/O connectors
- IP65 Approved Front Protection & Panel Mounting
- More Durable 5-wire Resistive Touch Screen
- Support Windows, Linux and Android
- Data Storage can be expanded by optional SATA HDD kit

## Introduction
TPC-650H touch panel computer with a 5.7” VGA LCD, low power embedded Intel Atom N270 1.6GHz processor and 1GB DDR2 SDRAM targets at low-power, essential and economical requirements. The compact fanless design still provide the sufficient I/O connectors. Except for Compact Flash storage, data storage of TPC-650H can be expanded by optional SATA HDD kit. To enhance its durability, TPC-650H is designed with IP65 front protection and 5-wire resistive touch.

## Specifications
### General
- **BIOS**: Award® 4Mbit
- **Certification**: BSMI, CCC, CE, FCC Class A, UL
- **Cooling System**: Fanless design
- **Dimensions (W x H x D)**: 195 x 148 x 58 mm (7.68” x 5.83” x 2.28”)
- **Enclosure**: Front bezel: PC/ABS Resin, Back housing: SECC
- **Mounting**: Panel Mount
- **OS Support**: Microsoft® Windows® 7/XPE/WES, Windows CE 5.0/6.0 with Java Script, Linux with Firefox explorer and Java Script plugin
- **Power Consumption**: 17 W (typical)
- **Power Input**: 18 ~ 28 VDC, 18 ~ 32 VDC (TPC-1750H only)
- **Watchdog Timer**: 1 – 255 sec (system)
- **Weight (Net)**: 1.43 kg (3.15 lb)/2.5 kg (5.51 lb)/3 kg (6.61 lb)/3.5 kg (7.71 lb)

### System Hardware
- **CPU**: Intel® Atom™ N270 1.6 GHz
- **Chipset**: Intel® 945GSE+ICH7M
- **Memory**: 1GB SO-DIMM DDR2 667 SDRAM
- **LAN**: 10/100/1000Base-T x 1
- **Storage**: CompactFlash slot x 1
- **I/O**: RS-232 x 2 (COM1, 2), USB 2.0 x 2 (Host), PS/2 x 1

### LCD Display
- **Display Type**: VGA TFT LED LCD
- **Display Size**: 5.7”
- **Max. Resolution**: 640 x 480
- **Max. Colors**: 262 K
- **Luminance cd/m²**: 700
- **Viewing Angle (H/V°)**: 160/140
- **Backlight Life**: 50,000 hrs
- **Contrast Ratio**: 800:1

### Touchscreen
- **Lifespan**: 10 million touches at single point
- **Light Transmission**: Above 75%
- **Resolution**: Linearity
- **Type**: 5-wire, analog resistive

### Environment
- **Humidity**: 10 ~ 95% RH @ 40°C, non-condensing
- **Ingress Protection**: Front panel: IP65
- **Operating Temperature**: 0 ~ -55°C (32 ~ 131°F)
- **Storage Temperature**: -20 ~ 60°C (-4 ~ 140°F)
- **Vibration Protection**: 2 Grms (5 ~ 500 Hz) (Operating, random vibration)

## Rear View
- a. Power Receptor
- b. COM (RS232 x 2)
- c. USB 2.0
- d. LAN (10/100/1000)
- e. PS/2
- f. CompactFlash

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**TPC-650H 5.7” VGA TFT LED LCD Intel® Atom™ Thin Client Terminals**

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**Introduction**

TPC-650H touch panel computer with a 5.7” VGA LCD, low power embedded Intel Atom N270 1.6GHz processor and 1GB DDR2 SDRAM targets at low-power, essential and economical requirements. The compact fanless design still provide the sufficient I/O connectors. Except for Compact Flash storage, data storage of TPC-650H can be expanded by optional SATA HDD kit. To enhance its durability, TPC-650H is designed with IP65 front protection and 5-wire resistive touch.
TPC-650H

Ordering Information
- TPC-650H-N2AE 5.7" VGA Touch Panel PC, Atom™ N270 1.6GHz, 1GB
- WA-TPC650 TPC-650H-N2AE with WebAccess software

Accessories
- PWR-247-BE 63W DC 24V/2.62A Output Power Supply
- TPC-651H-EHKE HDD extension kit
- 1702002600 Power Cable US Plug 1.8 M
- 1702002605 Power Cable EU Plug 1.8 M
- 1702031801 Power Cable UK Plug 1.8 M
- 1700000596 Power Cable China/Australia Plug 1.8 M

Automation Software
- 968WEXP003X PanelExpress V2.0 300 tags S/W license
- 968WEXP015X PanelExpress V2.0 1500 tags S/W license
- 968WEXP050X PanelExpress V2.0 5000 tags S/W license
- 968WEXP2USB PanelExpress V2.0 S/W USB dongle

Application Software
- SUSIAccess
  Version: V2.1 or above
  An innovative remote device management software, allowing efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.

- WebAccess
  Version: V7.1 or above
  WebAccess, as the core of Advantech’s IoT solution, is full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.

- PanelExpress
  Designated for HMI
  Version: V2.0.3.8 or above
  Panel Express, a windows based HMI mini SCADA, realizes the cross platform flexibility offered by WebOP Designer to switch hardware for the consideration of cost and performance become an easy job. Panel Express software provides the best economic and express solution for data intensive high-end HMI applications.

- WebOP
  Version: V2.0.3.8 or above
  An easy to use integrated development tool featuring solution-oriented screen objects, high-end graphics, Windows fonts for multi-language applications. WebOP runtime, a part of WebOP Designer, guarantees reliability and performance because of the minimum system overhead, high communication data rates, and sub-second screen switching.
## Introduction

Advantech’s HMI TPC-8100TR for transportation is used to keep the train driver informed about status of the train’s functions. Its design allows it to be deployed in environments with an extended temperature range (–30 to +70°C) and it also complies with the EMC, shock and vibration test requirements of European standard EN50155 and EN45545 for railway applications.

The TPC-8100TR 10.4” TFT display has a ruggedized touch panel and optical bonding for weather-proofing. All round IP65 and M12 connectors are the perfect choice for Human Machine Interfaces (HMI) in railway environments. The internal boards all have Conformal Coating protection for anti-moisture protection. The TPC-8100TR includes a comprehensive feature set with two Ethernet ports, serial interfaces, USB ports, built-in CFast devices.

Railway power module design support 10 ms interruption (EN50155, S2) , EMI EN55022 CLASS A filter, Over/Short current protection for its railway application.

## Specifications

### General
- **Certification**: CE,FCC,CCC,EN50155 Compliance
- **Cooling System**: Fanless design
- **Dimensions (W x H x D)**: 345x227x85mm (13.58” x 8.94’ x 3.35”)
- **Enclosure**: Front bezel: Die-cast Aluminium alloy
- **Mounting**: Panel Mount / VESA Mount
- **OS Support**: WES 7 & 8/ WES 2009 / Windows CE 7.0 / Linux
- **Power Consumption**: 35 W Typical
- **Power Input**: 110 VAC, 96 VDC, 72 VDC, 48 VDC (option), 37.5 VDC (option), 24 VDC (option)
- **Weight (Net)**: 5 kg (11 lbs)

### System Hardware
- **CPU**: Intel Cedar Trail Dual core processor 1.6G
- **Chipset**: Intel Atom N2600
- **Memory**: 4GB SO-DIMM DDR3 SDRAM
- **Storage**: Built-in 16G CFast card
- **Expansion Slot**: Full-size Mini-pcie slot x 1 (option)
- **I/O**: 2 x RS-232 (connection: M12 A-code, 8-pin male)
  - 2 x RS-232 (with isolation, connection: M12 A-code, 8-pin male)
  - 2 x USB2.0 (connection: M12 A-code, 8-pin female)
  - 2 x 100/1000 Base (connection: M12 A-code, 8-pin female)
  - 1x Audio (with Internal Buzzer, Line out, connection: M12 A-code, 8-pin male)
  - 1x Power connector (connection: M12 A-code, 5-pin male)

### LCD Display
- **Display Type**: SVGA TFT LED LCD
- **Display Size**: 10.4”
- **Max. Resolution**: 800x600
- **Max. Colors**: 262 K
- **Luminance cd/m²**: 240
- **Viewing Angle (H/V°)**: 160/140
- **Backlight Life**: 50,000 hrs
- **Contrast Ratio**: 700:1
- **Environment**: Humidity: 10 – 95% RH @ 40°C, non-condensing
  - Ingress Protection: All around IP65
  - Operating Temperature: -30 – 70°C (-22 – 158°F)
  - Storage Temperature: -30 – 70°C (-22 – 158°F)
  - Vibration Protection: IEC 61373 Railway– Shock and Vibration
TPC-8100TR

Dimensions

Unit: mm

Accessories

- TPC-8100TR-N3AE
- 10.5” SVGA Touch Panel PC

Ordering Information

- PWR-247-BE
- 63W DC 24V/2.62A Output Power Supply
- 1702002600
- Power Cable US Plug 1.8 M
- 1702002605
- Power Cable EU Plug 1.8 M
- 1702031801
- Power Cable UK Plug 1.8 M
- 1700000596
- Power Cable China/Australia Plug 1.8 M
- EWM-C109F6G1E
- 6-band HSPA Cellular Module, SIM holder+GPS
- 1750006432
- GPS antenna L=10.9cm 500Ohm AN8921F-5701SM
- 1750005865
- GSM Antenna L=10.9cm 50Ohm AN8921F-5701SM
- TPC-8100TR-MOKE
- (9 x M12 Connectors for TPC-8100TR)
- TPC-8100TR-MCKE
- (9 x M12 Cables supporting standard I/O connector for TPC-8100TR)

Front View

- Wall Mounting Hole
- Resistive Touch
- Optical bonding between LCD and Touch to avoid fog and enhance sunlight readability
- Yellow and Red LED Indicator can be defined by GPIO
- Membrane keypad to simulate keyboard code for easy integration into customer application

Rear View

- VESA 100
- Ruggedized enclosure with Die-cast Aluminium alloy
- SIM Card can be inserted externally (option)
- Wireless SMA connectors support WiFi, GPS, GSM (option)
- M12 Connector for IP65 and Easy Cabling
  1. RS-232 x 2 with isolation
  2. RS-422/485 x 2 with isolation
  3. USB2.0 x 2, GbE x 2
  4. Power x 1, Audio x 1 (Line in and Speaker)

TPC-8100TR-N3AE
- 10.5” SVGA Touch Panel PC
TPC VESA Mounting Kit

**TPC-1000H-WMKE**

**Features**
- Support VESA 75/100
- Adjustable design for 10” – 17” TPC
- Support any mounting with VESA

**Ordering Information**
- TPC-1000H-WMKE

**Supported Models**
- TPC-1250H, TPC-1550H, TPC-1750H
- TPC-1251H, TPC-1551H
- TPC-1071H, TPC-1271H, TPC-1571H, TPC-1771H
- TPC-1582H, TPC-1782H
- TPC-1251T, TPC-1551T

TPC-1000H-WMKE

TPC Stand Kit

**TPC-1000H-SMKE**

**Features**
- Adjustable design for 10” – 17” TPC
- Adjustable view angle from 10° – 30°
- Can be fixed stood on the horizontal plane

**Ordering Information**
- TPC-1000H-SMKE

**Supported Models**
- TPC-1250H, TPC-1550H, TPC-1750H
- TPC-1251H, TPC-1551H
- TPC-1071H, TPC-1271H, TPC-1571H, TPC-1771H
- TPC-1582H, TPC-1782H
- TPC-1251T, TPC-1551T

TPC-1000H-SMKE

TPC HDD Extension Kit

**Ordering Information & Supported Models**
- TPC-651T-EHKE (HDD and Door extension kit for TPC-1251T, TPC-1551T)

TPC-651H-EHKE

TPC-651T-EHKE

SPC M12 connector Kit

**Ordering Information & Supported Models**
- SPC-1840WP-MOKE (5 x M12 Connectors for SPC-1840WP/2140WP)
- SPC-1840WP-MCKE (5 x M12 Cables supporting standard I/O connector for SPC-1840WP/2140WP)
- TPC-8100TR-MOKE (9 x M12 Connectors for TPC-8100TR)
- TPC-8100TR-MCKE (9 x M12 Cables supporting standard I/O connector for TPC-8100TR)

AC to DC Power Adapter

**Features**
- Input Voltage : 100-240V~AC, 47Hz-63Hz
- Output Voltage : 24VDC

**Supported Models**
- TPC-650H/1250H/1550H/1750H
- TPC-651H/1251H/1551H
- TPC-1251T/1551T
- TPC-671H/1071H/1271H/1571H/1771H
- TPC-1840WP/TPC-2140WP/SPC-1840WP/SPC-2140WP

**Ordering Information**
- PWR-247-8E

<table>
<thead>
<tr>
<th>Cable Model Name</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Cable US Plug 1.8 M</td>
<td>1702002600</td>
<td>PWR-247-8E</td>
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<tr>
<td>Power Cable EU Plug 1.8 M</td>
<td>1702002605</td>
<td>PWR-247-8E</td>
</tr>
<tr>
<td>Power Cable UK Plug 1.8 M</td>
<td>1702031801</td>
<td>PWR-247-8E</td>
</tr>
<tr>
<td>Power Cable China/Australia Plug 1.8 M</td>
<td>1700000596</td>
<td>PWR-247-8E</td>
</tr>
<tr>
<td>DVI CABLE 200cm FOR PDC-170</td>
<td>1700000243</td>
<td>PWR-247-8E</td>
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<tr>
<td>M CABLE DVI 24+1P(M)/DVI 24+1P(M) 300cm FPM-3121</td>
<td>1700019762</td>
<td>PWR-247-8E</td>
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</table>

6-44
## Fanless Panel PC Selection Guide

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-L62T</td>
<td>6.5&quot; Fanless Panel PC with Intel® Atom™ N455 Processor</td>
<td>7-4</td>
</tr>
<tr>
<td>PPC-3180</td>
<td>10.4&quot; Fanless Panel PC with Intel® Atom™ D2550 Processor</td>
<td>7-6</td>
</tr>
<tr>
<td>PPC-3120</td>
<td>12.1&quot; Fanless Panel PC with Intel® Atom™ D2550 Processor</td>
<td>7-8</td>
</tr>
<tr>
<td>PPC-L16T</td>
<td>15&quot; Fanless Panel PC with Intel® Atom™ N270 Processor</td>
<td>7-10</td>
</tr>
<tr>
<td>PPC-L18T</td>
<td>15&quot; Fanless Panel PC with Intel® Atom™ Dual-Core Processor</td>
<td>7-12</td>
</tr>
<tr>
<td>PPC-4150W</td>
<td>15.6&quot; Fanless Wide Screen Panel PC with Intel Atom Dual-Core Processor</td>
<td>7-14</td>
</tr>
<tr>
<td>PPC-4151W</td>
<td>15.6&quot; Fanless Wide Screen Panel PC with Intel Core i5 / Celeron Processor</td>
<td>7-16</td>
</tr>
<tr>
<td>PPC-4211W</td>
<td>21.5&quot; Fanless Wide Screen Panel PC with Intel Core i5 / Celeron Processor</td>
<td>7-18</td>
</tr>
</tbody>
</table>

## Multi-functional Panel PCs Selection Guide

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-6120</td>
<td>12&quot; Panel PC with 4th Generation Intel® Core™ i / Celeron® Processor</td>
<td>7-21</td>
</tr>
<tr>
<td>PPC-6150</td>
<td>15&quot; Panel PC with Intel® Core™ i3 / i5 / Celeron® Processor</td>
<td>7-23</td>
</tr>
<tr>
<td>PPC-6170</td>
<td>17&quot; Panel PC with Intel® Core™ i3 / i5 / Celeron® Processor</td>
<td>7-25</td>
</tr>
<tr>
<td>PPC-178T</td>
<td>17&quot; Panel PC with Intel® Core™2 Duo Processor</td>
<td>7-27</td>
</tr>
<tr>
<td>PPC-6170A/PPC-6150A</td>
<td>17&quot;/15&quot; Panel PC with Intel® Core™ i3 / i5 / Celeron® Processor and 4 additional GbE ports</td>
<td>7-29</td>
</tr>
</tbody>
</table>

## Configure-to-Order Panel PCs Selection Guide

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-8150</td>
<td>15&quot; Panel PC with Mini-iTX AIMB Motherboard supported</td>
<td>7-32</td>
</tr>
<tr>
<td>PPC-8170</td>
<td>17&quot; Panel PC with Mini-iTX AIMB Motherboard supported</td>
<td>7-34</td>
</tr>
</tbody>
</table>

## Installation Accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPPC-6152</td>
<td>15&quot; XGA/17&quot; SXGA/19&quot;SXGA TFT LCD LED Backlight Core™ i7/i5/i3 Industrial Panel PC</td>
<td>7-38</td>
</tr>
<tr>
<td>IPPC-6172</td>
<td>15&quot; XGA/17&quot; SXGA LED backlight TFT LCD Intel® Core™ i7/i5/i3 Celeron® Mobile Processor Industrial Panel PC with 1 x PCIe Slot</td>
<td>7-40</td>
</tr>
<tr>
<td>IPPC-9151G</td>
<td>15&quot; XGA/17&quot; SXGA LED backlight TFT LCD Intel® Core™ i7/i5/i3 Celeron® Mobile Processor Industrial Panel PC with 1 x PCIe Slot</td>
<td>7-40</td>
</tr>
<tr>
<td>IPPC-9171G</td>
<td>5.7&quot; VGA TFT LCD Backlight 4U 19&quot; 14-Slot Rackmount Chassis with Keyboard Drawer</td>
<td>7-42</td>
</tr>
<tr>
<td>IPPC-4001D</td>
<td>12&quot;/15&quot;/17&quot; Industrial LED Monitor with Full-Flat Resistive Touchscreen</td>
<td>7-44</td>
</tr>
</tbody>
</table>

To view all of Advantech's Automation Panel PCs, please visit www.advantech.com/products.
## Fanless Panel PC Selection Guide

### Selection Guide

<table>
<thead>
<tr>
<th>Model Name</th>
<th>PPC-L82T</th>
<th>PPC-3100</th>
<th>PPC-3120</th>
<th>PPC-L157T</th>
<th>PPC-L158T</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU Board</strong></td>
<td>PCM-8205</td>
<td>PCM-8206</td>
<td>PCM-8206</td>
<td>PCM-8201</td>
<td>PCM-8204</td>
</tr>
<tr>
<td><strong>Processor</strong></td>
<td>Intel Atom N455 (1.66 GHz)</td>
<td>Intel Atom Dual core D2550 (1.86 GHz)</td>
<td>Intel Atom Dual core D2550 (1.86 GHz)</td>
<td>Intel Atom N270 1.6 GHz</td>
<td>Intel Atom Dual core D255 1.8G</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>512 MB ~ 2 GB DDR3 SDRAM</td>
<td>Maximum 4GB DDR3 1066</td>
<td>Maximum 4GB DDR3 1066</td>
<td>DDR2 533 Up to 2 GB (2 GB each socket)</td>
<td>204-pin SODIMM x 2</td>
</tr>
<tr>
<td><strong>Module Type</strong></td>
<td>204-pin SODIMM x 1</td>
<td>204-pin SODIMM x 1</td>
<td>204-pin SODIMM x 1</td>
<td>200-pin SODIMM x 1</td>
<td>512 KB</td>
</tr>
<tr>
<td><strong>Power Input Voltage</strong></td>
<td>12 ~ 24 VDC</td>
<td>12 ~ 24 VDC</td>
<td>12 ~ 24 VDC</td>
<td>12 ~ 24 VDC</td>
<td>12 ~ 24 VDC</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>6.5” TFT LCD, LED Backlight</td>
<td>10.4” TFT LCD, LED Backlight</td>
<td>12.1” Color TFT LCD, LED backlight</td>
<td>15” Color TFT LCD</td>
<td>15” Color TFT LCD, LED backlight</td>
</tr>
<tr>
<td><strong>VGA Chipset</strong></td>
<td>Intel N455 + Intel ICH8M</td>
<td>Intel D2550 Integrated</td>
<td>Intel D2550 Integrated</td>
<td>Intel 945GSE + Intel ICH7M</td>
<td>Intel D525 + Intel ICH8M</td>
</tr>
<tr>
<td><strong>HDD/Type</strong></td>
<td>Optional 1 x 2.5” drive bay</td>
<td>1 x 2.5” internal SATA drive bay</td>
<td>1 x 2.5” internal SATA drive bay</td>
<td>1 x 2.5” internal SATA drive bay</td>
<td>1 x 2.5” internal SATA drive bay</td>
</tr>
<tr>
<td><strong>I/O Ports</strong></td>
<td>2 x COM ports: 1 x RS-232, 1x RS-232/422/485, 4 x USB</td>
<td>1 x Line-out, 1 x Mic-in</td>
<td>1 x DB15 VGA</td>
<td>4 x Serial ports: 3 x RS-232, 1 x RS-232/422/485</td>
<td>4 x Serial ports: 3 x RS-232, 1 x RS-232/422/485</td>
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<tr>
<td><strong>Bus Expansion</strong></td>
<td>1 x MINI PCIe slot</td>
<td></td>
<td></td>
<td>1 x miniPCIe</td>
<td>1 x miniPCIe</td>
</tr>
<tr>
<td><strong>Network (LAN)</strong></td>
<td>AXE: 2 x 10/100/1000 Mbps (RJ-45)</td>
<td>2 x 10/100/1000 Mbps (RJ-45)</td>
<td>2 x 10/100/1000 Mbps (RJ-45)</td>
<td>2 x 10/100/1000 Mbps (RJ-45)</td>
<td>2 x 10/100/1000 Mbps (RJ-45)</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>15 ~ 24 VDC</td>
<td>12 ~ 30 VDC</td>
<td>12 ~ 30 VDC</td>
<td>12 ~ 24 VDC, 15 ~ 24 VDC with battery pack</td>
<td>AC Model: 100W 100 ~ 250 VAC/ DC Model: 90W 15 ~ 24 VDC</td>
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<tr>
<td><strong>Technology</strong></td>
<td>Resistive</td>
<td>Resistive</td>
<td>Resistive</td>
<td>Resistive</td>
<td>Resistive</td>
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<tr>
<td><strong>Light Transmission</strong></td>
<td>81%</td>
<td>81%</td>
<td>80%</td>
<td>80%</td>
<td>80%</td>
</tr>
<tr>
<td><strong>OS Support</strong></td>
<td>Windows CE, XPE, XP, WIN 7</td>
<td>Windows XPE, WEST, WEC7</td>
<td>Windows XPE, WEST, WEC7</td>
<td>Windows XPE/XP Pro, Vista, WES7</td>
<td>Windows XPE/XP Pro, Vista, WES7, CE6.0</td>
</tr>
<tr>
<td><strong>Durability (Touchs)er</strong></td>
<td>36 million</td>
<td>36 million</td>
<td>35 million</td>
<td>35 million</td>
<td>35 million</td>
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<tr>
<td><strong>Watchdog Timer</strong></td>
<td>255 Level</td>
<td>255 Level</td>
<td>255 Level</td>
<td>255 Level</td>
<td>255 Level</td>
</tr>
<tr>
<td><strong>Working Temperature</strong></td>
<td>0 ~ 50°C (32 ~ 122°F)</td>
<td>0 ~ 50°C (32 ~ 122°F)</td>
<td>0 ~ 50°C (32 ~ 122°F)</td>
<td>0 ~ 50°C (32 ~ 122°F)</td>
<td>0 ~ 50°C (32 ~ 122°F)</td>
</tr>
<tr>
<td><strong>Front Panel Protection</strong></td>
<td>IP65 compliant</td>
<td>IP65 compliant</td>
<td>IP65 compliant</td>
<td>IP65 compliant</td>
<td>IP65 compliant</td>
</tr>
<tr>
<td><strong>Certification</strong></td>
<td>CE, FCC Class B, BSMI, CCC, UL</td>
<td>CE, FCC Class B, UL, BSMI, CCC</td>
<td>CE, FCC Class B, UL, BSMI, CCC</td>
<td>CE, FCC Class B, UL, BSMI, CCC, CB, VCCI</td>
<td>CE, FCC Class B, UL, BSMI, CCC, CB, VCCI</td>
</tr>
<tr>
<td><strong>Dimensions (W x H x D)</strong></td>
<td>202 x 148 x 49 mm (7.9” x 5.82” x 1.92”)</td>
<td>275 x 220 x 68 mm (10.83” x 8.74” x 2.68”)</td>
<td>329 x 253.8 x 58.4 mm (12.79” x 10” x 2.3”)</td>
<td>396.5 x 317.6 x 74.8 mm (15.6” x 12.5” x 2.9”)</td>
<td>396.5 x 317.6 x 74.8 mm (15.6” x 12.5” x 2.9”)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>1.5 kg (3.3lb)</td>
<td>3.0 kg (6.6lb)</td>
<td>3.0 kg (6.6lb)</td>
<td>6 kg (13.2lb)</td>
<td>6 kg (13.2lb)</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>7-4</td>
<td>7-6</td>
<td>7-8</td>
<td>7-10</td>
<td>7-12</td>
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</table>
### Model name

<table>
<thead>
<tr>
<th>PPC-4150W</th>
<th>PPC-4151W</th>
<th>PPC-4211W</th>
</tr>
</thead>
</table>

#### CPU board
- PCM-8206
- PCM-8209
- PCM-8209

#### Processor
- Intel Atom Dual Core D2550 (1.86GHz)
- Intel Dual core i5-4300U up to 2.9GHz
- Intel Dual Core Celeron 2980U 1.6GHz

#### Memory
- DDR3 800/1066 maximum up to 4GB
- DDR3L 1600 maximum up to 8GB
- DDR3L 1600 maximum up to 8GB

#### Processor
- Intel Dual core i5-4300U up to 2.9GHz
- Intel Dual Core Celeron 2980U 1.6GHz

#### Memory
- DDR3L 1600 maximum up to 8GB
- DDR3L 1600 maximum up to 8GB
- DDR3L 1600 maximum up to 8GB

#### Module Type
- 204-pin SODIMM x 1
- 204-pin SODIMM x 1
- 204-pin SODIMM x 1

#### 2nd Cache memory
- 1MB
- 3MB/2MB
- 3MB/2MB

#### SSD/Type
- Support 1 x internal mSATA
- Support 1 x internal mSATA
- Support 1 x internal mSATA

#### Display
- **Size/Type**
  - 15.6 TFT LCD, LED Backlight
  - 15.6 TFT LCD, LED Backlight
  - 21.5 TFT LCD, LED Backlight

#### HDD/Type
- 1 x 2.5" internal SATA drive bay
- 1 x 2.5" internal SATA drive bay
- 1 x 2.5" internal SATA drive bay

#### I/O Ports
- 4 x Serial ports: 3 x RS-232, 1x RS-232/422/485 (Adjustable through BIOS)
- 5 x USB 2.0 ports (4 in Rear, 1 from right side)
- 1 x Line-out, 1x Mic-in
- 1 x DB15 VGA
- 1 x DB9 GPIO port (8 pin programable)

#### Bus Expansion
- PCIe1 or PCI
- PCIe1 or PCI
- PCIe4(support x1) or PCI

#### Network(LAN)
- 2 x 10/100/1000 Mbps (RJ-45)
- 2 x 10/100/1000 Mbps (RJ-45)
- 2 x 10/100/1000 Mbps (RJ-45)

#### Power
- DC 12-30 V
- DC 9-32V
- DC 9-32V

#### Touch screen
- PCT Multi Touch
- PCT Multi Touch
- PCT Multi Touch

#### Resolution
- 2048 x 2048
- 2048 x 2048
- 4096 x 4096

#### Operating Temperature
- 0-50°C
- 0-50°C for SSD (0-45°C for HDD)
- 0-50°C

#### Front Panel Protection
- IP65
- IP65
- IP65

#### Certification
- CE. FCC Class B, BSMI, CCC, UL
- CE. FCC Class B, BSMI, CCC, UL
- CE. FCC Class B, BSMI, CCC, UL

#### Dimension (W x H x D)
- 419.7 x 269 x 59 mm
- 419.7 x 269 x 59 mm
- 558.4 x 349.8 x 63.6 mm

#### Weight
- 5.5 Kg
- 5.6 Kg
- 7.6 Kg

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## Introduction

The PPC-L62T is a 6.5” industrial-grade Panel PC for compact applications for machine builders. The PPC-L62T is highly reliable because of its fanless design. The IP65 compliant aluminum front bezel provides excellent protection especially in harsh environments (water and dust). The Dual Gigabit LAN provides reliable communication between machine and control unit and the teaming function enhances fault tolerance and load balancing. PPC-L62T supports the most popular operating systems, such as Microsoft Windows XP, XP Embedded and Windows CE 6.0.

## Specifications

### Processor system

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>Intel Atom N455 1.66GHz Single Core CPU on board</td>
</tr>
<tr>
<td>Memory</td>
<td>SODIMM x 1, DDR3 667, Max 2GB</td>
</tr>
<tr>
<td>2nd Cache Memory</td>
<td>512 KB</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel ICH8M</td>
</tr>
<tr>
<td>SSD</td>
<td>CFast*1</td>
</tr>
<tr>
<td>HDD</td>
<td>1 x 2.5” external SATA HDD module (Optional)</td>
</tr>
<tr>
<td>I/O Ports</td>
<td>2 x Serial ports: RS-232x1, RS-232/422/485 x1; 4 x USB; 1 x Line-out</td>
</tr>
<tr>
<td>Bus Expansion</td>
<td>1x MINI PCIe</td>
</tr>
<tr>
<td>Network (LAN)</td>
<td>2 x 10/100/1000Mbps Ethernet</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>255 timer levels; setup by software</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>202 x 148 x 49 mm (7.9” x 5.82” x 1.92”)</td>
</tr>
<tr>
<td>Weight</td>
<td>1.5 kg (3.30 lb)</td>
</tr>
</tbody>
</table>

### OS Support

- Win XPE
- Win XP Pro
- WES7 32 bit
- Win CE 6.0

### Power Supply

- Input Voltage: 15-24VDC

### LCD Display

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Type</td>
<td>6.5” TFT LCD (LED Backlight)</td>
</tr>
<tr>
<td>Max. Resolution</td>
<td>640 x 480</td>
</tr>
<tr>
<td>Colors</td>
<td>262K</td>
</tr>
<tr>
<td>Dot Size (mm)</td>
<td>0.207 x 0.207</td>
</tr>
<tr>
<td>Viewing Angle</td>
<td>80 (left), 80 (right), 70 (up), 70 (down)</td>
</tr>
<tr>
<td>Luminance</td>
<td>700</td>
</tr>
<tr>
<td>Brightness Control</td>
<td>Yes (by BIOS)</td>
</tr>
<tr>
<td>Backlight Lifeline</td>
<td>50,000 hrs</td>
</tr>
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### Touchscreen

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Touch Type</td>
<td>Analog Resistive 5 wires</td>
</tr>
<tr>
<td>Resolution</td>
<td>2048 x 2048</td>
</tr>
<tr>
<td>Light Transmission</td>
<td>81%</td>
</tr>
<tr>
<td>Controller</td>
<td>RS-232 interface</td>
</tr>
<tr>
<td>Software Driver Supports</td>
<td>Windows 7, XP, CE</td>
</tr>
</tbody>
</table>

### Environment

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>0 ~ 50°C (32 ~ 122°F)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-20 ~ 60°C (-4 ~ 140°F)</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>10 ~ 95% @ 40°C (non-condensing)</td>
</tr>
<tr>
<td>Shock</td>
<td>Operating 10 Gpeak acceleration (11 ms duration), follow IEC 60068-2-27</td>
</tr>
<tr>
<td>Vibration</td>
<td>Operating Random Vibration Test 5-500Hz, 1Grms, follow IEC 60068-2-64</td>
</tr>
<tr>
<td>EMC</td>
<td>BSMI, CE, FCC Class B</td>
</tr>
<tr>
<td>Safety</td>
<td>CB, CCC, BSMI, UL</td>
</tr>
<tr>
<td>Front Panel Protection</td>
<td>IP65 compliant</td>
</tr>
</tbody>
</table>
**Dimensions**

Unit: mm

**Ordering Information**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-L62T-R80-AXE</td>
<td>Fanless Atom N455 PPC w/6.5” LCD+Res T/S+2LAN</td>
</tr>
<tr>
<td>PPC-L62T-080-AXE</td>
<td>Fanless Atom N455 PPC w/6.5” LCD+2LAN (w/o T/S)</td>
</tr>
<tr>
<td>PS-DC19-L157E</td>
<td>19 Vdc power adapter module for PPC-L128/ PPC-L157T</td>
</tr>
<tr>
<td>1700001524</td>
<td>POWER Cord 3P UL 10A 125V 180cm</td>
</tr>
<tr>
<td>170203183C</td>
<td>POWER Code 3P Europe (WS-010+083)183cm</td>
</tr>
<tr>
<td>1700008921</td>
<td>POWER CORD 3P/3P POWER SUPPLY 1.8M PSE</td>
</tr>
<tr>
<td>PPC-L62T-HDD-EXPE</td>
<td>HDD kit for PPC-L62T</td>
</tr>
<tr>
<td>PPC-L62T-WLANE</td>
<td>Wireless LAN Module for PPC-L62T</td>
</tr>
<tr>
<td>2070011145</td>
<td>Image WE59 PPC-L62T V4.0.24 multi-languages with SUSI Access</td>
</tr>
<tr>
<td>PPC-ARM-A03</td>
<td>PPC ARM VESA Standard</td>
</tr>
<tr>
<td>PPC-174T-WL-MTE</td>
<td>Wall mount kit for PPC series</td>
</tr>
<tr>
<td>2070011174</td>
<td>Image CE60 Pro PPC-L62T V1.0 ENG with SUSI</td>
</tr>
<tr>
<td>2070011418</td>
<td>Image CE6.0 Pro PPC-L62T V1.0 (JPN) with SUSI</td>
</tr>
<tr>
<td>2070011441</td>
<td>Image CE 6.0 Pro PPC-L62T V1.0 (Traditional Chinese) with SUSI</td>
</tr>
<tr>
<td>2070011675</td>
<td>Image WEST7E PPC-L62T V5.1.4 (EN/JP/Simplified Chinese/Traditional Chinese), 4 languages with SUSI Access</td>
</tr>
</tbody>
</table>

**I/O Appearance**

- A. Serial Port (RS-232/422/485)
- C. Serial Port (RS-232)
- D. 10/100/1000 Ethernet x 2
- E. USB 2.0 x 2
- F. Audio Line-out
- B. DC inlet
PPC-3100

10.4" Fanless Panel PC with Intel® Atom™ D2550 Processor

Features
- 10.4" TFT SVGA LED Panel with resistive touchscreen
- Embedded Intel® Atom™ processor D2550 1.86 GHz
- System memory up to 4 GB DDR3 1066 SDRAM
- Supports one internal SATA 2.5" HDD and 1 x mSATA socket
- Fanless design and low power consumption
- Automatic data flow control over RS-485
- Adjust RS-232/422/485 through BIOS
- COM1/COM2 pin9 RI/5V/12V adjustable through BIOS
- LED backlight Auto dimming

Introduction
PPC-3100 is a new 10.4" Panel PC equipped with an Intel Atom processor D2550. Meeting high demands of harsh environments, the fanless design makes PPC-3100 more reliable in different kinds of applications for the machine building industry. In addition, the dual GbE LAN, 4 x serial ports, 4 x USB ports, and GPIO connector make it easier to connect to devices and be integrated into specific solutions. With a user friendly design it comes with an LED indicator on the front panel for power on/off, storage access, and LAN active status.

Specifications

| Processor System | CPU | Intel Atom D2550 1.86 GHz 10W Dual Core CPU on board |
| Memory | DDR3 1066, Max 4 GB, 2 GB DDR3 pre-installed |
| 2nd Cache Memory | 1 MB |
| Chipset | Intel NM10 |
| Storage | mSATA*1 |
| HDD | 1 x 2.5" SATA HDD Bay (Internal) |
| I/O Ports | 4 x Serial ports: 3 x RS-232, 1x RS-232/422/485 (Adjustable through BIOS) |
| | 4 x USB 2.0 ports |
| | 1 x Line-out, 1x MIC-in |
| | 1 x DB15 VGA |
| | 1 x DB9 GPIO port (8 pin programmable) |
| Bus Expansion | 1x MINI PCIe |
| Network (LAN) | 2 x 10/100/1000 Mbps Ethernet |
| Speaker | 2 x 1W speakers |
| Watchdog Timer | 255 timer levels; setup by software |
| Dimensions (W x H x D) | 275 x 220 x 64.3 mm (10.83" x 8.74" x 2.53") |
| Weight | 2.5 kg (5.51 lb) |
| Power Supply | OS Support | Win XPE, Win XP Pro, WES7 32 bit, Win CE 7.0 |
| Display Type | LCD Display | 10.4" TFT LCD (LED Backlight) |
| Max. Resolution | 800 x 600 |
| Colors | 262K |
| Dot Size (mm) | 0.264 x 0.264 |
| Viewing Angle | 80 (left), 80 (right), 70 (up), 70 (down) |
| Luminance(cd/m2) | 400 |
| Brightness Control | Yes |
| Backlight Lifetime | 30,000 hrs (typical) |
| Touchscreen | Touch Type | Analog Resisitive 5-wire |
| Resolution | 2048 x 2048 |
| Light Transmission | 81 +/- 3% |
| Controller | RS-232 interface |
| Software Driver Support | Windows 7, XP, CE |
| Durability (Touchs) | 36 million |
### Dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Unit: mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>275.00</td>
</tr>
<tr>
<td>Depth</td>
<td>21.50</td>
</tr>
<tr>
<td>Height</td>
<td>4.50</td>
</tr>
<tr>
<td>Cut Out</td>
<td>266.00</td>
</tr>
</tbody>
</table>

### Specifications

**Environment**
- Operating Temperature: 0 ~ 50°C (32 ~ 122°F)
- Storage Temperature: -20 ~ 60°C (-4 ~ 140°F)
- Relative Humidity: 10 ~ 95% @ 40°C (non-condensing)
- Shock: Operating 10 G peak acceleration (11 ms duration), follow IEC 60068-2-27
- Vibration: Operating Random Vibration Test 5~500Hz, 1G rms, follow IEC 60068-2-64
- EMC: BSMI, CE, FCC Class B
- Safety: CB, CCC, BSMI, UL
- Front Panel Protection: IP65 compliant

### Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-3100-R2GAE</td>
<td>Atom D2550 Fanless Panel PC with 10.4&quot; SVGA LED backlight, 2 GB DDR3 pre-installed</td>
</tr>
<tr>
<td>PPC-3100-R4GAE</td>
<td>Atom D2550 Fanless Panel PC with 10.4&quot; SVGA LED backlight, 4 GB DDR3 pre-installed</td>
</tr>
<tr>
<td>PPC-3100-X2GAE</td>
<td>Atom D2550 Fanless Panel PC with 10.4&quot; SVGA LED backlight, w/o touch, 2 GB DDR3 pre-installed</td>
</tr>
<tr>
<td>PS-DC19-L157E</td>
<td>19V power adapter module</td>
</tr>
<tr>
<td>1700001524</td>
<td>Power cord 3P UL 10A 125V 1.8m</td>
</tr>
<tr>
<td>170203183C</td>
<td>Power cord 3P Europe (WS-010+083)183cm</td>
</tr>
<tr>
<td>1700008921</td>
<td>Power cord 3P/3P Power supply 1.8M PSE</td>
</tr>
<tr>
<td>* PPC-17AT-WL-MTE</td>
<td>Wall mount kit for PPC series</td>
</tr>
<tr>
<td>* PPC-ARM-A03</td>
<td>PPC ARM VESA Standard</td>
</tr>
<tr>
<td>PPC-3100-VESAFE</td>
<td>PPC-3100 VESA bracket</td>
</tr>
<tr>
<td>PPC-3100-WLANE</td>
<td>PCIe Half Mini Card WLAN module for PPC-3100 series</td>
</tr>
<tr>
<td>2070011747</td>
<td>Image XPE WES2009 PPC-3100 V4.3.1.24 multi-languages with SUSI Access</td>
</tr>
<tr>
<td>2070011748</td>
<td>Image WES7/E PPC-3100 V5.3.1.1 (ENG/JPN/Simplified Chinese/Traditional Chinese), 4 languages with SUSI Access</td>
</tr>
<tr>
<td>2070012470</td>
<td>Image WEC7 PPC-3100 V1.0 Eng</td>
</tr>
<tr>
<td>PPC-3100-STANDE</td>
<td>Stand desktop stand for PPC-3100/PPC-3120</td>
</tr>
</tbody>
</table>

* if you order Wall mount kit or ARM, please also order PPC-3100-VESAFE at the same time.
**Introduction**

The PPC-3120 is a new 12.1" Panel PC equipped with an Intel Atom processor D2550. Meeting high demands of harsh environments, the fanless design makes PPC-3120 more reliable in different kinds of applications for the machine building industry. In addition, the dual GbE LAN, 4 x serial ports, 4 x USB ports, and GPIO connector make it easier to connect to devices and be integrated into specific solutions. With a user friendly design it comes with an LED indicator on the front panel for power on/off, storage access, and LAN active status.

**Specifications**

<table>
<thead>
<tr>
<th>Processor System</th>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>Intel Atom D2550 1.86 GHz 10W Dual Core CPU on board</td>
<td></td>
</tr>
<tr>
<td>Memory</td>
<td>1x SODIMM x 1, DDR3 1066, Max 4 GB</td>
<td></td>
</tr>
<tr>
<td>2nd Cache Memory</td>
<td>1 MB</td>
<td></td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel NM10</td>
<td></td>
</tr>
<tr>
<td>HDD</td>
<td>1 x 2.5&quot; SATA HDD Bay (Internal)</td>
<td></td>
</tr>
<tr>
<td>I/O Ports</td>
<td>4 x Serial ports: 3 x RS-232, 1x RS-232/422/485 (Adjustable through BIOS)</td>
<td>4 x USB 2.0 ports</td>
</tr>
<tr>
<td></td>
<td>1 x Line-out, 1x MIC-in</td>
<td>1 x DB15 VGA</td>
</tr>
<tr>
<td></td>
<td>1 x DB9 GPIO port (8 pin programmable)</td>
<td></td>
</tr>
<tr>
<td>Bus Expansion</td>
<td>1x MINI PCI-e (Standard), 1 x PCI / 1 x PCI-e through riser (Optional)</td>
<td></td>
</tr>
<tr>
<td>Network (LAN)</td>
<td>2 x 10/100/1000 Mbps Ethernet</td>
<td></td>
</tr>
<tr>
<td>Speaker</td>
<td>2 x 1W speakers</td>
<td></td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>255 timer levels; setup by software</td>
<td></td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>325 x 253.8 x 58.4 mm (12.79&quot; x 10&quot; x 2.3&quot;)</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>3.3 kg (7.27 lb)</td>
<td></td>
</tr>
</tbody>
</table>

**OS Support**

- OS Support: Win XPE, Win XP Pro, WES7 32 bit, Win CE 7.0

**Power Supply**

- Input Voltage: DC 12 – 30 V

**LCD Display**

- Display Type: 12.1" TFT LCD (LED Backlight)
- Max. Resolution: 1024 x 768
- Colors: 262K
- Dot Size (mm): 0.24 x 0.24
- Viewing Angle: 80 (left), 80 (right), 80 (up), 80 (down)
- Luminance (cd/m²): 600
- Brightness Control: Yes
- Backlight Lifetime: 50,000 hrs (typical)

**Touchscreen**

- Touch Type: Analog Resistive 5-wire
- Resolution: 2048 x 2048
- Light Transmission: 61% +/-3%
- Controller: RS-232 interface
- Software Driver Support: Windows 7, XP, CE
- Durability (Touches): 36 million
**Dimensions**

Unit: mm

- 325.00 mm (Width)
- 253.80 mm (Height)
- 58.40 mm (Depth)

**Specifications**

**Environment**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>-40°C to 70°C (14°F to 158°F)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-20°C to 60°C (-4°F to 140°F)</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>10% to 90% (non-condensing)</td>
</tr>
<tr>
<td>Shock</td>
<td>Operating 10 G peak acceleration (11 ms duration)</td>
</tr>
<tr>
<td>Vibration</td>
<td>Operating Random Vibration Test 5~500Hz, 15Gms</td>
</tr>
<tr>
<td>EMC</td>
<td>BSMI, CE, FCC Class B</td>
</tr>
<tr>
<td>Safety</td>
<td>CB, CCC, BSMI, UL</td>
</tr>
<tr>
<td>Front Panel Protection</td>
<td>IP65 compliant</td>
</tr>
</tbody>
</table>

**Ordering Information**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-3120-R2GAE</td>
<td>Atom D2550 Fanless Panel PC with 12.1&quot; XGA LED backlight, 2 GB DDR3 pre-installed</td>
</tr>
<tr>
<td>PPC-3120-R4GAE</td>
<td>Atom D2550 Fanless Panel PC with 12.1&quot; XGA LED backlight, 4 GB DDR3 pre-installed</td>
</tr>
<tr>
<td>PPC-3120-X2GAE</td>
<td>Atom D2550 Fanless Panel PC with 12.1&quot; XGA LED backlight, w/o touch, 2 GB DDR3 pre-installed</td>
</tr>
<tr>
<td>PS-DC19-L157E</td>
<td>19V power adapter module</td>
</tr>
<tr>
<td>1700001524</td>
<td>Power cord 3P UL 10A 125V 1.8m</td>
</tr>
<tr>
<td>1700031830</td>
<td>Power cord 3P Europe (WS-010+083)183cm</td>
</tr>
<tr>
<td>170008921</td>
<td>Power cord 3P/3P Power supply 1.8M PSE</td>
</tr>
<tr>
<td>* PPC-174T-WL-MTE</td>
<td>Wall mount kit for PPC series</td>
</tr>
<tr>
<td>* PPC-ARM-A03</td>
<td>PPC ARM VESA Standard</td>
</tr>
<tr>
<td>* PPC-3100-STANDE</td>
<td>Desktop Stand for PPC-3100 series</td>
</tr>
<tr>
<td>PPC-3100-VSAE</td>
<td>PPC-3100 VESA bracket module</td>
</tr>
<tr>
<td>PPC-3100-WLANE</td>
<td>PCIe Half Mini Card WLAN module for PPC-3100 series</td>
</tr>
<tr>
<td>PPC-3120-EXPE</td>
<td>Add-on box for PCI or PCIe expansion (include PCI / PCIe riser card)</td>
</tr>
<tr>
<td>2070011878</td>
<td>Image WES7E PPC-3120 V5.1.4 ENG/TC/SC/JPN</td>
</tr>
<tr>
<td>2070011967</td>
<td>Image windows XPE WES2009 PPC-3120 V4.3 MUI SA</td>
</tr>
</tbody>
</table>

* If you order Wall mount kit / ARM / Desktop stand, please also order PPC-3100-VSAE at the same time.
PPC-L157T

15” Fanless Panel PC with Intel® Atom™ N270 Processor

Introduction
The PPC-L157T is a 15” Fanless panel PC that delivers high performance while consuming low power. The PPC-L157T operates with low noise and provides display resolutions up to 1024 x 768 (XGA) pixels. The PPC-L157T is equipped with dual Gigabit Ethernet connectors supporting either failover or LAN teaming. Advantech’s customization services and optional accessories including wireless modules, battery packs, and SATA optical devices, allow system integrators to design tailor-made solutions to a host of industrial applications.

Specifications

<table>
<thead>
<tr>
<th>Processor System</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
</tr>
<tr>
<td>CPU Front Side Bus</td>
</tr>
<tr>
<td>Chipset</td>
</tr>
<tr>
<td>Secondary Cache</td>
</tr>
<tr>
<td>Memory</td>
</tr>
<tr>
<td>DVD+/RW</td>
</tr>
<tr>
<td>SSD</td>
</tr>
<tr>
<td>HDD</td>
</tr>
<tr>
<td>Network (LAN)</td>
</tr>
<tr>
<td>Fully Integrated I/O and Speakers</td>
</tr>
<tr>
<td>Bus Expansion</td>
</tr>
<tr>
<td>Front Panel Protection</td>
</tr>
<tr>
<td>Weight</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OS Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply</td>
</tr>
<tr>
<td>Display Type</td>
</tr>
<tr>
<td>Max. Resolution</td>
</tr>
<tr>
<td>Colors</td>
</tr>
<tr>
<td>Pixel Pitch (mm)</td>
</tr>
<tr>
<td>Viewing Angle</td>
</tr>
<tr>
<td>Luminance (cd/m²)</td>
</tr>
<tr>
<td>Backlight Lifetime</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Touchscreen (optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
</tr>
<tr>
<td>Resolution</td>
</tr>
<tr>
<td>Light Transmission</td>
</tr>
<tr>
<td>Controller</td>
</tr>
<tr>
<td>Durability (Touch)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
</tr>
<tr>
<td>Relative Humidity</td>
</tr>
<tr>
<td>Shock</td>
</tr>
<tr>
<td>Vibration</td>
</tr>
<tr>
<td>EMC</td>
</tr>
<tr>
<td>Safety</td>
</tr>
</tbody>
</table>
Dimensions

Unit: mm

Ordering Information

<table>
<thead>
<tr>
<th>Part NO</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-L157T-080-XE</td>
<td>Intel Atom processor N270 1.6 GHz fanless panel PC with 15” TFT LCD</td>
</tr>
<tr>
<td>PPC-L157T-R80-XE</td>
<td>PPC-L157T-080-XE with resistive touchscreen</td>
</tr>
<tr>
<td>PPC-L157T-RXPE06E</td>
<td>PPC-L157T with 1G memory/Windows XPE on 160G HDD</td>
</tr>
<tr>
<td>PPC-ARM-043</td>
<td>VESA Stand ARM for PPC series</td>
</tr>
<tr>
<td>PPC-174T-WL-MTE</td>
<td>Wall mount kit for PPC series</td>
</tr>
<tr>
<td>PPC-L157-STANDE</td>
<td>Stand desktop stand for PPC-L157T</td>
</tr>
<tr>
<td>PPC-L157-EXPE</td>
<td>PCI/PCIe expansion kit for PPC-L157</td>
</tr>
<tr>
<td>1760001580</td>
<td>Battery PACK 11.1V 4.4AH SS2P (only for PPC-L157T-R81-XE)</td>
</tr>
<tr>
<td>1700001524</td>
<td>Power cord 3P UL 10A 125V 1.8M</td>
</tr>
<tr>
<td>989KL15700E</td>
<td>Wireless Module for PPC-L157T Series</td>
</tr>
<tr>
<td>989KL15702E</td>
<td>Slim type DVD-RW Module for PPC-L157T Series</td>
</tr>
<tr>
<td>PPC-L157T-R81-XE</td>
<td>Intel Atom processor N270 1.6 GHz fanless panel PC with 15” TFT LCD and AMT Anti-Corrosive touchscreen (LED backlight)</td>
</tr>
<tr>
<td>2070009824</td>
<td>XPE WES2009 for PPC-L157T V4.0 24MUI (for R80)</td>
</tr>
<tr>
<td>2070011575</td>
<td>XPE WES2009 V4.0, 24 multi-languages with SUSI Access (for R81)</td>
</tr>
</tbody>
</table>

I/O Appearance

A. Main power switch
B. USB 2.0 x 3
C. Ethernet jack
D. USB 2.0
E. PS/2 mouse and keyboard
F. PCI/PCI-E expansion slot cover
G. GPIO port
H. DC inlet
I. Line-in jack
J. Line-out jack
K. Mic-in jack
L. Ethernet jack
M. VGA port
N. Serial ports
**PPC-L158T**

**15” Fanless Panel PC with Intel® Atom™ Dual-Core Processor**

**Features**
- 15” TFT XGA LCD with optional resistive touchscreen
- Embedded Intel® Atom™ processor, dual-core D525 1.8G
- System memory up to 2 x DDR3 800 MHz SODIMMs
- Supports one internal SATA 2.5” HDD
- Supports one Mini PCIe socket, Dual Gigabit Ethernet
- Either PCI/PCIe x 1 expansion kit
- Fanless and ultra-low power consumption
- One RS-232/422/485; (supporting Auto-flow control, BIOS-selectable)
- One RS-232/ GPIO (8 channels, TTL level); (by swapping pin header)

**Introduction**

The PPC-L158T is a 15” Fanless panel PC that delivers high performance while consuming low power. The PPC-L158T operates with low noise and provides display resolutions up to 1024 x 768 (XGA) pixels. The PPC-L158T is equipped with dual Gigabit Ethernet connectors, 8-channel GPIO function and either one PCI or one PCIe expansion slot. Advantech’s customization services and optional accessories including wireless modules and SATA optical devices, allow system integrators to design tailor-made solutions for a host of industrial applications.

**Specifications**

<table>
<thead>
<tr>
<th>Processor System</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>Intel Atom processor, dual-core D525 1.8G</td>
</tr>
<tr>
<td>Chipset</td>
<td>D525 + ICH8M</td>
</tr>
<tr>
<td>Secondary Cache</td>
<td>1MB L2 cache</td>
</tr>
<tr>
<td>Memory</td>
<td>2 x DDR3 800 MHz SODIMMs (up to 2GB each socket), compatible with 1066/1333 MHz (does not support ECC and REG)</td>
</tr>
<tr>
<td>DVD-RW Drive</td>
<td>Optional (989017702E)</td>
</tr>
<tr>
<td>SSD</td>
<td>Supports one CFastTM Type I, II socket</td>
</tr>
<tr>
<td>HDD</td>
<td>One internal SATA interface- 2.5” Type</td>
</tr>
<tr>
<td>Network (LAN)</td>
<td>2 x 10/100/1000 Mbps (RJ-45)</td>
</tr>
<tr>
<td>Fully Integrated I/O and Speakers</td>
<td>4 x COM ports: 2 x RS-232, 1 x RS-232/422/485, 1 x RS-232/ GPIO (8 channels, TTL level)*</td>
</tr>
<tr>
<td></td>
<td>4 x USB 2.0 ports</td>
</tr>
<tr>
<td></td>
<td>Mic in/ Line out, 1W speaker - 2 x Gigabit Ethernet ports</td>
</tr>
<tr>
<td></td>
<td>1 x O-SI/8 VGA port</td>
</tr>
<tr>
<td></td>
<td>1 x PS/2 mouse and 1 x keyboard interface</td>
</tr>
<tr>
<td></td>
<td>1 x Parallel port (by an additional cable in the accessory box)</td>
</tr>
<tr>
<td>* RS-232/422/485 - selected in BIOS and supporting RS-232/GPIO by swapping pinheader, Auto-flow control</td>
<td></td>
</tr>
<tr>
<td>Bus Expansion</td>
<td>1 x expansion slot for PCI/PCIe card</td>
</tr>
<tr>
<td></td>
<td>1 x Mini PCIe slot</td>
</tr>
<tr>
<td>Front Panel Protection</td>
<td>IP65 compliant</td>
</tr>
<tr>
<td>Weight</td>
<td>6 kg (13.2 Ib)</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>396.5 x 317.6 x 103.5 mm (15.6” x 12.5 x 4.08”)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power Supply</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DC</td>
<td>Input Voltage 15 - 24 VDC</td>
</tr>
<tr>
<td>AC</td>
<td>Input Voltage 100 – 240 VAC, 50 – 60 Hz, 1 – 2 A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LCD Display</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Type</td>
<td>15” Color TFT LCD</td>
</tr>
<tr>
<td>Max. Resolution</td>
<td>1024 x 768</td>
</tr>
<tr>
<td>Colors</td>
<td>262 K</td>
</tr>
<tr>
<td>Pixel Pitch (mm)</td>
<td>0.297 x 0.297</td>
</tr>
<tr>
<td>Viewing Angle</td>
<td>160°/140°</td>
</tr>
<tr>
<td>Luminance (cd/m²)</td>
<td>350</td>
</tr>
<tr>
<td>Brightness Control</td>
<td>Yes</td>
</tr>
<tr>
<td>Backlight Lifetime</td>
<td>50,000 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Touchscreen (optional)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Analog Resistive 5-wire (AMT) Anti-Corrective type</td>
</tr>
<tr>
<td>Resolution</td>
<td>2048 x 2048</td>
</tr>
<tr>
<td>Light Transmission</td>
<td>50 %</td>
</tr>
<tr>
<td>Controller</td>
<td>RS-232 interface</td>
</tr>
<tr>
<td>Durability (Touches)</td>
<td>35 million</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental Specifications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>0-50°C (32-122°F)</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>10 – 95 % @ 40°C, non-condensing</td>
</tr>
<tr>
<td>Shock</td>
<td>Operating 10G peak acceleration (11 ms duration), follows IEC 60068-2-27</td>
</tr>
<tr>
<td>Vibration</td>
<td>Operating Random Vibration Test 5-500Hz, 1G,5ms, follows IEC 60068-2-64</td>
</tr>
<tr>
<td>EMC</td>
<td>CE, FCC Class B, BSMI</td>
</tr>
<tr>
<td>Safety</td>
<td>CE, CB, UL, BSMI, CCC, VCCI</td>
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**Introduction**

The PPC-L158T is a 15” Fanless panel PC that delivers high performance while consuming low power. The PPC-L158T operates with low noise and provides display resolutions up to 1024 x 768 (XGA) pixels. The PPC-L158T is equipped with dual Gigabit Ethernet connectors, 8-channel GPIO function and either one PCI or one PCIe expansion slot. Advantech’s customization services and optional accessories including wireless modules and SATA optical devices, allow system integrators to design tailor-made solutions for a host of industrial applications.

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</tbody>
</table>
### PPC-L158T

#### Dimensions

<table>
<thead>
<tr>
<th>Unit: mm</th>
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</thead>
<tbody>
<tr>
<td>379.50</td>
</tr>
<tr>
<td>103.50</td>
</tr>
<tr>
<td>300.60</td>
</tr>
<tr>
<td>396.34</td>
</tr>
<tr>
<td>300.60</td>
</tr>
<tr>
<td>103.50</td>
</tr>
<tr>
<td>317.74</td>
</tr>
</tbody>
</table>

#### Ordering Information

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<tr>
<th>Part NO</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-L158T-090-AXE</td>
<td>Intel Atom processor, Dual Core processor D525 1.8G fanless panel PC with 15&quot; TFT LCD (with 85W PSU inside)</td>
</tr>
<tr>
<td>PPC-L158T-R90-AXE</td>
<td>PPC-L158T-090-AXE with resistive touchscreen (with 85W PSU inside)</td>
</tr>
<tr>
<td>PPC-L158T-090-DXE</td>
<td>Intel Atom Dual Core processor D525 1.8G fanless panel PC with 15&quot; TFT LCD (DC Input Model)</td>
</tr>
<tr>
<td>PPC-L158T-R90-DXE</td>
<td>PPC-L158T-090-DXE with resistive touchscreen (DC Input Model)</td>
</tr>
<tr>
<td>PPC-ARM-A03</td>
<td>VESA Stand ARM for PPC series</td>
</tr>
<tr>
<td>PPC-174T-WL-MTE</td>
<td>Wall mount kit for PPC series</td>
</tr>
<tr>
<td>PPC-155T STAND</td>
<td>Stand kit for PPC-L158T/157/177/ series</td>
</tr>
<tr>
<td>PS-DC19-L157E</td>
<td>19V DC power adapter module for PPC-L128/PPCL157/170</td>
</tr>
<tr>
<td>1700001524</td>
<td>Power cord 3P UL 10A 125V 1.8M (for adapter)</td>
</tr>
<tr>
<td>989K017700E</td>
<td>Optical disc drive kit for PPC-L158T/157/177/ (W/O ODD)</td>
</tr>
<tr>
<td>989K017702E</td>
<td>DVD-RW (SATA) module for PPC-L158T/157/177</td>
</tr>
<tr>
<td>2070010541</td>
<td>Image XPE WES2009 PPC-L158 V4.0 24 MUI</td>
</tr>
<tr>
<td>2070011078</td>
<td>Image CE 6.0 Pro PPC-L158 V1.0 ENG</td>
</tr>
<tr>
<td>PPC-L158T-WLANE</td>
<td>Wireless Module for PPC-L158T Series</td>
</tr>
<tr>
<td>2070011241</td>
<td>Image WES7E SPI 32 bit PPC-L158T V5.1 English version</td>
</tr>
<tr>
<td>2070011242</td>
<td>Image WES7P SPI 32 bit PPC-L158T V5.1, 36 multi-language</td>
</tr>
</tbody>
</table>

#### I/O Appearance

##### AC Input Model

- A: AC Inlet
- B: Power Switch
- C: PS2 Mouse x 1 / Keyboard x1
- D: RS-232 x 2, RS-232/422/485 x 1
- E: RS-232 x 1 (or GPIO x 1 by cable swapping)
- F: 10/100/1000 Mbps Ethernet x 1
- G: PCI Slot x 1 (or PCIe Slot x 1)
- H: VGA Port
- I: USB 2.0 x 4
- J: 10/100/1000 Mbps Ethernet x 1
- K: Line out/Mic in

##### DC Input Model

- A: Power Switch
- B: PS2 Mouse x 1 / Keyboard x1
- C: RS-232 x 2, RS-232/422/485 x 1
- D: RS-232 x 1 (or GPIO x 1 by cable swapping)
- E: 10/100/1000 Mbps Ethernet x 1
- F: PCI Slot x 1 (or PCIe Slot x 1)
- G: DC inlet
- H: VGA Port
- I: USB 2.0 x 4
- J: 10/100/1000 Mbps Ethernet x 1
- K: Line out/Mic in
Industrial Panel Computers & Panel PC

PPC-4150W
15.6" Fanless Wide Screen Panel PC with Intel Atom Dual-Core Processor

Features
- 15.6" TFT WXGA LED entirely flat panel with Projected capacitive touchscreen
- Fanless design and low power consumption
- Supports one internal SATA 2.5" HDD and 1 x mSATA socket
- PCI or PCIe expansion support
- Adjust RS-232/422/485 through BIOS
- Automatic data flow control over RS-485
- Wide Range DC 12~30V support
- One right side USB port
- Front panel compliant with IP65

Specifications

<table>
<thead>
<tr>
<th>Processor system</th>
<th>CPU</th>
<th>Intel Atom D2550 1.86GHz 10W Dual Core CPU on board</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Memory</td>
<td>SODIMM x 1, DDR3 1066, Max 4 GB</td>
</tr>
<tr>
<td></td>
<td>2nd Cache Memory</td>
<td>1 MB</td>
</tr>
<tr>
<td></td>
<td>Chipset</td>
<td>Intel NM10</td>
</tr>
<tr>
<td></td>
<td>Storage</td>
<td>mSATA x 1</td>
</tr>
<tr>
<td></td>
<td>HDD</td>
<td>1 x 2.5&quot; SATA HDD Bay (Internal)</td>
</tr>
<tr>
<td></td>
<td>I/O Ports</td>
<td>4 x Serial ports: 3 x RS-232, 1x RS-232/422/485 (Adjustable through BIOS) 5 x USB 2.0 ports (4 in Rear, 1 from right side) 1 x Line-out, 1x MIC-in 1 x DB15 VGA 1 x DB9 GPIO port (8 pin programable)</td>
</tr>
<tr>
<td></td>
<td>Bus Expansion</td>
<td>1 x MINI PCIe, 1 x PCIe x1 or 1 x PCIe</td>
</tr>
<tr>
<td></td>
<td>Network (LAN)</td>
<td>2 x 10/100/1000 Mbps Ethernet</td>
</tr>
<tr>
<td></td>
<td>Watchdog Timer</td>
<td>255 timer levels; setup by software</td>
</tr>
<tr>
<td></td>
<td>Dimensions</td>
<td>419.7 x 269 x 59 mm</td>
</tr>
<tr>
<td></td>
<td>Weight</td>
<td>5.5Kg</td>
</tr>
<tr>
<td>OS support</td>
<td>OS Support</td>
<td>Win XPE / WES7 / WIN CE7.0 / Linux</td>
</tr>
<tr>
<td>Power supply</td>
<td>Input Voltage</td>
<td>DC 12 – 30 V</td>
</tr>
<tr>
<td></td>
<td>Power consumption</td>
<td>36 W (4 GB DDR3, 2.5&quot; HDD 500GB, 4xRS232 loop back, USB2.0x3, mouse, Windows7 32bit)</td>
</tr>
<tr>
<td>LCD Display</td>
<td>Display Type</td>
<td>15.6&quot; TFT LCD (LED Backlight)</td>
</tr>
<tr>
<td></td>
<td>Max. Resolution</td>
<td>1366 x 768</td>
</tr>
<tr>
<td></td>
<td>Colors</td>
<td>16.7 M colors</td>
</tr>
<tr>
<td></td>
<td>Dot Size (mm)</td>
<td>0.264 x 0.264</td>
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<tr>
<td></td>
<td>Viewing Angle</td>
<td>85 (left), 85 (right), 80 (up), 80 (down)</td>
</tr>
<tr>
<td></td>
<td>Luminance</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>Brightness Control</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Backlight Lifetime</td>
<td>50,000 hrs</td>
</tr>
<tr>
<td>Touchscreen</td>
<td>Touch Type</td>
<td>Projected Capacitive 4 point Multitouch</td>
</tr>
<tr>
<td></td>
<td>Controller</td>
<td>USB interface</td>
</tr>
<tr>
<td></td>
<td>Software Driver</td>
<td>Supports Windows 7 / XP Embedded (WES7E and XP Embedded support single touch only)</td>
</tr>
<tr>
<td>Environment</td>
<td>Operating Temperature</td>
<td>0 ~ 50°C (-32 ~ 122°F)</td>
</tr>
<tr>
<td></td>
<td>Storage Temperature</td>
<td>-20 ~ 60°C (-4 ~ 140°F)</td>
</tr>
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<td></td>
<td>Relative Humidity</td>
<td>10 ~ 95% @ 40°C (non-condensing)</td>
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<td>Vibration</td>
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<tbody>
<tr>
<td>PPC-4150W-P2GAE</td>
<td>15.6 Wide screen PPC with PCT Multi-touch, Intel Atom D2550 1.86GHz, 2G DDR3 pre-installed</td>
</tr>
<tr>
<td>PPC-4150W-P4GAE</td>
<td>15.6 Wide screen PPC with PCT touch, Intel Atom D2550 1.86GHz, 4G DDR3 pre-installed</td>
</tr>
<tr>
<td>PPC-6150-WLANE</td>
<td>Wi-Fi Module with Intel 6205 for PPC-6150/6170</td>
</tr>
<tr>
<td>PS-DC19-L157E</td>
<td>19V DC power Adapter Module</td>
</tr>
<tr>
<td>1700001524</td>
<td>POWER Cord 3P UL 10A 125V 180cm</td>
</tr>
<tr>
<td>170203183C</td>
<td>POWER Code 3P Europe (WS-010+083)183cm</td>
</tr>
<tr>
<td>1700000921</td>
<td>POWER CORD 3P/3P POWER SUPPLY 1.8M FSE</td>
</tr>
<tr>
<td>PPC-1741-WL-MTE</td>
<td>Wall mount kit A8038 for PPC series</td>
</tr>
<tr>
<td>PPC-4150W-STANDE</td>
<td>Desktop stand kit for PPC-4150W</td>
</tr>
<tr>
<td>PPC-ARM-A03</td>
<td>PPC ARM VESA Standard</td>
</tr>
</tbody>
</table>

I/O Appearance

A. Mic-in  
B. 4 x USB 2.0  
C. VGA Port  
D. 1 x RS232/422/485  
E. Power Button  
F. Ground Line  
G. DC Inlet  
H. 3 x RS232  
I. DIO Port  
J. 2 x 10/100/1000 Mbps Ethernet  
K. Line Out
Introduction

The PPC-4151W is a new generation Panel PC with WXGA (1366 x 768) screen. The most important, system equips with high performance Intel Core i CPU but the heat can be dispatched easily by high efficiency fanless thermal design. This makes HMI a big step forward to consolidate performance and reliability in one system. Besides, with rich I/O as 5xCOM, 5xUSB and dual Gigabit ethernet make it easier to connect to devices and be integrated into machine building industry. In addition, PCIe/PCI expansion to add on field bus or proprietary card makes more application possibility. The last but not least, the multi touch screen makes the HMI more intuitive, brings you the best operate experience.

Specifications

<table>
<thead>
<tr>
<th>Processor system</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>Intel 4th Generation Core i CPU i5-4300U, 2C, 3M, up to 2.9GHz Celeron 2980U, 2C, 2M, 1.6GHz</td>
</tr>
<tr>
<td>Memory</td>
<td>SO-DIMM x 1, DDR3L1333/1600, Max 8GB</td>
</tr>
<tr>
<td>2nd Cache Memory</td>
<td>3 MB / 2 MB</td>
</tr>
<tr>
<td>Storage</td>
<td>mSATA*1</td>
</tr>
<tr>
<td>HDD</td>
<td>1 x 2.5&quot; SATA HDD bay</td>
</tr>
<tr>
<td>I/O Ports</td>
<td>5 x Serial ports: 4 x RS-232, 1 x RS-422/485 with isolation 1K V DC 4 x USB 3.0 ports in rear side, 1 x USB 2.0 in right side 1 x Line-out, 1x MIC-in 1 x Display Port (1.2)</td>
</tr>
<tr>
<td>Bus Expansion</td>
<td>1 x MINI PCIe, 1 x PCIe x1 or 1 x PCI(either one)</td>
</tr>
<tr>
<td>Network (LAN)</td>
<td>2 x 10/100/1000 Mbps Ethernet, Intel I211-AT, Intel I218LM</td>
</tr>
<tr>
<td>Speaker</td>
<td>2 x 1W</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>255 timer levels; setup by software</td>
</tr>
<tr>
<td>Dimensions</td>
<td>419.7 x 269 x 59 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>5.8 Kg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power supply</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage</td>
<td>DC 9-32V</td>
</tr>
<tr>
<td>Power consumption</td>
<td>i5-4300U: 56W, Celeron 2980U: 45W (8G DDR3L, USB x 4, COM x 4, USB mouse, 2.5&quot; HDD 500G )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LCD Display</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Type</td>
<td>15.6&quot; WXGA LCD (LED Backlight)</td>
</tr>
<tr>
<td>Max. Resolution</td>
<td>1366 x 768</td>
</tr>
<tr>
<td>Colors</td>
<td>16.7M</td>
</tr>
<tr>
<td>Viewing Angle</td>
<td>85 (left), 85 (right), 85 (up), 85 (down)</td>
</tr>
<tr>
<td>Luminance(cd/m2)</td>
<td>300</td>
</tr>
<tr>
<td>Brightness Control</td>
<td>Yes (by BIOS)</td>
</tr>
<tr>
<td>Backlight Lifetime</td>
<td>50,000 hrs(typ.)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Touchscreen</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>2048 x 2048</td>
</tr>
<tr>
<td>Light Transmission</td>
<td>88 % x 2 %</td>
</tr>
<tr>
<td>Controller</td>
<td>USB interface</td>
</tr>
<tr>
<td>Software Driver Supports</td>
<td>Windows7, Windows8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>0 ~ 50° C (32 ~ 122° F) for SSD, 0 ~ 45° C for HDD</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-20 ~ 60° C (-4 ~ 140° F)</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>10 ~ 95% @ 40° C (non-condensing)</td>
</tr>
<tr>
<td>Shock</td>
<td>Operating 10/5 g peak acceleration (11 ms duration), follow IEC 60068-2-27</td>
</tr>
<tr>
<td>Vibration</td>
<td>Operating random vibration test 5-500Hz, Torms, follow IEC 60068-2-64</td>
</tr>
<tr>
<td>EMC</td>
<td>BSMI, CE, FCC Class B</td>
</tr>
<tr>
<td>Safety</td>
<td>CB, CCC, BSMI, UL</td>
</tr>
<tr>
<td>Front Panel Protection</td>
<td>IP65 compliant</td>
</tr>
</tbody>
</table>
PPC-4151W

Dimensions

Ordering Information

<table>
<thead>
<tr>
<th>Part NO</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-4151W-P54AE</td>
<td>15.6 Wide screen PPC with PCT Multi-touch, Intel Core i5-4300U up to 2.9GHz, 4G DDR3L pre-installed</td>
</tr>
<tr>
<td>PPC-4151W-PC4AE</td>
<td>15.6 Wide screen PPC with PCT Multi-touch, Intel Celeron 2980U 1.6GHz, 4G DDR3L pre-installed</td>
</tr>
<tr>
<td>PS-DC19-L157E</td>
<td>19V DC power Adapter Module</td>
</tr>
<tr>
<td>1700001524</td>
<td>POWER Cord 3P UL 10A 125V 180cm</td>
</tr>
<tr>
<td>170203183C</td>
<td>POWER Cord 3P Europe (VS-010+083)183cm</td>
</tr>
<tr>
<td>1700008921</td>
<td>POWER CORD 3P/3P POWER SUPPLY 1.8M PSE</td>
</tr>
<tr>
<td>PPC-174T-WL-MTE</td>
<td>Wall mount kit A800B for PPC series</td>
</tr>
<tr>
<td>PPC-4150W-STANDE</td>
<td>Desktop stand kit for PPC-4150W series</td>
</tr>
<tr>
<td>PPC-ARM-A03</td>
<td>PPC ARM VESA Standard</td>
</tr>
</tbody>
</table>

I/O Appearance

A. Mic-in
B. 4 x USB 3.0
C. VGA Port
D. 4 x RS-232
E. DC Inlet
F. Power Button
G. Ground Line
H. 1 x RS-422/485
I. Display Port
J. 2 x 10/100/1000 Mbps Ethernet
K. Line Out
Introduction

The PPC-4211W is a new generation Panel PC with Full HD (1920 x 1080) screen. The large panel help you to display more yet important information in one screen. The most important, system equips with high performance Intel Core i CPU but the heat can be dispatched easily by high efficiency fanless thermal design. This makes HMI a big step forward to consolidate performance and reliability in one system. Besides, with rich I/O as 5xCOM, 5xUSB and dual Gigabit ethernet make it easier to connect to devices and be integrated into machine building industry. Moreover, with PCIe x4 expansion to add on field bus or proprietry card makes more application posibility. The last but not least, the multi touch screen makes the HMI more intuitive, brings you the best operate experience.

Specifications

<table>
<thead>
<tr>
<th>Processor system</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>Intel 4th Generation Core i CPU</td>
</tr>
<tr>
<td></td>
<td>i5-4300U, 2C, 3M, up to 2.9GHz</td>
</tr>
<tr>
<td></td>
<td>Celeron 2980U, 2C, 2M, 1.6GHz</td>
</tr>
<tr>
<td>Memory</td>
<td>SO-DIMM x 1, DDR3L1333/1600, Max 8GB</td>
</tr>
<tr>
<td>Storage</td>
<td>mSATA*1</td>
</tr>
<tr>
<td>2nd Cache Memory</td>
<td>3 MB / 2 MB</td>
</tr>
<tr>
<td>HDD</td>
<td>1 x 2.5&quot; SATA HDD Bay, optional 2nd HDD bay</td>
</tr>
<tr>
<td>I/O Ports</td>
<td>5 x Serial ports: 4 x RS-232, 1 x RS-422/485 with isolation 1K VDC</td>
</tr>
<tr>
<td></td>
<td>4 x USB 3.0 ports in rear side, 1 x USB 2.0 in right side</td>
</tr>
<tr>
<td></td>
<td>1 x Line-out, 1x MIC-in</td>
</tr>
<tr>
<td></td>
<td>1 x Display Port (1,2)</td>
</tr>
<tr>
<td>Bus Expansion</td>
<td>1 x MINI PCIe, 1 x PCIe x4 (support x1) or 1 x PCIe (either one)</td>
</tr>
<tr>
<td>Network (LAN)</td>
<td>2 x 10/100/1000 Mbps Ethernet, Intel I211-AT, Intel I218LM</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>255 timer levels, setup by software</td>
</tr>
<tr>
<td>Dimensions</td>
<td>557.77 x 349.17 x 63.6 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>7.8 Kg</td>
</tr>
<tr>
<td>OS support</td>
<td>OS Support WIN7 / WIN 8 / Linux</td>
</tr>
<tr>
<td>Power supply</td>
<td>Input Voltage DC 9-32V</td>
</tr>
<tr>
<td>LCD Display</td>
<td>Display Type 21.5” TFT LCD (LED Backlight)</td>
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<tr>
<td></td>
<td>Max. Resolution 1920 x 1080</td>
</tr>
<tr>
<td></td>
<td>Colors 16.7M</td>
</tr>
<tr>
<td></td>
<td>Viewing Angle 178 Horizontal, 178 Vertical</td>
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<tr>
<td></td>
<td>Luminance(cd/m2) 300</td>
</tr>
<tr>
<td></td>
<td>Brightness Control Yes (by BIOS)</td>
</tr>
<tr>
<td></td>
<td>Backlight Lifetime 50,000 hrs (typ.)</td>
</tr>
<tr>
<td>Touchscreen</td>
<td>Touch Type Projected Capacitive multi touch 4 point</td>
</tr>
<tr>
<td></td>
<td>Resolution 2048 x 2048</td>
</tr>
<tr>
<td></td>
<td>Light Transmission 88 % ± 2 %</td>
</tr>
<tr>
<td></td>
<td>Controller USB interface</td>
</tr>
<tr>
<td></td>
<td>Software Driver Supports Windows7 / Windows8</td>
</tr>
<tr>
<td>Environment</td>
<td>Operating Temperature 0 - 50°C (32 - 122°F)</td>
</tr>
<tr>
<td></td>
<td>Storage Temperature -20 - 60°C (-4 - 140°F)</td>
</tr>
<tr>
<td></td>
<td>Relative Humidity 10 - 95% @ 40°C (non-condensing)</td>
</tr>
<tr>
<td></td>
<td>Shock Operating 3G peak acceleration (11ms duration), follow IEC 60068-2-27</td>
</tr>
<tr>
<td></td>
<td>Vibration Operating Random Vibration Test 5–55Hz, 10mm, follow IEC 60068-2-64</td>
</tr>
<tr>
<td></td>
<td>EMC BSMI, CE, FCC Class B</td>
</tr>
<tr>
<td></td>
<td>Safety CB, CCC, BSMI, UL</td>
</tr>
<tr>
<td></td>
<td>Front Panel Protection/IP65 compliant</td>
</tr>
</tbody>
</table>
**Dimensions**

Unit: mm

**Ordering Information**

<table>
<thead>
<tr>
<th>Part NO</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-4211W-P54AE</td>
<td>21.5 Wide screen PPC with PCT Multi-touch, Intel Core i5-4300U up to 2.9GHz, 4G DDR3L pre-installed</td>
</tr>
<tr>
<td>PPC-4211W-PC4AE</td>
<td>21.5 Wide screen PPC with PCT Multi-touch, Intel Celeron 2980U 1.6GHz, 4G DDR3L pre-installed</td>
</tr>
<tr>
<td>PS-DC19-L157E</td>
<td>19V DC power Adapter Module</td>
</tr>
<tr>
<td>1700001524</td>
<td>POWER Cord 3P UL 10A 125V 180cm</td>
</tr>
<tr>
<td>170203183C</td>
<td>POWER Code 3P Europe (WS-010+083)183cm</td>
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<tr>
<td>1700008921</td>
<td>POWER CORD 3P3P POWER SUPPLY 1.8M PSE</td>
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<tr>
<td>PPC-174T-WL-MTE</td>
<td>Wall mount kit A800B for PPC series</td>
</tr>
<tr>
<td>PPC-ARM-A03</td>
<td>PPC ARM VESA Standard</td>
</tr>
</tbody>
</table>

**I/O Appearance**

A. Mic-in  
B. 4 x USB 3.0  
C. VGA Port  
D. 4 x RS-232  
E. DC Inlet  
F. Power Button  
G. Ground Line  
H. 1 x RS-422/485  
I. Display Port  
J. .2 x 10/100/1000 Mbps Ethernet  
K. Line Out
## Selection Guide

<table>
<thead>
<tr>
<th>Model Name</th>
<th>Multi-functional Panel Computer</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-8210</td>
<td>CPU Board 4th Gen Intel Core i7 Pentium® 35W (4/0/4W) 45W: CORE i7-4770TE 2.3GHz 35W: CORE i5-4570E 2.7GHz CORE i3-4330TETE 2.4GHz PENTIUM® G3320TE 2.4GHz</td>
</tr>
<tr>
<td>PPC-9210</td>
<td>CPU Board 3rd Gen Core i7 CPU Core i5: CPU LG495: 1.7GHz Core i3: 830ME 2.4 GHz Core i5: 3610ME 2.7 GHz</td>
</tr>
<tr>
<td>PPC-1797</td>
<td>CPU Board 3rd Gen Core i7 CPU Core i5: CPU Core i3: 830ME 2.7 GHz Core i5: 3610ME 2.7 GHz</td>
</tr>
<tr>
<td>PPC-6150A/70A</td>
<td>CPU Board 3rd Gen Core i7 CPU Core i5: CPU Core i3: 830ME 2.7 GHz Core i5: 3610ME 2.7 GHz</td>
</tr>
</tbody>
</table>

**CPU Board**
- 4th Gen Intel Core i7 Pentium® 35W (4/0/4W)
- 45W: CORE i7-4770TE 2.3GHz
- 35W: CORE i5-4570E 2.7GHz
- CORE i3-4330TETE 2.4GHz
- PENTIUM® G3320TE 2.4GHz

**Memory**
- 25.5 SATA GB SRAY bay 1
- Either one
- Second 2.5 SATA bay (Intel RAID supported, optional)
- - Sim type 6X or above DVD +/- RW (optional)

**Display**
- 12.1” Color TFT LCD
- Intel® 3rd Gen Core i
- Intel® Core i
- Intel® Core i
- Intel® Core i

**I/O Ports**
- 1 x MiniPCIe (Standard)
- 1 x PCIe by 1 (1 x PCIe through riser, Optional)
- 2 x COM ports
- 1 x isolated RS-232/232, 1 x isolated 1 x isolated RS-232/232, 1 x isolated 1 x isolated RS-232/232, 1 x isolated

**Network (LAN)**
- 2 x GbE supports Intel® ATML.0
- 2 x Gigabit Ethernet
- 2 x Gigabit Ethernet
- 2 x Gigabit Ethernet

**Power**
- Input Voltage: DC 12-30 V
- Output Power: 150W

**Dimensions (W x H x D)**
- 325 x 253.8 x 73.0 mm (12.8” x 9.9” x 2.9”)

**Weight/Package**
- 3.4 Kg
- 6.5 Kg (14.32 lb)
- 7.5Kg (16.52 lb)
- 7.5Kg (16.52 lb)
**Introduction**

The PPC-6120 is an 4th Generation Intel® Core™ i / Celeron® based Panel PC with a 12" color TFT LCD. It features extremely high computing power, various connectors, and can be installed in virtually any application. In addition, its user-friendly interface makes it a great host for information appliances. Three RS-232, one isolated RS422/485 and Dual Gb Ethernet connectors support Intel AMT, one expansion slot make PPC-6120 highly reliable, and provides a great solution for versatile applications.

**Specifications**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU</strong></td>
<td>4th Generation Intel® Core™ i / Celeron® Processor (Thermal Design Power: 35W/45W)</td>
</tr>
<tr>
<td><strong>Chipset</strong></td>
<td>Intel Q87</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>Support dual channel DDR3/DDR3L up to 16 GB</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>2.5” SATA HDD bay x1 mSATA x1</td>
</tr>
<tr>
<td><strong>Bus Expansion</strong></td>
<td>1 x Mini PCIe (Standard)</td>
</tr>
<tr>
<td><strong>Network (LAN)</strong></td>
<td>2 x GbE, supports Intel AMT8.0</td>
</tr>
<tr>
<td><strong>I/O</strong></td>
<td>4 x USB3.0 (Ext.), 2 x USB2.0 (Int. pin head)</td>
</tr>
<tr>
<td><strong>Speaker</strong></td>
<td>2 x 1W speakers</td>
</tr>
<tr>
<td><strong>Watchdog Timer</strong></td>
<td>255 timer levels, setup by software</td>
</tr>
<tr>
<td><strong>Dimensions (W x H x D)</strong></td>
<td>325 x 253.8 x 73.8</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>3.4KG</td>
</tr>
<tr>
<td><strong>OS Support</strong></td>
<td>OS Support: Win XPE, Win XP Pro, WES7 32 bit</td>
</tr>
<tr>
<td><strong>Power Supply</strong></td>
<td>Input Voltage: DC 12 – 30 V</td>
</tr>
<tr>
<td><strong>Display Type</strong></td>
<td>12.1&quot; TFT LCD (LED Backlight)</td>
</tr>
<tr>
<td><strong>Max. Resolution</strong></td>
<td>1024 x 768</td>
</tr>
<tr>
<td><strong>Colors</strong></td>
<td>262K</td>
</tr>
<tr>
<td><strong>Dot Size (mm)</strong></td>
<td>0.24 x 0.24</td>
</tr>
<tr>
<td><strong>Viewing Angle</strong></td>
<td>80 (left), 80 (right), 80 (up), 80 (down)</td>
</tr>
<tr>
<td><strong>Luminance (cd/m²)</strong></td>
<td>600</td>
</tr>
<tr>
<td><strong>Brightness Control</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Touch Type</strong></td>
<td>Analog Resistive 5-wire</td>
</tr>
<tr>
<td><strong>Resolution</strong></td>
<td>2048 x 2048</td>
</tr>
<tr>
<td><strong>Light Transmission</strong></td>
<td>81 +/- 3%</td>
</tr>
<tr>
<td><strong>Controller</strong></td>
<td>RS-232 interface</td>
</tr>
<tr>
<td><strong>Software Driver Support</strong></td>
<td>Windows 7, XP, CE</td>
</tr>
<tr>
<td><strong>Durability (Touches)</strong></td>
<td>36 million</td>
</tr>
</tbody>
</table>
## Dimensions

<table>
<thead>
<tr>
<th>Unit: mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width: 325.00</td>
</tr>
<tr>
<td>Depth: 263.00</td>
</tr>
<tr>
<td>Height: 73.79</td>
</tr>
</tbody>
</table>

## Specifications

### Environment

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>0 ~ 50°C (32 ~ 122°F)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-20 ~ 60°C (-4 ~ 140°F)</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>10 ~ 95% @ 40°C (non-condensing)</td>
</tr>
<tr>
<td>Shock</td>
<td>Operating 10 G peak acceleration (11 ms duration), follow IEC 60068-2-27</td>
</tr>
<tr>
<td>Vibration</td>
<td>Operating Random Vibration Test 5~500Hz, 1G, follow IEC 60068-2-64</td>
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<tr>
<td>EMC</td>
<td>BSMI, CE, FCC Class B</td>
</tr>
<tr>
<td>Safety</td>
<td>CB, CCC, BSMI, UL</td>
</tr>
<tr>
<td>Front Panel Protection</td>
<td>IP65 compliant</td>
</tr>
</tbody>
</table>

### Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-6120-RAE</td>
<td>12.1&quot; 4th Generation Intel® Core™ i7/Celeron Panel PC with Resil. T/S</td>
</tr>
<tr>
<td>170001524</td>
<td>Power Cord 3P UL 10A 125V 1.8m</td>
</tr>
<tr>
<td>170203183C</td>
<td>Power Cord 3P Europe (WS-010+083)183cm</td>
</tr>
<tr>
<td>170008821</td>
<td>Power Cord 3P/3P Power Supply 1.8M PSE</td>
</tr>
<tr>
<td>* PPC-174T-WL-MTE</td>
<td>Wall mount kit for PPC series</td>
</tr>
<tr>
<td>* PPC-ARM-A03</td>
<td>PPC ARM VESA Standard</td>
</tr>
<tr>
<td>* PPC-3100-STANDE</td>
<td>Desktop Stand for PPC-3100 series</td>
</tr>
<tr>
<td>PPC-3100-VESA</td>
<td>PPC-3100 VESA bracket module</td>
</tr>
<tr>
<td>PPC-3100-WLANE</td>
<td>PCIe Half Mini Card WLAN module for PPC-3100 series</td>
</tr>
<tr>
<td>PPC-6120-EXPE</td>
<td>Add-on box for PCI or PCIe expansion (include PCI / PCIe riser card)</td>
</tr>
</tbody>
</table>

*If you order Wall mount kit / ARM / Desktop stand, please also order PPC-3100-VESA at the same time.*

### CPU Suggested List

- 4th Gen Intel Core i/Pentium®/Celeron® (35W/45W)
  - 45W: CORE I7-4770TE 2.3GHz
  - 35W: CORE I5-4570TE 2.7GHz
  - CORE I3-4330TE 2.4GHz
  - PENTIUM G3320TE 2.3GHz

## I/O

- A. MIC in
- B. Line Out
- C. USB 3.0 x 4
- D. 10/100/1000 Mbps Ethernet x 2
- E. VGA Port
- F. Display Port
- G. CDM RS-232 x 4
- H. DC Inlet
- I. CDM RS-422/485
Introduction

The PPC-6150 is a Panel PC with an Intel Core i3/i5 or Celeron processor, and a 15" color TFT LCD panel. It features extremely high computing power, modular design, excellent connectivity, and can support virtually any application. In addition, its user-friendly interface makes it a great host for information appliances. Two expansion slots, dual hard drives supporting Intel RAID, and one isolated RS-232/422/485 port make the PPC-6150 highly reliable, and provide a great solution for a wide range of applications.

Specifications

<table>
<thead>
<tr>
<th>Processor System</th>
<th>Intel</th>
<th>Core i5-3610ME</th>
<th>Core i3-3120ME</th>
<th>Celeron 847E</th>
<th>Celeron 1020E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>2.7 GHz</td>
<td>2.4 GHz</td>
<td>1.1 GHz</td>
<td>2.2 GHz</td>
<td></td>
</tr>
<tr>
<td>L3 Cache</td>
<td>4M</td>
<td>3M</td>
<td>2M</td>
<td>2M</td>
<td></td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel QM77</td>
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<tr>
<td>Memory</td>
<td>1 x 204-pin SODIMM, DDR3 (1600 MHz) / DDRL (1333 MHz), supports up to 8 GB</td>
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<tr>
<td>Storage 1</td>
<td>1 x 2.5&quot; SATA bay</td>
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<tr>
<td>Storage 2</td>
<td>Either one</td>
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<tr>
<td></td>
<td>- Second 2.5&quot; SATA bay (Intel RAID supported, optional)</td>
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<td></td>
<td>- Slim type 8X or above DVD +/- RW (optional)</td>
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</tr>
<tr>
<td>Network (LAN)</td>
<td>2 x Gigabit Gigabit Ethernet connectors, Intel AMT supported (Gbe1- Intel 82579LM, Gbe2 – Intel 82583V)</td>
<td></td>
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<tr>
<td>I/O ports</td>
<td>- 4 x COM ports, 1 x isolated RS-232/422/485, 3 x RS-232</td>
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<tr>
<td></td>
<td>- 1 x GPIO/RS-232 (8 channels, TTL level); by pin header</td>
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<tr>
<td></td>
<td>- 3 x USB3.0 + 2 x USB2.0 ports</td>
<td></td>
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<tr>
<td>Expansion Slots</td>
<td>Either:</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>- one PCI + one PCIe x1 (standard)</td>
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<tr>
<td></td>
<td>- one PCIe x 4 (in the accessory box)</td>
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<td></td>
<td>- two PCIe x 1 (optional)</td>
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<td></td>
<td>- two PCI (optional)</td>
<td></td>
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<tr>
<td>Additional Expansion</td>
<td>1 full-size mini PCIe (Supports mSATA)</td>
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<tr>
<td></td>
<td>1 x half-size mini PCIe</td>
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<tr>
<td>Physical Characteristics</td>
<td>Dimensions: 395.5 x 316.8 x 105.5 (mm) (15.6&quot; x 12.5&quot; x 4.15&quot;)</td>
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<tr>
<td></td>
<td>Weight: 6.5 Kg (14.32lb)</td>
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<tr>
<td>OS Support</td>
<td>OS Support: Win XPE / Win XP Pro / WEST7 32 &amp; 64 bit / Windows 7 32 &amp; 64 bit</td>
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<tr>
<td>Power Supply</td>
<td>Output Rating: 150 W (max.)</td>
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<tr>
<td></td>
<td>Input Voltage: 100 - 240Vc, 50/60Hz, 4-2A</td>
<td></td>
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<tr>
<td></td>
<td>Power Consumption: With Core i5-3610ME is 61W</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>With Core i3-3120ME is 50W</td>
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</tr>
<tr>
<td></td>
<td>With Celeron 847E is 48W (Burn-in test 7.0 in Windows 7 32-bit)</td>
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<tr>
<td>LCD Display</td>
<td>Display Type: 15&quot; TFT LCD (LED Backlight)</td>
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</tr>
<tr>
<td></td>
<td>Max. Resolution: 1024 x 768</td>
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</tr>
<tr>
<td></td>
<td>Colors: 262K</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Dot Size (mm): 0.239 x 0.239</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Viewing Angle: 80 (left), 80 (right), 70 (up), 70 (down)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Luminance(cd/m2): 350</td>
<td></td>
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<tr>
<td></td>
<td>Contrast Ratio: 700</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Backlight Lifetime: 50,000 hrs (typical)</td>
<td></td>
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</tbody>
</table>
Specifications (Cont.)

Touchscreen
- Touch Type: Analog Resistive 5-wire
- Resolution: 2048 x 2048
- Light Transmission: 81 +/- 3%
- Controller: RS-232 interface (COM5), USB interface is available as an option
- Software Driver Support: Windows 7, XP
- Durability (Touches): 36 million

Environment
- Operating Temperature: 0 ~ 50°C (32 ~ 122°F)
- Storage Temperature: -20 ~ 60°C (-4 ~ 140°F)
- Relative Humidity: 10 ~ 95% @ 40°C (non-condensing)
- Shock: Operating 10 G peak acceleration (11 ms duration), follows IEC 60068-2-27
- Vibration: Operating Random Vibration Test 5~500Hz, Tgrms, follows IEC 60068-2-64
- EMC: BSMI, CE, FCC Class A
- Safety: CB, CCC, BSMI, UL
- Front Panel Protection: IP65 compliant

Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-6150-Ri5AE</td>
<td>Intel Core i5-3610ME (2.7G) Panel PC with 15&quot; XGA LED backlight and 5-wire resistive T/S, w/o memory</td>
</tr>
<tr>
<td>PPC-6150-Ri3AE</td>
<td>Intel Core i3-3120ME (2.4G) Panel PC with 15&quot; XGA LED backlight and 5-wire resistive T/S, w/o memory</td>
</tr>
<tr>
<td>PPC-6150-RC8AE</td>
<td>Intel Celeron 847E (1.1G) Panel PC with 15&quot; XGA LED backlight and 5-wire resistive T/S, w/o memory</td>
</tr>
<tr>
<td>PPC-6150-RC10AE</td>
<td>Intel Celeron 1020E (2.2G) Panel PC with 15&quot; XGA LED backlight and 5-wire resistive T/S, w/o memory</td>
</tr>
<tr>
<td>PPC-6150-WLANE</td>
<td>WiFi Module with Intel 6205 supports 802.11 abgn, 212R</td>
</tr>
<tr>
<td>PPC-6150-PCIE</td>
<td>Riser card supports two PCI slots for PPC-6150/PPC-6170</td>
</tr>
<tr>
<td>PPC-6150-PCIE2</td>
<td>Riser card supports two PCiex1 slots for PPC-6150/PPC-6170</td>
</tr>
<tr>
<td>PPC-6150-HDDE</td>
<td>Kit to install the second 2.5&quot; SATA HDD for PPC-6150/PPC-6170, w/o HD</td>
</tr>
<tr>
<td>PPC-6150-DVDE</td>
<td>Module with 8X SATA DVD-RW for PPC-6150/PPC-6170</td>
</tr>
<tr>
<td>PPC-1741-WL-MTE</td>
<td>Wall mount kit for PPC series</td>
</tr>
<tr>
<td>PPC-ARM-403</td>
<td>PPC ARM VESA Standard</td>
</tr>
<tr>
<td>PPC-1551 STAND</td>
<td>Stand kit for PPC-6150/PPC-6170</td>
</tr>
<tr>
<td>1702002605</td>
<td>Power cord 90D 220V EUROPEAN 250V/6A, 1.8M</td>
</tr>
<tr>
<td>1702002600</td>
<td>Power cord UL/CAS(A/USA) 180D 125V/10A 1.83M</td>
</tr>
<tr>
<td>2070011757</td>
<td>WEST E 32-bit (ENG/JPN/Simplified Chinese/Traditional Chinese), 4 languages with SUSI Access</td>
</tr>
<tr>
<td>2070011758</td>
<td>WEST E 64-bit (ENG/JPN/Simplified Chinese/Traditional Chinese), 4 languages with SUSI Access</td>
</tr>
</tbody>
</table>

I/O Placement

A: AC Inlet  
B: Power Switch  
C: USB 3.0 x 2, USB 2.0 x 2  
D: HDMI  
E: VGA  
F: Gigabit Ethernet x 2  
G: 2 Expansion slots  
H: Line out/ Mic in  
J: GPIO / RS-232 (by swapping pin header)  
K: RS-232 x 3  
L: Isolated RS-232/422/485 (selecting by BIOS)

Touchscreen
- Specifications
  - Touch Type: Analog Resistive 5-wire
  - Resolution: 2048 x 2048
  - Light Transmission: 81 +/- 3%
  - Controller: RS-232 interface (COM5), USB interface is available as an option
  - Software Driver Support: Windows 7, XP
  - Durability (Touches): 36 million

Environment
- Specifications
  - Operating Temperature: 0 ~ 50°C (32 ~ 122°F)
  - Storage Temperature: -20 ~ 60°C (-4 ~ 140°F)
  - Relative Humidity: 10 ~ 95% @ 40°C (non-condensing)
  - Shock: Operating 10 G peak acceleration (11 ms duration), follows IEC 60068-2-27
  - Vibration: Operating Random Vibration Test 5~500Hz, Tgrms, follows IEC 60068-2-64
  - EMC: BSMI, CE, FCC Class A
  - Safety: CB, CCC, BSMI, UL
  - Front Panel Protection: IP65 compliant

Ordering Information
- Specifications
  - Part No. PPC-6150-Ri5AE: Intel Core i5-3610ME (2.7G) Panel PC with 15" XGA LED backlight and 5-wire resistive T/S, w/o memory
  - Part No. PPC-6150-Ri3AE: Intel Core i3-3120ME (2.4G) Panel PC with 15" XGA LED backlight and 5-wire resistive T/S, w/o memory
  - Part No. PPC-6150-RC8AE: Intel Celeron 847E (1.1G) Panel PC with 15" XGA LED backlight and 5-wire resistive T/S, w/o memory
  - Part No. PPC-6150-RC10AE: Intel Celeron 1020E (2.2G) Panel PC with 15" XGA LED backlight and 5-wire resistive T/S, w/o memory
  - Part No. PPC-6150-WLANE: WiFi Module with Intel 6205 supports 802.11 abgn, 212R
  - Part No. PPC-6150-PCIE: Riser card supports two PCI slots for PPC-6150/PPC-6170
  - Part No. PPC-6150-PCIE2: Riser card supports two PCiex1 slots for PPC-6150/PPC-6170
  - Part No. PPC-6150-HDDE: Kit to install the second 2.5" SATA HDD for PPC-6150/PPC-6170, w/o HD
  - Part No. PPC-6150-DVDE: Module with 8X SATA DVD-RW for PPC-6150/PPC-6170
  - Part No. PPC-1741-WL-MTE: Wall mount kit for PPC series
  - Part No. PPC-ARM-403: PPC ARM VESA Standard
  - Part No. PPC-1551 STAND: Stand kit for PPC-6150/PPC-6170
  - Part No. 1702002605: Power cord 90D 220V EUROPEAN 250V/6A, 1.8M
  - Part No. 1702002600: Power cord UL/CAS(A/USA) 180D 125V/10A 1.83M
  - Part No. 2070011757: WEST E 32-bit (ENG/JPN/Simplified Chinese/Traditional Chinese), 4 languages with SUSI Access
  - Part No. 2070011758: WEST E 64-bit (ENG/JPN/Simplified Chinese/Traditional Chinese), 4 languages with SUSI Access
Introduction

The PPC-6170 is a Panel PC with an Intel Core i3/i5 or Celeron processor, and a 17" color TFT LCD panel. It features extremely high computing power, modular design, excellent connectivity, and can support virtually any application. In addition, its user-friendly interface makes it a great host for information appliances. Two expansion slots, dual hard drives supporting Intel RAID, and one isolated RS-232/422/485 port make the PPC-6170 highly reliable, and provide a great solution for a wide range of applications.

Specifications

<table>
<thead>
<tr>
<th>Processor System</th>
<th>Intel</th>
<th>Core i5-3610ME</th>
<th>Core i3-3120ME</th>
<th>Celeron 847E</th>
<th>Celeron 1020E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>2.7 GHz</td>
<td>2.4 GHz</td>
<td>1.1 GHz</td>
<td>2.2 GHz</td>
<td></td>
</tr>
<tr>
<td>L3 Cache</td>
<td>4M</td>
<td>3M</td>
<td>2M</td>
<td>2M</td>
<td></td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel QM77</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Memory</td>
<td>1 x 204-pin SODIMM, DDR3 (1600 MHz) / DDR3L (1333 MHz), supports up to 8 GB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage 1</td>
<td>Either one - Second 2.5&quot; SATA bay (Intel RAID supported, optional) - Slim type 8x or above DVD +/- RW (optional)</td>
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<tr>
<td>Storage 2</td>
<td>Either one - 2 x Gigabit Ethernet connectors, Intel AMT supported (Gbit1 - Intel 82579LM, Gbit2 – Intel 82583V)</td>
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</tr>
<tr>
<td>Network (LAN)</td>
<td>2 x COM ports, 1 x isolated RS-232/422/485, - 2 x Gigabit Ethernet - 1 x D-SUB VGA port</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I/O ports</td>
<td>1 x GPIO/RS-232 (8 channels, TTL level); by pin header</td>
<td>1 x HDMI</td>
<td>1 x Line-out, 1 x Mic-in, 2 x 1W speaker</td>
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</tr>
<tr>
<td>Expansion Slots</td>
<td>Either: - one PCI + one PCIe x1 (standard) - two PCIe x1 (optional)</td>
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<tr>
<td>Additional Expansion</td>
<td>1 x Full-size mini PCIe (Supports mSATA)</td>
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<tr>
<td>Fan</td>
<td>Two 12V 60 x 60 x 13 (mm) with smart fan control. (70,000 hours continuous test @ 40° C)</td>
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</tbody>
</table>

Physical Characteristics

| Dimensions       | 442.0 x 362.0 x 113.5 (mm) (17.4 x 14.25 x 4.47") |
| Weight           | 7.5Kg (16.52lb) |

OS Support

| OS Support       | Win XPE / Win XP Pro / WES7 32 & 64 bit / Windows 7 32 & 64 bit |

Power Supply

| Output Rating    | 150 W (max.) |
| Input Voltage    | 100 - 240Vac, 50/60Hz, 4-2A |
| Power Consumption| With Core i5-3610ME is 65W With Core i3-3120ME is 55W With Celeron 847E is 53W (Burn-in test 7.0 in Windows 7 32-bit) |

LCD Display

| Display Type     | 17" TFT LCD (LED Backlight) |
| Max. Resolution  | 1280 x 1024 |
| Colors           | 262K |
| Dist Size (mm)   | 0.264 x 0.264 |
| Viewing Angle    | 85 (left), 85 (right), 80 (up), 80 (down) |
| Luminance (cd/m2) | 350 |
| Contrast Ratio   | 1,000 |
| Backlight Lifetime | 50,000 hrs (typical) |
# Specifications (Cont.)

## Touchscreen
- **Touch Type**: Analog Resistive 5-wire
- **Resolution**: 2048 x 2048
- **Light Transmission**: 81%+/-3%
- **Controller**: RS-232 interface (COM5), USB interface is available as an option
- **Software Driver Support**: Windows 7, XP

## Environment
- **Temperature**
  - Operating: 0 ~ 50°C (32 ~ 122°F)
  - Storage: -20 ~ 60°C (-4 ~ 140°F)
- **Relative Humidity**: 10 ~ 95% @ 40°C (non-condensing)
- **Shock**: Operating 10 G peak acceleration (11 ms duration), follows IEC 60068-2-27
- **Vibration**: Operating Random Vibration Test 5-500Hz, 1G, rms, follows IEC 60068-2-64
- **EMC**: BSMI, CE, FCC Class A
- **Safety**: CB, CCC, BSMI, UL
- **Front Panel Protection**: IP65 compliant

## Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-6170-R3AE</td>
<td>Intel Core i3-3120ME (2.4G) Panel PC with 17&quot; XGA LED backlight and 5-wire resistive I/S, w/o memory</td>
</tr>
<tr>
<td>PPC-6170-R2AE</td>
<td>Intel Core i5-3610ME (2.7G) Panel PC with 17&quot; XGA LED backlight and 5-wire resistive I/S, w/o memory</td>
</tr>
<tr>
<td>PPC-6170-RC10AE</td>
<td>Intel Celeron 1020E (2.2G) Panel PC with 17&quot; XGA LED backlight and 5-wire resistive I/S, w/o memory</td>
</tr>
<tr>
<td>PPC-6170-RC8AE</td>
<td>Intel Celeron 847E (1.1G) Panel PC with 17&quot; XGA LED backlight and 5-wire resistive I/S, w/o memory</td>
</tr>
<tr>
<td>PPC-6150-WLANE</td>
<td>WiFi Module with Intel 6205 supports 802.11a/b/g/n, 2T2R</td>
</tr>
<tr>
<td>PPC-6150-PCI</td>
<td>Riser card supports two PCI slots for PPC-6150/PPC-6170</td>
</tr>
<tr>
<td>PPC-6150-PCIIDE</td>
<td>Riser card supports two PCIe x1 slots for PPC-6150/PPC-6170</td>
</tr>
<tr>
<td>PPC-6150-HDDE</td>
<td>Kit to install the second 2.5&quot; SATA HDD for PPC-6150/PPC-6170, w/o HDD</td>
</tr>
<tr>
<td>PPC-6150-DVDE</td>
<td>Module with 8X SATA DVD-RW for PPC-6150/PPC-6170</td>
</tr>
<tr>
<td>PPC-1741-WL-MTE</td>
<td>Wall mount kit for PPC series</td>
</tr>
<tr>
<td>PPC-ARM-A03</td>
<td>PPC ARM VESA Standard</td>
</tr>
<tr>
<td>PPC-1551 STAND</td>
<td>Stand kit for PPC-6150/PPC-6170</td>
</tr>
<tr>
<td>1702021005</td>
<td>Power cord 9000V 220/230V EUROPEAN 250V/6A, 1.8M</td>
</tr>
<tr>
<td>1702026000</td>
<td>Power cord UL/CSA (USA) 1800 250V/70A 1.83M</td>
</tr>
<tr>
<td>2070011780</td>
<td>WES7 I 32-bit (ENGLISH/Simplified Chinese/Traditional Chinese), 4 languages with SUSI Access</td>
</tr>
<tr>
<td>2070011779</td>
<td>WES7 E 64-bit (ENGLISH/Simplified Chinese/Traditional Chinese), 4 languages with SUSI Access</td>
</tr>
<tr>
<td>2070012161</td>
<td>WES7 P 32-bit (ENGLISH/Simplified Chinese/Traditional Chinese), 4 languages with SUSI Access</td>
</tr>
<tr>
<td>2070012186</td>
<td>WES7 P 64-bit (ENGLISH/Simplified Chinese/Traditional Chinese), 4 languages with SUSI Access</td>
</tr>
</tbody>
</table>

## I/O Placement

- **A**: AC Inlet
- **B**: Power Switch
- **C**: USB 3.0 x 2, USB 2.0 x 2
- **D**: HDMI
- **E**: VGA
- **F**: Cable clip x 2
- **G**: Gigabit Ethernet x 2
- **H**: 2 Expansion slots
- **I**: Line out / Mic in
- **J**: USB 3.0 x 1
- **K**: GPIO / RS-232 (by swapping pin header)
- **L**: RS232 x 3
- **M**: Isolated RS-232/422/485 (selecting by BIOS)
PPC-179T

Introduction
PPC-179T is a top performing and highly expandable panel PC. Equipped with a 17" Color TFT LCD, it features high performance, multimedia devices, connectors, and 2 expansion sockets (PCI and PCIe) for high expansion capacity. Because of its multifunctional design, the PPC-179T meets demands from multimedia applications and interactive kiosks that require big displays and powerful computing performance.

Specifications

<table>
<thead>
<tr>
<th>Processor System</th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>Supports LGA775 Socket-based Intel Core 2 Duo Processor up to 3.0 GHz</td>
<td></td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>446 x 382 x 149 mm (17.56&quot; x 15.04&quot; x 5.87&quot;)</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>10 kg (22 lb)</td>
<td></td>
</tr>
<tr>
<td>Front Panel Protection</td>
<td>IP65 compliant</td>
<td></td>
</tr>
<tr>
<td>HDD</td>
<td>One internal SATA interface - 2.5&quot; Type</td>
<td></td>
</tr>
<tr>
<td>DVD+/RW Drive</td>
<td>Equipped with one slim 8x SATA DVD +/- RW (BLACK)</td>
<td></td>
</tr>
<tr>
<td>Memory</td>
<td>Supports 240-pin DDR3 1333/1066 DIMM x2 Up to 4 GB (only supports 64X8 and 128X8, not for 256X8)</td>
<td></td>
</tr>
<tr>
<td>Network (LAN)</td>
<td>2 x 10/100/1000 Mbps (RJ-45)</td>
<td></td>
</tr>
<tr>
<td>I/O ports</td>
<td>- 4 x serial ports: 3 x RS-232, 1 x RS-232/422/485 - 6 x USB2.0 ports - Mic-in, Line-in, Line-out, 1W speaker - 1 x D-SUB VGA port</td>
<td></td>
</tr>
<tr>
<td>Bus Expansion</td>
<td>1 x PCI + 1 x PCIe (in the accessory box), 1 x Mini PCI-e socket</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental Specifications</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>0 ~ 45°C (32 ~ 113°F)</td>
<td></td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>10 ~ 95% @ 40°C, non-condensing</td>
<td></td>
</tr>
<tr>
<td>Shock</td>
<td>Operating 10 G peak acceleration (11 ms duration), follows IEC 60068-2-27</td>
<td></td>
</tr>
<tr>
<td>Vibration</td>
<td>Operating Random Vibration Test 5~500Hz, 1Grms, follows IEC 60068-2-64</td>
<td></td>
</tr>
<tr>
<td>EMC</td>
<td>BSMI, VCCI, CE, FCC Class B, CCC</td>
<td></td>
</tr>
<tr>
<td>Safety</td>
<td>CB, CE, UL</td>
<td></td>
</tr>
</tbody>
</table>

Touchscreen (Optional)

| Types | Analog Resistive | |
| Resolution | 2048 x 2048 | |
| Light Transmission | 75% | |
| Controller | RS-232 interface, (COM6) | |
| Power Consumption | +5 V @ 200 mA | |

LCD Display

| Display type | Color TFT LCD | |
| Size (Diagonal) | 17" | |
| Max. Resolution | 1280 x 1024 | |
| Pixel Pitch (mm) | 0.264 x 0.264 | |
| Luminance (cd/m²) | 380 | |
| Contrast Ratio | 1000:1 | |
| Viewing Angle | 80°(left), 80°(right), 80°(up), 80°(down) | |
| LCD MTBF | 50,000 hrs | |

Power Supply

| Output Rating | 220W (max.) | |
| Input Voltage | 100 ~ 240 VAC @ 50 ~ 60Hz | |

Features

- 17” TFT SXGA LCD
- Intel® Core™2 Duo LGA775 Socket-based processor up to 3.0 GHz
- Supports 240-pin DDR3 1333/1066 DIMM x2 Up to 4 GB
- Rugged die-cast aluminum housing with removable plastic front bezel
- Supports One Mini PCIe socket, Dual Gigabit Ethernet
- One PCI and one PCIe expansion slot
- One RS-232/422/485; (supporting Auto-flow control, jumper-selected)
I/O Appearance

A. AC inlet
B. Power switch
C. PCI expansion x 1, PCIe expansion x 1
D. RS-232 x 3, RS-232/422/485 x 1
E. VGA port
F. USB2.0 x 6
G. 10/100/1000 Mbps Ethernet x 2
H. Line-in/Line-out/Mic-in

Feature Details

Protection
The PPC-179T is robust enough to withstand harsh environments on factory floors and in an external environment. The die-cast housing also acts as a heat sink to prevent the system from overheating.

Networking
Four serial ports and dual 10/100/1000 Mbps Ethernet port give the PPC-179T advanced networking capabilities and provide the best solution for versatile applications.

Expansion
To extend its functionality, PPC-179T is designed with two expansion slots for one PCI and one PCIe card, one Mini PCIe slot, six USB 2.0 (Universal Serial Bus) ports, four COM ports. With these expansion capabilities, PPC-179T not only functions as an HMI, but also as a computing center around which to build your application.
Introduction
The PPC-6170 is a Panel PC with an Intel Core i5/i7 processor, and a 17” color TFT LCD panel. It features extremely high computing power, modular design, excellent connectivity, and four additional GbE ports, which is ideal design for machine vision markets. In addition, its user-friendly interface makes it a great host for information appliances. Two expansion slots, dual hard drives supporting Intel RAID, and one isolated RS-232/422/485 port make the PPC-6170 highly reliable, and provide a great solution for a wide range of applications.

Specifications

<table>
<thead>
<tr>
<th>Processor System</th>
<th>PPC-6170A</th>
<th>PPC-6150A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>2.7 GHz</td>
<td>2.1 GHz</td>
</tr>
<tr>
<td>L3 Cache</td>
<td>4M</td>
<td>6M</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel QM77</td>
<td></td>
</tr>
<tr>
<td>Memory</td>
<td>1 x 204-pin SODIMM, DDR3 (1600 MHz) / DDR3L (1333 MHz), supports up to 8 GB</td>
<td></td>
</tr>
<tr>
<td>Storage 1</td>
<td>1 x 2.5” SATA bay</td>
<td></td>
</tr>
<tr>
<td>Storage 2</td>
<td>Either one - Second 2.5” SATA bay (Intel RAID supported, optional) - Slim type 8X or above DVD +/- RW (optional)</td>
<td></td>
</tr>
<tr>
<td>Network1 (LAN1, LAN2)</td>
<td>2 x Gigabit Ethernet connectors, Intel AMT supported (Gbe1-T Intel 82579LM, Gbe2 – Intel 82583V)</td>
<td></td>
</tr>
<tr>
<td>Network2 (LAN3, LAN4, LAN5, LAN6)</td>
<td>4 x Gigabit Ethernet connectors, Intel i350</td>
<td></td>
</tr>
<tr>
<td>I/O ports</td>
<td>- 2 x COM ports, 1 x isolated RS-232/422/485, 1 x RS232 - 1 x GPIO/RS-232 (8 channels, TTL level); by pin header - 3 x USB2.0 ports</td>
<td></td>
</tr>
<tr>
<td>Expansion Slots</td>
<td>Either: - one PCI + one PCIe x1 (standard) - (2-4) x Gigabit Ethernet - 1 x USB3.0 + 2 x USB2.0 ports</td>
<td></td>
</tr>
<tr>
<td>Fan</td>
<td>Two 12V 60 x 60 x 13 (mm) with smart fan control, (70,000 hours continuous test @ 40° C)</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>7.5kg (16.52lb)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OS Support</th>
<th>PPC-6170A</th>
<th>PPC-6150A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Rating</td>
<td>150 W (max.)</td>
<td>100 W (max.)</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>262W</td>
<td>262W</td>
</tr>
<tr>
<td>Power Consumption (Burn-in test 7.0 in Windows 7 32-bit)</td>
<td>1280 x 1024</td>
<td>1024 x 768</td>
</tr>
<tr>
<td>Colors</td>
<td>262K</td>
<td>262K</td>
</tr>
<tr>
<td>Dot Size (mm)</td>
<td>0.264 x 0.264</td>
<td>0.297 x 0.297</td>
</tr>
<tr>
<td>Viewing Angle</td>
<td>85 (left), 85 (right), 80 (up), 80 (down)</td>
<td>80 (left), 80 (right), 70 (up), 70 (down)</td>
</tr>
<tr>
<td>Luminance(cd/m2)</td>
<td>350</td>
<td>350</td>
</tr>
<tr>
<td>Contrast Ratio</td>
<td>1,000</td>
<td>700</td>
</tr>
<tr>
<td>Backlight Lifetime</td>
<td>50,000 hrs (typical)</td>
<td>50,000 hrs (typical)</td>
</tr>
</tbody>
</table>

Features
- Intel® Core™ i5 and i7 + Intel QM77 PCH
- 1X DDR3/DDR3L SODIMM support to 8 GB
- Multiple expansion slots including one PCI + one PCIe x1, two PCI (optional) and two PCIe x1 (optional)
- Optional second HDD, supports Intel RAID
- One isolated RS-232/422/485 port (selected in the BIOS)
- One GPO/IO-RS-232 (8 channels, TTL level); (by swapping pin header)
- Dual GbE, supports Intel AMT8.0, four additional GbE (Intel i350) for Machine Vision
- Supports iManager, SUSIAccess and Embedded Software APIs
Specifications (Cont.)

<table>
<thead>
<tr>
<th>Touchscreen</th>
<th>Analog Resistive 5-wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>2048 x 2048</td>
</tr>
<tr>
<td>Light Transmission</td>
<td>81 +/- 3%</td>
</tr>
<tr>
<td>Controller</td>
<td>RS-232 interface (COM3), USB interface is available as an option</td>
</tr>
<tr>
<td>Software Driver Support</td>
<td>Windows 7, XP</td>
</tr>
<tr>
<td>Durability (Touch)</td>
<td>36 million</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0 ~ 50°C (32 ~ 122°F)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-20 ~ 60°C (-4 ~ 140°F)</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>10 ~ 95% @ 40°C (non-condensing)</td>
</tr>
<tr>
<td>Shock</td>
<td>Operating 10 G peak acceleration (11 ms duration), follows IEC 60068-2-27</td>
</tr>
<tr>
<td>Vibration</td>
<td>Operating Random Vibration Test 5-500Hz, 1G rms, follows IEC 60068-2-64</td>
</tr>
<tr>
<td>EMC</td>
<td>BSMI, CE, FCC Class A</td>
</tr>
<tr>
<td>Safety</td>
<td>CB, CCC, BSMI, UL</td>
</tr>
<tr>
<td>Front Panel Protection</td>
<td>IP65 compliant</td>
</tr>
</tbody>
</table>

Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-6170A-Ri5AE</td>
<td>Intel Core i5-3610ME (2.7G) Panel PC with 17” XGA LED backlight, 5-wire resistive T/S and 4 additional GbE ports, w/o memory</td>
</tr>
<tr>
<td>PPC-6150-WLAME</td>
<td>WiFi Module with Intel 6205 support 802.11 abgn, 2T2R</td>
</tr>
<tr>
<td>PPC-6150-PCIE</td>
<td>Riser card support two PCI slots for PPC-6150/PPC-6170</td>
</tr>
<tr>
<td>PPC-6150-PCIIE</td>
<td>Riser card support two PCIe x1 slots for PPC-6150/PPC-6170</td>
</tr>
<tr>
<td>PPC-6150-HDDE</td>
<td>Kit to install the second 2.5” SATA HDD for PPC-6150/PPC-6170, w/o HDD</td>
</tr>
<tr>
<td>PPC-6150-DVDE</td>
<td>Module with 8x SATA DVD-RW for PPC-6150/PPC-6170</td>
</tr>
<tr>
<td>PPC-1741-WLMTE</td>
<td>Wall mount kit for PPC series</td>
</tr>
<tr>
<td>PPC-ARM-403</td>
<td>PPC ARM VESA Standard</td>
</tr>
<tr>
<td>PPC-1551STAND</td>
<td>Stand kit for PPC-6150/PPC-6170</td>
</tr>
<tr>
<td>1702002805</td>
<td>Power cord 900 220V EUROPEAN 250V/6A, 1.8M</td>
</tr>
<tr>
<td>1702002800</td>
<td>Power cord UL/CSA(USA) 1800 125V/10A 1.83M</td>
</tr>
<tr>
<td>PPC-6150A-Ri5AE</td>
<td>Intel Core i5-3610ME (2.7G) Panel PC with 15” XGA LED backlight, 5-wire resistive T/S and 4 additional GbE ports, w/o memory</td>
</tr>
</tbody>
</table>

I/O Placement

- A: AC Inlet
- B: Power Switch
- C: USB 3.0 x 2, USB 2.0 x 2
- D: HDMI
- E: VGA
- F: Cable clip x 2
- G: Gigabit Ethernet x 2
- H: 2 Expansion slots
- I: Line out / Mic in
- J: USB 3.0 x 1
- K: GPIO / RS-232 (by swapping pin header)
- L: Isolated RS-232/422/485 (selected in the BIOS)
- M: RS-232 x 1
- N: Gigabit Ethernet x 4 (Intel 350)
Configure-to-Order Panel PCs
Selection Guide

A Brand New Concept of Panel PC

Panel IPC, a combination of a panel and an IPC, are used in a wide range of industrial applications such as manufacturing process control, automation monitoring and facility management. But Advantech don’t think this is enough, have you imagined what can be achieved if we separate the touch front panel and the computing area and let users choose their own processor and I/O interface to meet their requirements? The PPC-8000 series makes this idea a reality.

The jewel in crown of the PPC-8000 series is the introduction of the configure-to-order-service. The PPC-8000 series are designed to use a range of mini-iTX based motherboards, which come with a variety of features, to provide users with the flexibility to choose the features that best meet their requirements. The ability to switch motherboards significantly speeds up the system upgrade process. The PPC-8000 is a brand new series with an exciting concept in letting users build the ideal device. With the benefit of a configure-to-order-service, we are able to deal with any order and offer timely shipment even if the products are custom made. The PPC-8000 series is the consummation of flexibility and expandability.

1st Step: Choose Panel Size

<table>
<thead>
<tr>
<th>Display Chassis</th>
<th>Panel Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15’ TFT LED Panel, XGA, 400nits</td>
</tr>
<tr>
<td></td>
<td>17’ TFT LED Panel, SXGA, 350nits</td>
</tr>
</tbody>
</table>

2nd Step: Choose Power input type

<table>
<thead>
<tr>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 – 240 Vac</td>
</tr>
<tr>
<td>12 – 30 Vdc</td>
</tr>
</tbody>
</table>

3rd Step: Choose Motherboard and functions

<table>
<thead>
<tr>
<th>Platform</th>
<th>MB</th>
<th>AIMB-274 (Intel, Haswell)</th>
<th>AIMB-273 (Intel, Ivy bridge)</th>
<th>AIMB-224 (AMD, Trinity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Core i7-4770S/4770E</td>
<td>Core i5-4570S/4570E</td>
<td>Core i3-4330/4330E</td>
<td>Pentium G3420/G3420E</td>
</tr>
<tr>
<td>Memory</td>
<td>DDR3/DDR3L 1333/1600MHz, 16G max, 2x SO DIMMs</td>
<td>DDR3 1066/1333 MHz, 16G Max, 2x SO DIMMs</td>
<td>DDR3 1066/1333/1600 MHz SDRAM, 16G Max, 2x SO DIMMs</td>
<td></td>
</tr>
<tr>
<td>HDD</td>
<td>N/A</td>
<td>1 x 2.5’ SATA Bay</td>
<td>1 x 2.5’ SATA Bay</td>
<td>1 x 2.5’ SATA Bay</td>
</tr>
<tr>
<td>Cfast</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Mini PCIe</td>
<td>1 x Full-size; 1 x half size</td>
<td>1</td>
<td>1 x Full-size; 1 x half size</td>
<td></td>
</tr>
<tr>
<td>Mini SATA</td>
<td>2</td>
<td>N/A</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>COM ports</td>
<td>1 x RS-232; 1 x RS-232/422/485</td>
<td>2 x RS-232</td>
<td>4 x RS-232; 1 x RS-232/422/485</td>
<td></td>
</tr>
<tr>
<td>USB port</td>
<td>4 x USB 3.0</td>
<td>4 x USB 3.0</td>
<td>2 x USB 2.0; 2 x USB 3.0</td>
<td></td>
</tr>
<tr>
<td>LANs</td>
<td>2 x GbE LANs</td>
<td>2 x GbE LANs</td>
<td>2 x GbE LANs</td>
<td></td>
</tr>
<tr>
<td>Audio</td>
<td>1 x Mic-in; 1 x Line-in; 1 x Line-out</td>
<td>1 x Mic-in; 1 x Line-in; 1 x Line-out</td>
<td>1 x Mic-in; 1 x Line-in; 1 x Line-out</td>
<td></td>
</tr>
<tr>
<td>Display</td>
<td>2 x DP; 1 x HDMI; 1 x CRT</td>
<td>2 x DP; 1 x HDMI; 1 x CRT</td>
<td>2 x DP; 1 x CRT</td>
<td></td>
</tr>
<tr>
<td>PS2</td>
<td>N/A</td>
<td>1 x keyboard; 1 x mouse</td>
<td>1 x KB/MS</td>
<td></td>
</tr>
<tr>
<td>PCIe expansion</td>
<td>1 x PCIe x16 slot</td>
<td>1 x PCIe x16 slot</td>
<td>1 x PCIe x8 slot</td>
<td></td>
</tr>
</tbody>
</table>
Introduction
The PPC-8150 is a Panel PC with Mini-iTX AIMB motherboard supported and a 15" TFT LED panel. It uses a versatile Mini-iTX AIMB motherboard, with a highly efficient power supply or a wide range DC power input, and easy-to-maintain cooling fans. The PPC-8150 especially features additional external COM ports and expansion slot to accommodate different applications.

Specifications

<table>
<thead>
<tr>
<th>Power Supply</th>
<th>Input Voltage</th>
<th>100 - 240 VAC or</th>
<th>12 - 30 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>Power Button</td>
<td>x 1 power button</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Storage</td>
<td>1 x 2.5&quot; SATA bay</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Audio</td>
<td>2 x 1W speaker</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fan</td>
<td>1 x 12V 80x80x15mm Fan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Additional External COM</td>
<td>x 4 optional port</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Expansion slot</td>
<td>1 x PCIe x16 or 1 x PCIe x8</td>
<td></td>
</tr>
<tr>
<td>LCD Display</td>
<td>Display Type</td>
<td>15&quot; TFT LED Panel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Max. Resolution</td>
<td>1024 x 768</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Colors</td>
<td>16.2M</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dot Size (mm)</td>
<td>0.297(H) x 0.297(W)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Viewing Angle</td>
<td>80 (left), 80 (right), 70 (up), 70 (down)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Luminance</td>
<td>400</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contrast Ratio</td>
<td>700</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operating Temperature</td>
<td>-30 – 80°C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Backlight Lifetime</td>
<td>50,000 hrs</td>
<td></td>
</tr>
<tr>
<td>Touchscreen</td>
<td>Touch Type</td>
<td>Analog Resistive 5-wires</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Light Transmission</td>
<td>81% +/- 3%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Durability (Touches)</td>
<td>36 millions</td>
<td></td>
</tr>
<tr>
<td>Environment</td>
<td>Operating Temperature</td>
<td>0 – 50°C (32 – 122°F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Storage Temperature</td>
<td>-20 – 60°C (-4 – 140°F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relative Humidity</td>
<td>10 – 95% @ 40°C (non-condensing)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EMC</td>
<td>CE, BSMI, FCC Class A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Safety</td>
<td>CB, CCC, BSMI, UL</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Front Panel Protection</td>
<td>IP65 Compliant</td>
<td></td>
</tr>
<tr>
<td>Physical Characteristics</td>
<td>Dimensions</td>
<td>395.5 x 316.8 x 110.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weight</td>
<td>5.03 kg</td>
<td></td>
</tr>
</tbody>
</table>
### Dimensions

**Unit: mm**

- **Front:** 379.4 x 395.5
- **Rear:** 321.8 x 316.8
- **Height:** 110.5
- **Depth:** 302.0
- **Width:** 381.0

### Ordering Information

<table>
<thead>
<tr>
<th>Part No</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-8150-RXAE</td>
<td>Panel PC w/15” XGA LED &amp; T/S, 1x PCIe, 180W PSU</td>
</tr>
<tr>
<td>PPC-8150-RXDE</td>
<td>Panel PC w/15” XGA LED &amp; T/S, 1x PCIe, DC input</td>
</tr>
<tr>
<td>PPC-8150-WLANE</td>
<td>PPC-8150 /8170 WLANE MODULE</td>
</tr>
<tr>
<td>PPC-174T-WL-MTE</td>
<td>Wall mount kits for PPC series</td>
</tr>
<tr>
<td>PPC-ARM-A03</td>
<td>PPC ARM VESA stand</td>
</tr>
<tr>
<td>PPC-155T Stand</td>
<td>Stand kit for PPC-8150/PPC-8170</td>
</tr>
<tr>
<td>17020200505</td>
<td>Power cord 2P FRANCE 10A/16A 220V 1.83M 90D</td>
</tr>
<tr>
<td>17020200600</td>
<td>Power Cord 3P UL/CSA(USA) 125V 10A 1.83M 180D</td>
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<tr>
<td>1757004597-01</td>
<td>Power Adapter 100-240V 150W 19V 7.89A</td>
</tr>
</tbody>
</table>

### Supported Mini-ITX Motherboard Options

<table>
<thead>
<tr>
<th>Part Number</th>
<th>PPC-8150-RXAE</th>
<th>PPC-8150-RXDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIMB-273G2-00A1E</td>
<td>Intel Core i7/15/3 mobile processor(PGA)</td>
<td>AMD eTrinity Quad/Dual Core</td>
</tr>
<tr>
<td>AIMB-274G2-00A1E</td>
<td>Intel Shark Bay Desktop(LGA 1150)</td>
<td>Dual channel DDR3 1066/1333/1600MHz, 16Gb max.</td>
</tr>
</tbody>
</table>

**Memory**
- Dual channel DDR3 1333/1600 MHz SDRAM, 16Gb max.
- Dual channel DDR3 1066/1333/1600MHz, 16Gb max.

**Expansion Slots**
- 1 x Mini PCI-e; 1 x PCIe x16 slot
- 2 x Mini PCI-e; 1 x PCIe x16 slot
- 2 x Mini PCI-e; 1 x PCIe x8 slot

**Rear IO**
- 1 x RS 232 (support 5V/12V);
- 1 x RS 232/422/485;
- 2 x GbE LAN;
- 1 x DP;
- 1 x CRT;
- 4 x USB 3.0;
- 2 x PS2 (1 x keyboard and 1 x mouse);
- 3 x Audio (Mic-in, Line-in, Line-out)

### I/O Placement

**PPC-8150-RXAE**

- A. Power button
- B. External COM port
- C. 9-33 Serial Device Servers & IP Gateways
- D. Mini-ITX AIMB IO Shield
- E. AC/DC Power Input

**PPC-8150-RXDE**

- A. Power button
- B. External COM port
- C. 9-33 Serial Device Servers & IP Gateways
- D. Mini-ITX AIMB IO Shield
- E. AC/DC Power Input

**Note:** For detailed motherboard specs, please refer to the datasheet of the motherboard.

---

1. WebAccess+ Solutions
2. Motion Control
3. Power & Energy Automation
4. Automation Software
5. Operator Panels
6. Automation Panel PCs
7. Industrial Panels, Computers & Panel PC
8. Industrial Monitors
9. Industrial Wireless Solutions
10. Industrial Ethernet Solutions
11. Serial Devices Servers and IP Gateways
12. Serial Communication Cards
13. Embedded Automation Computers
14. PACs
15. CompactPCI Systems
16. NAO I/O Modules
17. RS-485 I/O Modules
18. Ethernet I/O Modules

Online Download: www.advantech.com/products
PPC-8170

17” Panel PC with Mini-iTX AIMB Motherboard supported

Introduction
The PPC-8170 is a Panel PC with Mini-iTX AIMB motherboard supported and a 17” TFT LED panel. It uses a versatile Mini-iTX AIMB motherboard, with a highly efficient power supply or a wide range DC power input, and easy-to-maintain cooling fans. The PPC-8170 especially features additional external COM ports and expansion slot to accommodate different applications.

Specifications

<table>
<thead>
<tr>
<th>Power Supply</th>
<th>Input Voltage</th>
<th>100 ~ 240 VAC or 12 ~ 30 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Button</td>
<td>1 x power button</td>
<td></td>
</tr>
<tr>
<td>Storage</td>
<td>1 x 2.5” SATA bay</td>
<td></td>
</tr>
<tr>
<td>Audio</td>
<td>2 x 1W speaker</td>
<td></td>
</tr>
<tr>
<td>Fan</td>
<td>1 x 12V 80x80x15mm Fan</td>
<td></td>
</tr>
<tr>
<td>Additional External COM</td>
<td>4 optional port</td>
<td></td>
</tr>
<tr>
<td>Expansion slot</td>
<td>1 x PCIe x16 or</td>
<td></td>
</tr>
<tr>
<td>LCD Display</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Display Type</td>
<td>17” TFT LED Panel</td>
<td></td>
</tr>
<tr>
<td>Max. Resolution</td>
<td>1280 x 1024</td>
<td></td>
</tr>
<tr>
<td>Colors</td>
<td>262K</td>
<td></td>
</tr>
<tr>
<td>Dot Size (mm)</td>
<td>0.264(H) x 0.264(W)</td>
<td></td>
</tr>
<tr>
<td>Viewing Angle</td>
<td>85(left), 80(right), 80(up), 80(down)</td>
<td></td>
</tr>
<tr>
<td>Luminance</td>
<td>350</td>
<td></td>
</tr>
<tr>
<td>Contrast Ratio</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-30 ~ 85°C</td>
<td></td>
</tr>
<tr>
<td>Backlight Lifetime</td>
<td>50,000 hrs</td>
<td></td>
</tr>
<tr>
<td>Touchscreen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Touch Type</td>
<td>Analog Resistive 5-wires</td>
<td></td>
</tr>
<tr>
<td>Light Transmission</td>
<td>81% +/- 3%</td>
<td></td>
</tr>
<tr>
<td>Durability (Touches)</td>
<td>36 millions</td>
<td></td>
</tr>
<tr>
<td>Environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0 ~ 50°C (32 ~ 122°F)</td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-20 ~ 60°C (-4 ~ 140°F)</td>
<td></td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>10 ~ 95% @ 40°C (non-condensing)</td>
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<td>EMC</td>
<td>CE, BSMI, FCC Class A</td>
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<td>Safety</td>
<td>CB, CCC, BSMI, UL</td>
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<td>Front Panel Protection</td>
<td>IP65 Compliant</td>
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<td>Physical Characteristics</td>
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<tr>
<td>Dimensions</td>
<td>442 x 382 x 113.5</td>
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<tr>
<td>Weight</td>
<td>6.3 kg</td>
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</table>
Dimensions

Ordering Information

<table>
<thead>
<tr>
<th>Part No</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-8170-RSXAE</td>
<td>Panel PC w/17” SXGA LED &amp; T/S, 1x PCIe, 180W PSU</td>
</tr>
<tr>
<td>PPC-8170-RSXDE</td>
<td>Panel PC w/17” SXGA LED &amp; T/S, 1x PCIe, DC input</td>
</tr>
<tr>
<td>PPC-8150-WLANE</td>
<td>PPC-8150 /8170 WLAN Module</td>
</tr>
<tr>
<td>PPC-174T-WLTE</td>
<td>Wall mount kits for PPC series</td>
</tr>
<tr>
<td>PPC-ARM-A03</td>
<td>PPC ARM VESA stand</td>
</tr>
<tr>
<td>PPC-155T</td>
<td>Stand kit for PPC-8170/PPC-8170</td>
</tr>
<tr>
<td>1702005005</td>
<td>Power cord 2P FRANCE 10A/16A 220V 1.83M 90D</td>
</tr>
<tr>
<td>1702002600</td>
<td>Power Cord 3P UL/CSA(USA) 125V 10A 1.83M 180D</td>
</tr>
<tr>
<td>1757004597-01</td>
<td>Power Adapter 100-240V 150W 19V 7.89A</td>
</tr>
</tbody>
</table>

Supported Mini-ITX Motherboard Options

<table>
<thead>
<tr>
<th>Part Number</th>
<th>PPC-8170-RSXAE</th>
<th>AIMG-273G2-00A1E</th>
<th>AIMG-274G2-00A1E</th>
<th>PPC-8170-RSXDE</th>
<th>AIMG-224G2-00A1E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Intel Core i7/5/3</td>
<td>Intel Shark Bay Desktop(LGA 1150)</td>
<td>AMD eTrinity Quad/Dual Core processor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Memory</td>
<td>Dual channel DDR3 1333/1600 MHz SDRAM, 16Gb max.</td>
<td>Dual channel DDR3 1066/1333/1600MHz, 16Gb max.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expansion Slots</td>
<td>1 x Mini PCI-e; 1 x PCIe x16 slot</td>
<td>2 x Mini PCI-e; 1 x PCIe x16 slot</td>
<td>2 x Mini PCI-e; 1 x PCIe x8 slot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear IO</td>
<td>2 x RS 232; 2 x GbE LAN; 2 x DP; 1 x HDMI; 1 x CRT; 4 x USB 3.0; 2 x PS/2 (1 x keyboard and 1 mouse); 3 x Audio (Mic-in, Line-in, Line-out)</td>
<td>1 x RS 232 (support 5V/12V); 1 x RS 232/422/485; 2 x GbE LAN; 1 x DP; 1 x HDMI; 1 x CRT; 4 x USB 3.0; 1 x PS/2 (1 x keyboard and 1 mouse); 3 x Audio (Mic-in, Line-in, Line-out)</td>
<td>4 x RS 232; 1 x RS 232/422/485; 2 x GbE LAN; 2 x DP; 1 x CRT; 4 x USB (2 x USB3.0 and 2 x USB2.0); 1 x PS/2, 3 x Audio (Mic-in, Line-in, Line-out)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: For detailed motherboard specs, please refer to the datasheet of the motherboard.
## Industrial Panel Computer Selection Guide

<table>
<thead>
<tr>
<th>Model</th>
<th>IPPC-9151G</th>
<th>IPPC-9171G</th>
<th>IPPC-6152A</th>
<th>IPPC-6172A</th>
<th>IPPC-6192A</th>
<th>IPPC-4001D</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>Socket μP-C/PGA887 Intel® Core™ i7, i5, i3, Celeron Mobile Processor</td>
<td>Drivers Intel® Core™ i7, i5, i3, Celeron Mobile Processor</td>
<td>Supports Intel® Core™ i7/i5/i3 processor with Q87 chipset (up to 3.1GHz)</td>
<td>Supports Intel® Core™ i7/i5/i3 processor with Q87 chipset (up to 3.1GHz)</td>
<td>Supports Intel® Core™ i7/i5/i3 processor with Q87 chipset (up to 3.1GHz)</td>
<td>Optional CPU Card</td>
</tr>
<tr>
<td>Memory</td>
<td>Up to 8GB DDR3 SODIMM 1333MHz/1600MHz</td>
<td>Up to 8GB DDR3 SODIMM 1333MHz/1600MHz</td>
<td>Up to 32 GB DDR3 1333/1600 MHz SDRAM</td>
<td>Up to 32 GB DDR3 1333/1600 MHz SDRAM</td>
<td>Up to 32 GB DDR3 1333/1600 MHz SDRAM</td>
<td>Optional CPU Card</td>
</tr>
<tr>
<td>Display Type</td>
<td>XGA LED LCD</td>
<td>SXGA LED LCD</td>
<td>XGA TFT LCD LED Backlight</td>
<td>SXGA TFT LCD LED Backlight</td>
<td>SXGA TFT LCD LED Backlight</td>
<td>VGA LED LCD</td>
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<tr>
<td>Max. Colors</td>
<td>16.2M/256K colors</td>
<td>16.7M colors (RGB 6 bits + Hi-FRC data)</td>
<td>16.7M (RGB 6-bit + Hi-FRC data)</td>
<td>16.7M (RGB 6-bit + Hi-FRC data)</td>
<td>16.7M (RGB 6-bit + Hi-FRC data)</td>
<td>262 K (RGB 6-bit)</td>
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<td>Resolution</td>
<td>15&quot;</td>
<td>17&quot;</td>
<td>15&quot;</td>
<td>17&quot;</td>
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<td>700</td>
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<td>50000 hrs</td>
<td>50000 hrs</td>
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<td>Touchscreen</td>
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<tr>
<td>Network(LAN)</td>
<td>2 x 10/100/1000Base-T</td>
<td>2 x 10/100/1000Base-T</td>
<td>2 x 10/100/1000Base-T</td>
<td>2 x 10/100/1000Base-T</td>
<td>2 x 10/100/1000Base-T</td>
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</tr>
<tr>
<td>I/O ports</td>
<td>4 x RS-232, 1 x VGA, 1 x CFast®, 1 x half-length PCI Slot (optional)</td>
<td>4 x RS-232, 1 x VGA, 1 x CFast®, 1 x half-length PCI Slot (optional)</td>
<td>4 (3 x RS-232, 1 x CFast® slot, 1 x half-length PCI Slot (optional)</td>
<td>4 (3 x RS-232, 1 x CFast® slot, 1 x half-length PCI Slot (optional)</td>
<td>4 (3 x RS-232, 1 x CFast® slot, 1 x half-length PCI Slot (optional)</td>
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<tr>
<td>Optical Drive</td>
<td>1 x CFast® slot</td>
<td>1 x CFast® slot</td>
<td>1 x CFast® slot (optional)</td>
<td>1 x CFast® slot (optional)</td>
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<td>CompactFlash Slots</td>
<td>1 x CFast® slot (optional)</td>
<td>1 x CFast® slot (optional)</td>
<td>1 x CFast® slot (optional)</td>
<td>1 x CFast® slot (optional)</td>
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<tr>
<td>HDD (Optional)</td>
<td>2 x 2.5&quot; SATA</td>
<td>2 x 2.5&quot; SATA</td>
<td>2 x 2.5&quot; SATA</td>
<td>2 x 2.5&quot; SATA</td>
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<tr>
<td>HDD (Optional)</td>
<td>1 x CFast® slot</td>
<td>1 x CFast® slot</td>
<td>1 x CFast® slot (optional)</td>
<td>1 x CFast® slot (optional)</td>
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</tr>
<tr>
<td>Expansion Slots</td>
<td>1 x PCIe x1 or x4 (PCI optional)</td>
<td>1 x PCIe x1 or x4 (PCI optional)</td>
<td>2 x half-length PCI Slot (optional)</td>
<td>2 x half-length PCI Slot (optional)</td>
<td>2 x half-length PCI Slot (optional)</td>
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<tr>
<td>Built-in Keyboard/Mouse</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Drawer</td>
</tr>
<tr>
<td>Power Input Voltage</td>
<td>100~240 VAC</td>
<td>100~240 VAC</td>
<td>100~240 VAC</td>
<td>100~240 VAC</td>
<td>100~240 VAC</td>
<td>100~240 VAC</td>
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<tr>
<td>Front Cover</td>
<td>Aluminum</td>
<td>Aluminum</td>
<td>Die-cast flat-sealed</td>
<td>Die-cast flat-sealed</td>
<td>Die-cast flat-sealed</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-50°C (32~122°F)</td>
<td>-50°C (32~122°F)</td>
<td>-50°C (32~122°F)</td>
<td>-50°C (32~122°F)</td>
<td>-50°C (32~122°F)</td>
<td>-50°C (32~122°F)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-20<del>60°C (-4</del>140°F)</td>
<td>-20<del>60°C (-4</del>140°F)</td>
<td>-20<del>60°C (-4</del>140°F)</td>
<td>-20<del>60°C (-4</del>140°F)</td>
<td>-20<del>60°C (-4</del>140°F)</td>
<td>-20<del>60°C (-4</del>140°F)</td>
</tr>
<tr>
<td>Ingress Protection (Front Panel)</td>
<td>IP65</td>
<td>IP65</td>
<td>IP65</td>
<td>IP65</td>
<td>IP65</td>
<td>IP65</td>
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<tr>
<td>Certification</td>
<td>BSMI, CCC, CE, FCC, UL</td>
<td>BSMI, CCC, CE, FCC, UL</td>
<td>BSMI, CCC, CE, FCC, UL</td>
<td>BSMI, CCC, CE, FCC, UL</td>
<td>BSMI, CCC, CE, FCC, UL</td>
<td>-</td>
</tr>
<tr>
<td>Operating System</td>
<td>Windows 7/8P</td>
<td>Windows 7/8P</td>
<td>Microsoft Windows 7/8</td>
<td>Microsoft Windows 7/8</td>
<td>Microsoft Windows 7/8</td>
<td>-</td>
</tr>
<tr>
<td>Dimensions</td>
<td>428 x 310 x 96.5 mm (16.5&quot; x 12.2&quot; x 3.8&quot;)</td>
<td>428 x 354.8 x 98 mm (17.11&quot; x 12.25&quot; x 3.88&quot;)</td>
<td>499.92 x 315.63 x 125.4 mm (19.71&quot; x 12.45&quot; x 4.96&quot;)</td>
<td>481.93 x 355.87 x 125.5 mm (18.97&quot; x 14.01&quot; x 5.22&quot;)</td>
<td>481.93 x 384.6 x 125.5 mm (18.97&quot; x 15.14&quot; x 5.33&quot;)</td>
<td>482 x 175 x 487 mm (19.6&quot; x 19.1&quot;)</td>
</tr>
<tr>
<td>Weight</td>
<td>10.52 Kg (23.19 lbs)</td>
<td>14 Kg (30.86 lbs)</td>
<td>13 Kg (28.6 lbs)</td>
<td>15 Kg (33.04 lb)</td>
<td>16.6 Kg (35.6 lbs)</td>
<td>19.99 kg (44 lbs)</td>
</tr>
<tr>
<td>Page</td>
<td>7-40</td>
<td>7-40</td>
<td>7-38</td>
<td>7-38</td>
<td>7-38</td>
<td>7-42</td>
</tr>
</tbody>
</table>
Introduction
The IPPC-6000A Series is an Industrial Panel PC with front USB access, supports the powerful Haswell platform Core™ i7/i5/i3, high speed DDR3 memory, up to 32 GB, two expansion PCI slots. The processor and chipset combination form the foundation of vPro, Intel’s next generation digital office platform, offering remote out-of-band manageability, improved security, and energy efficient performance. Two SATA hard driver interface with RAID 0,1 support provides data security. Multi function optional – CFast, PCI/PCIe expansion, DVD-ROM which offers great flexibility for application specific requirements. Rugged Metal & IP65 Flat-Sealed Front provide excellent durability in harsh environment. With optional mounting accessories, from panels to racks, it can be mounted anywhere.

Specifications

General
- BIOS: AMI 64 MB Flash BIOS
- Certification: UL, CE, FCC, CCC, BSMI
- Enclosure: Die-cast flat-sealed front with SGCC Housing
- Dimensions (W x H x D): IPTPC-6152: 449.92 x 315.53 x 126.4 mm (17.71” x 12.43” x 4.98”)
  IPTPC-6172: 481.93 x 355.87 x 132.5 mm (18.97” x 14.01” x 5.22”)
  IPTPC-6192: 481.93 x 384.6 x 135.5 mm (18.97” x 15.14” x 5.33”)

Mounting: Panel, Rack (option)

OS Support: Microsoft Windows 7, Windows 8

Power Input: 100 ~ 240 Vac @ 60 ~ 50 Hz, 7 ~ 3.5 A

Power Supply: 350 W

System Hardware
- CPU: Supports Intel® Core™ i7/i5/i3 processor (up to 3.1GHz)
- Chipset: Intel Q87
- Memory: System supports four DIMM sockets support up to 32 GB DDR3 1333/1600 MHz SDRAM
- LAN: 10/100/1000 Base-T Ethernet x 2
- Expansion: 2 x half-length PCI Slot installed (1x two slot PCIe x1 riser optional)
- Storage: Supports 2 x 2.5” SATA 2.0 or SATA 3.0 HDDs and RAID 0,1 compatibility
- Optical Driver: 1 x Slim Type DVD-RW (optional)
- CFast (optional)
- I/Os: 4 (3 x RS-232, 1 x RS-232/422/485 to support auto flow control)
  1 x GPIO
  2 x Reservation ports
  5 x USB Host (2 USB 2.0 front, 4 USB 3.0) 2 x GbE LAN
  VGA x1, DVI x1, DP x1
  2 (1 x keyboard and 1 x mouse)
  2 (Mic-in, Line-out)

LCD Display
- Backlight Life: 50,000 hrs
- Contrast Ratio: IPTPC-6152: 700:1
  IPTPC-6172: 1000:1
  IPTPC-6192: 1000:1
- Display Size: IPTPC-6152: 15”
  IPTPC-6172: 17”
  IPTPC-6192: 19”
- Display Type: IPTPC-6152: XGA TFT LCD LED Backlight
  IPTPC-6172: SXGA TFT LCD LED Backlight
  IPTPC-6192: SXGA TFT LCD LED Backlight
- Luminance: IPTPC-6152: 400 cd/m2
  IPTPC-6172: 350 cd/m2
  IPTPC-6192: 350 cd/m2
- Max. Colors: IPTPC-6152: 16.2M/262K
  IPTPC-6172: 16.7M (RGB 6-bit + Hi-FRC data)
  IPTPC-6192: 16.7M (RGB 6-bit + Hi-FRC data)
- Max. Resolution: IPTPC-6152: 1024 x 768
  IPTPC-6172: 1280 x 1024
  IPTPC-6192: 1280 x 1024
- Viewing Angle (H/V°): IPTPC-6152: 160/140
  IPTPC-6172: 170/180
  IPTPC-6192: 170/180

Touchscreen
- Lifespan: 36 million with a silicone rubber of R8 finger, writing rate is by 250g at 2 times/s
- Light Transmission: > 80%
- Type: Analog resistive 5-wire

Environment
- Humidity: 5 ~ 85% @ 40°C (non-condensing)
- Ingress Protection: Front panel: IP65
- Operating Temperature: 0 ~ 50°C (32 ~ 122°F)
- Storage Temperature: -20 ~ 60°C (-4 ~ 140°F)
- Vibration Protection: 5 ~ 500 Hz, 1 Grms random vibration
Dimensions

Panel Cut-out Dimensions:
- IPPC-6152A: 424x293mm (16.69”x11.54”)
- IPPC-6172A: 454x338mm (17.87”x13.31”)
- IPPC-6192A: 454x338mm (17.87”x13.31”)

Ordering Information
- IPPC-6152A-R2AE: 15” XGA LED Haswell 2PCIs w/ TS
- IPPC-6172A-R2AE: 17” SXGA LED Haswell 2PCIs w/ TS
- IPPC-6192A-R2AE: 19” SXGA LED Haswell 2PCIs w/ TS

Accessories
- IPPC-6152A-RMKE: IPPC-6152A Rack mount Kit
- IPPC-6172A-RMKE: IPPC-6172A Rack mount Kit
- IPPC-6192A-RMKE: IPPC-6192A Rack mount Kit
- IPPC-6152-CFASTE: CFast module for IPPC-61x2 Haswell
- IPPC-6152-PCIEE: PCIE module for IPPC-61x2 Haswell
- 1702002600: Power Cable US Plug 1.8 M
- 1702002605: Power Cable EU Plug 1.8 M
- 1702031801: Power Cable UK Plug 1.8 M
- 1702031836: Power Cable China/Australia Plug 1.8 M
- 96CB-POWER-B-1.8M1: POWER CORD for China 1.8 M

I/O View
- COM Ports
- LAN Ports
- DVD ROM
- Power Switch
- GPIO
- Line Out
- Mouse Port
- DP
- DVI Port
- MIC
- USB 3.0 Ports
- CFast
- AC In
- Keyboard Port
- VGA
- USB

Front Accessible USB Port

Reset Button

www.advantech.com/products
Introduction
IPPC-9151G/IPPC-9171G is a fully functional computer system with front USB access, with Intel® mobile Core i7-2710QE 2.1GHz/Core i5-2510E 2.5 GHz/Core i3-2330E 2.2 GHz /Celeron® B810 1.6 GHz processors up to 6 MB L3 cache and DDR3 SO-DIMM 1066/1333 up to 8 GB and a resolution up to 1024 x 768 to meet the demands of today's high-end industrial software. The IPPC-9151G/IPPC-9171G is a rugged unit with an aluminum panel, 15"/17" TFT LCD with LED backlight, a stainless steel structure and a PCIe slot. The IPPC-9151G/IPPC-9171G is rugged enough to handle the toughest industrial operating environments. With optional mounting accessories, from panels to racks, it can be mounted anywhere.

Specifications

General
- BIOS: AMI EFI 64 Mbit SPI
- Certification: BSMI, CCC, CE, FCC, UL
- Cooling System: 2 x 10.1 CFM fans w/50,000 hrs MTBF
- Dimensions (W x H x D): IPPC-9151G: 428 x 310 x 96.5 mm (16.35" x 12.2" x 3.79"), IPPC-9171G: 482 x 354.8 x 98 mm (18.98" x 13.97" x 3.86")
- Disk Drive Bay: Supports 1 x 2.5" SATA II or SATA III HDD
- Enclosure: Stainless steel back case, 10 mm aluminum front panel
- Mounting: Panel, rack
- Power Input: 100-240 VAC @ 4A 50~60hz
- Power Supply: 180 W, MTBF: 100,000 hrs
- Weight (Gross): IPPC-9151G: 10.52 Kg (23.19 lbs), IPPC-9171G: 14 Kg (30.86 lbs)

System Hardware
- CPU: Supports uFC-PGA988 Intel® mobile Core i7-2710QE 2.1GHz/Core i5-2510E 2.5 GHz/Core i3-2330E 2.2 GHz/Celeron® B810 1.6 GHz processor
- Chipset: Intel® 6 series chipset (QM67)
- Audio Ports: Mic-in, Line-out, Line-in
- Expansion Slots: Supports 1 x PCIe x1 or x4 (PCI optional)
- PS/2: 1 x keyboard and 1 x mouse
- LAN: 2 x 10/100/1000 Mbps
- Memory: 2 x 204 pin DDR3 1066/1333 SODIMM sockets supports up to 8GB (2 x 4GB)
- Cfast: 1 x CFast slot
- I/Os: 1 x VGA; 1 x HDMI; 5 x USB 2.0 (one at front); 4 xRS-232

LCD Display
- LCD Display Type: IPPC-9151G: XGA TFT LCD with LED Backlight, IPPC-9171G: SXGA TFT LCD with LED Backlight
- Display Size: IPPC-9151G: 1024 x 768, IPPC-9171G: 1280 x 1024
- Luminance: IPPC-9151G: 350 cd/m², IPPC-9171G: 380 cd/m²
- Contrast Ratio: IPPC-9151G: 700:1, IPPC-9171G: 400:1
- Touchscreen
- Lifespan: 36 million with a silicone rubber of R8 finger, writing rate is by 250g at 2 times/s
- Light Transmission: > 80%
- Type: Analog resistive (5-wire)

Environment
- Humidity: 5 – 85% @ 40°C (non-condensing)
- Ingress Protection: Front panel: IP66
- Operating Temperature: 0 ~ 50°C (32 ~ 122°F)
- Storage Temperature: -20 ~ 60°C (-4 ~ 140°F)
- Vibration Protection: 5 ~ 500 Hz, 1 gPeak random vibration
Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Width (mm)</th>
<th>Height (mm)</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPPC-9151G</td>
<td>404</td>
<td>292</td>
<td>15.90” x 11.49”</td>
</tr>
<tr>
<td>IPPC-9171G</td>
<td>447.5</td>
<td>329.5</td>
<td>17.618” x 12.972”</td>
</tr>
</tbody>
</table>

Panel Cut-out Dimensions: IPPC-9151G: 404 x 292mm (15.90” x 11.49”)
IPPC-9171G: 447.5 x 329.5mm (17.618” x 12.972”)

Ordering Information

- **IPPC-9151G-R1AE**
  - 15” XGA Intel® Core™ i7/i5/i3 Celeron with TS

- **IPPC-9171G-R1AE**
  - 17” SXGA Intel® Core™ i7/i5/i3 Celeron with TS

Accessories

- **IPPC-9151G-RMKE**
  - (IPPC-9151G) Mounting Kit for standard 19“ industrial rack

- **IPPC-9151G-EPRE**
  - IPPC-9151G/9171G-R1AE PCI Riser card

Notes:
1. When used in a panel mounted environment, the panel's thickness can not be over 10mm.

2. Dual Display

Primary Display: LCD

Second Display: CRT or HDMI

I/O Overview

- COM Ports 1-3
- LAN Ports
- Audio Ports
- CFast Slot
- USB Ports 1-4
- VGA Port
- HDMI Port
- PS/2 Keyboard & Mouse
**Introduction**

IPPC-4001D is a 4U 19" rackmount Chassis with 5.7" VGA TFT display, support up to 14 cards. Designed to be an all-in-one and cost-effective solution for traditional IPC users, IPPC-4001D includes a slim type 85 key keyboard and touch pad drawer making input troublefree, and a 5.7" TFT LCD screen is perfect for information displays like: charts, trends, a control panel, simple programming, production data or field monitoring records. A wide range of standard computing peripherals from the Advantech IPC family can be integrated into the unit to meet different application development requirements in mission-critical environments.

**Available Models**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPPC-4001D-G2AE</td>
<td>IPPC-4001D-B0AE without Backplane</td>
</tr>
</tbody>
</table>

**Features**

- 4U height 19" rackmount chassis with 5.7" VGA TFT display
- Slim keyboard & mouse pad drawer with lockable clip
- Supports high performance Intel i7 processors (and up)
- Support up to 14 cards
- Lockable front door prevents unauthorized access
- Membrane function keys (F1~F5) for varied application access
- Handy screen function for Industrial Automation Controller and Monitoring
- Front accessible USB is friendly to plug-in versatile USB devices
- All-in-one IPC system for saving cost/space from IPC with LCD/keyboard
- Telecom/Power Station portal and platform for test & measurement equipment
- Suitable for Automatic Testing Equipment and Production Line Testers

**specifications**

**General**

<table>
<thead>
<tr>
<th>Button Control</th>
<th>Membrane Key 5 Function Keys (F1 to F5), 5 Cursor Keys (Up, Down, Left, Right, Enter)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certifications</td>
<td>CE, FCC, CCC</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>482 x 174.9 x 486.7 mm (18.97&quot; x 6.88&quot; x 19.16&quot;)</td>
</tr>
<tr>
<td>Keyboard Drawer</td>
<td>Integrated 88-Key (US) slim type keyboard w/ touch pad</td>
</tr>
<tr>
<td>Mounting</td>
<td>19&quot; Rack</td>
</tr>
<tr>
<td>Power Input</td>
<td>100 ~ 240 VAC @ 50~ 60 Hz full range 10A</td>
</tr>
<tr>
<td>Power Supply</td>
<td>Watt: 300 W, MTBF: 100,000 hrs</td>
</tr>
<tr>
<td>Weight</td>
<td>18.00</td>
</tr>
</tbody>
</table>

**System Hardware**

| Storage | 3 x 5.25" Disk drive bay |

**LCD Display**

| Backlight Life | 50,000 hrs (LED Backlight) |
| Contrast Ratio | 800 : 1 |
| Display Size | 5.7" |
| Display Type | VGA TFT LCD |
| Luminance | 700 cd/m2 |
| Max. Colors | 262 K (RGB 6-bit) |
| Max. Resolution | 640 x 480 |
| OSD Control | ON/OFF, Brightness down, up |
| Viewing Angle (H/V°) | 160/140 |

**Environment**

| Humidity | 5 – 85% RH @ 40°C (non-condensing) |
| Ingress Protection | Front panel IP65 |
| Operating Temperature | 0 ~ 50°C (32 ~ 122°F) |
| Storage Temperature | -20 ~ 60°C (-4 ~ 140°F) |
| Vibration Protection | 5 ~ 500 Hz, 1 GRMS random vibration (operating) |

**Introduction**

IPPC-4001D is a 4U 19" rackmount Chassis with 5.7" VGA TFT LCD LED Backlight 4U 19" 14-Slot Rackmount Chassis with Keyboard Drawer

**Features**

- 4U height 19" rackmount chassis with 5.7" VGA TFT display
- Slim keyboard & mouse pad drawer with lockable clip
- Supports high performance Intel i7 processors (and up)
- Support up to 14 cards
- Lockable front door prevents unauthorized access
- Membrane function keys (F1~F5) for varied application access
- Handy screen function for Industrial Automation Controller and Monitoring
- Front accessible USB is friendly to plug-in versatile USB devices
- All-in-one IPC system for saving cost/space from IPC with LCD/keyboard
- Telecom/Power Station portal and platform for test & measurement equipment
- Suitable for Automatic Testing Equipment and Production Line Testers

**Specifications**

**General**

| Button Control | Membrane Key 5 Function Keys (F1 to F5), 5 Cursor Keys (Up, Down, Left, Right, Enter) |
| Certifications| CE, FCC, CCC |
| Dimensions (W x H x D) | 482 x 174.9 x 486.7 mm (18.97" x 6.88" x 19.16") |
| Keyboard Drawer | Integrated 88-Key (US) slim type keyboard w/ touch pad |
| Mounting | 19" Rack |
| Power Input | 100 ~ 240 VAC @ 50~ 60 Hz full range 10A |
| Power Supply | Watt: 300 W, MTBF: 100,000 hrs |
| Weight | 18.00 |

**System Hardware**

| Storage | 3 x 5.25" Disk drive bay |

**LCD Display**

| Backlight Life | 50,000 hrs (LED Backlight) |
| Contrast Ratio | 800 : 1 |
| Display Size | 5.7" |
| Display Type | VGA TFT LCD |
| Luminance | 700 cd/m2 |
| Max. Colors | 262 K (RGB 6-bit) |
| Max. Resolution | 640 x 480 |
| OSD Control | ON/OFF, Brightness down, up |
| Viewing Angle (H/V°) | 160/140 |

**Environment**

| Humidity | 5 – 85% RH @ 40°C (non-condensing) |
| Ingress Protection | Front panel IP65 |
| Operating Temperature | 0 ~ 50°C (32 ~ 122°F) |
| Storage Temperature | -20 ~ 60°C (-4 ~ 140°F) |
| Vibration Protection | 5 ~ 500 Hz, 1 GRMS random vibration (operating) |

**Introduction**

IPPC-4001D is a 4U 19" rackmount Chassis with 5.7" VGA TFT display, support up to 14 cards. Designed to be an all-in-one and cost-effective solution for traditional IPC users, IPPC-4001D includes a slim type 85 key keyboard and touch pad drawer making input troublefree, and a 5.7" TFT LCD screen is perfect for information displays like: charts, trends, a control panel, simple programming, production data or field monitoring records. A wide range of standard computing peripherals from the Advantech IPC family can be integrated into the unit to meet different application development requirements in mission-critical environments.
### Dimensions

![Dimensions Diagram](image)

**Unit: mm [inches]**

- Depth: 360 [14.17]
- Height: 477.40 [18.80]
- Width: 482 [18.98]

### Accessories

- **1702002600**: Power Cable US Plug 1.8 M
- **1702002605**: Power Cable EU Plug 1.8 M
- **1702031801**: Power Cable UK Plug 1.8 M
- **1702031836**: Power Cable China/Australia Plug 1.8 M

### Rear View

![Rear View Diagram](image)

### System View

- **PWR LED**: Power On/Off
- **HDD LED**: HDD LED
- **2 x USB**: 2 x USB
- **OSD Controls**: OSD Controls
- **PCI Card Holder (with Clamp)**: PCI Card Holder
- **System Fan**: System Fan
- **PSU**: PSU
- **Passive Backplane**: Passive Backplane

![System View Diagram](image)
Industrial Panel Computers & Panel PC

ITM-5112R/5115R/5117R series

12”/15”/17” Industrial LED Monitor with Full-Flat Resistive Touchscreen

Features
- Industrial LED Monitor with Full-Flat Resistive Touchscreen
- LED backlight panel provides 20 – 30% power savings
- -20° ~ +60° C wide range operating temperature
- Easy-clean 5-wire resistive plane touch
- Combo RS-232 & USB interface for touchscreen function
- VGA & DVI interface
- Simple, elegant design with IP54 front panel protection
- Supports panel, wall, desktop, and swing-arm VESA mounting

Introduction
Designed especially for machine and factory automation these 12”, 15” and 17” completely flat touch panel monitors are not only great looking but with a wide operating temperature range and rugged casing. For the purposes of easy cleaning the ITM series have an entirely smooth flat panel that is IP54 front panel protected. To further aid the ITM models being used in harsh environments they have an operating temperature as low as -20° C and as high as 60° C and have Advantech’s customary reliability. For versatility and use in any environment the ITM series have VGA and DVI input interfaces and a combo RS-232 and USB interface for touch usage.

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>ITM-5112R-MA1E</th>
<th>ITM-5115R-MA1E</th>
<th>ITM-5117R-MA1E</th>
<th>ITM-5115R-EA1E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>12.1” LED backlight panel</td>
<td>15” LED backlight panel</td>
<td>17” LED backlight panel</td>
<td>15” panel (CCFL)</td>
</tr>
<tr>
<td>Resolution</td>
<td>800 x 600 (SVGA)</td>
<td>1024 x 768 (XGA)</td>
<td>1280 x 1024 (SXGA)</td>
<td>1024 x 768 (XGA)</td>
</tr>
<tr>
<td>Viewing Angle</td>
<td>80°/80°/80°/80°</td>
<td>80°/80°/80°/80°</td>
<td>80°/80°/80°/80°</td>
<td>85°/85°/80°/80°</td>
</tr>
<tr>
<td>Brightness</td>
<td>450 (cd/m²)</td>
<td>400 (cd/m²)</td>
<td>350 (cd/m²)</td>
<td>250 (cd/m²)</td>
</tr>
<tr>
<td>Color Support</td>
<td>16.7M / 262K colors</td>
<td>16.2 M / 262 K colors</td>
<td>16.7M / 262K colors</td>
<td>16.2 M / 262 K colors</td>
</tr>
<tr>
<td>Contrast Ratio</td>
<td>800</td>
<td>700</td>
<td>800</td>
<td>700</td>
</tr>
<tr>
<td>Response Time</td>
<td>12 msec</td>
<td>8 msec</td>
<td>30 msec</td>
<td>8 msec</td>
</tr>
<tr>
<td>Backlight Life (hrs)</td>
<td>60,000 hrs</td>
<td>50,000 hrs</td>
<td>50,000 hrs</td>
<td>30,000 hrs</td>
</tr>
<tr>
<td>Touch screen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>5-wire resistive</td>
<td>5-wire resistive</td>
<td>5-wire resistive</td>
<td>5-wire resistive</td>
</tr>
<tr>
<td>Surface Hardness</td>
<td>3H</td>
<td>3H</td>
<td>3H</td>
<td>3H</td>
</tr>
<tr>
<td>Durability</td>
<td>10 million touches</td>
<td>36 million with a silicone rubber R8 finger, writing rate is by 250g at 2 times/s</td>
<td>36 million with a silicone rubber R8 finger, writing rate is by 250g at 2 times/s</td>
<td>10 million touches</td>
</tr>
<tr>
<td>Environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-20 – 60° C ( -4 – 140° F)</td>
<td>0 – 50° C (32 – 122° F)</td>
<td>-20 – 60° C ( -4 – 140° F)</td>
<td>-20 – 60° C ( -4 – 140° F)</td>
</tr>
<tr>
<td>Humidity</td>
<td>5 – 95% @ 40° C, non-condensing</td>
<td>5 – 95% @ 40° C, non-condensing</td>
<td>5 – 95% @ 40° C, non-condensing</td>
<td>5 – 95% @ 40° C, non-condensing</td>
</tr>
<tr>
<td>Shock</td>
<td>1G peak acceleration (11 ms duration)</td>
<td>1G peak acceleration (11 ms duration)</td>
<td>1G peak acceleration (11 ms duration)</td>
<td>1G peak acceleration (11 ms duration)</td>
</tr>
<tr>
<td>Front panel</td>
<td>IP54</td>
<td>IP54</td>
<td>IP54</td>
<td>IP54</td>
</tr>
<tr>
<td>System</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I/O</td>
<td>VGA x 1; DVI-D x 1; 12 VDC Jack x 1; USB x 1; RS-232 x 1 (USB &amp; RS-232 are reserved for the connection to enable touch usage only)</td>
<td>VGA x 1; 12 - 24 V Phoenix jack x 1; USB x 1; RS-232 x 1 (USB &amp; RS-232 are reserved for the connection to enable touch usage only)</td>
<td>VGA x 1; 12 - 24 V Phoenix jack x 1; USB x 1; RS-232 x 1 (USB &amp; RS-232 are reserved for the connection to enable touch usage only)</td>
<td>VGA x 1; 12 - 24 V Phoenix jack x 1; USB x 1; RS-232 x 1 (USB &amp; RS-232 are reserved for the connection to enable touch usage only)</td>
</tr>
<tr>
<td>Power</td>
<td>DC +12 V input</td>
<td>DC 12 – 24 V input</td>
<td>DC 12 – 24 V input</td>
<td>DC 12 – 24 V input</td>
</tr>
<tr>
<td>EMC Compliance</td>
<td>CE/FCC/CCC/BSMI</td>
<td>CE/FCC/CCC/BSMI</td>
<td>CE/FCC/CCC/BSMI</td>
<td>CE/FCC/CCC/BSMI</td>
</tr>
<tr>
<td>Safety</td>
<td>CB/UL/CCC/BSMI</td>
<td>CB/UL/CCC/BSMI</td>
<td>CB/UL/CCC/BSMI</td>
<td>CB/UL/CCC/BSMI</td>
</tr>
</tbody>
</table>
**Dimensions**

**ITM-5115R-MA1E**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Unit: mm [inches]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>26.20 (1.02)</td>
</tr>
<tr>
<td>Height</td>
<td>32.20 (1.28)</td>
</tr>
<tr>
<td>Depth</td>
<td>53.90 (2.12)</td>
</tr>
</tbody>
</table>

**ITM-5117R-MA1E**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Unit: mm [inches]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>28.20 (1.11)</td>
</tr>
<tr>
<td>Height</td>
<td>40.00 (1.57)</td>
</tr>
<tr>
<td>Depth</td>
<td>56.90 (2.24)</td>
</tr>
</tbody>
</table>

**ITM-5115R-EA1E**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Unit: mm [inches]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>26.20 (1.02)</td>
</tr>
<tr>
<td>Height</td>
<td>32.20 (1.28)</td>
</tr>
<tr>
<td>Depth</td>
<td>53.90 (2.12)</td>
</tr>
</tbody>
</table>

**ITM-5117R-EA1E**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Unit: mm [inches]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>28.20 (1.11)</td>
</tr>
<tr>
<td>Height</td>
<td>36.70 (1.45)</td>
</tr>
<tr>
<td>Depth</td>
<td>56.90 (2.24)</td>
</tr>
</tbody>
</table>

**Ordering information**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITM-5112R-MA1E</td>
<td>12&quot; SVGA LED Full-Flat Touch Monitor</td>
</tr>
<tr>
<td>ITM-5115R-MA1E</td>
<td>15&quot; XGA LED Full-Flat Touch Monitor</td>
</tr>
<tr>
<td>ITM-5117R-MA1E</td>
<td>17&quot; SXGA LED Full-Flat Touch Monitor</td>
</tr>
<tr>
<td>ITM-5115R-EA1E</td>
<td>15&quot; XGA CCFL Full-Flat Touch Monitor</td>
</tr>
<tr>
<td>ITM-5117R-EA1E</td>
<td>17&quot; SXGA CCFL Full-Flat Touch Monitor</td>
</tr>
</tbody>
</table>

**Optional Items**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>90STANDARD-1TM</td>
<td>Stand kit</td>
</tr>
<tr>
<td>1700000243</td>
<td>DVI Cable 2.0 M</td>
</tr>
<tr>
<td>1700002215</td>
<td>USB-A/M(USB-A/M) 1.8 meter</td>
</tr>
<tr>
<td>175/0/39069</td>
<td>*Adapter AC100-240V 60W+12V/5A DPS-60PB A</td>
</tr>
<tr>
<td>1700002669</td>
<td>*Power cord 3P (USA)</td>
</tr>
<tr>
<td>1700000596</td>
<td>*Power cord 3P (China)</td>
</tr>
<tr>
<td>1700018703</td>
<td>*Power cord 3P (EU)</td>
</tr>
<tr>
<td>1750003659</td>
<td>**AC to DC Adapter, DC 19 V/3.42 A 65 W, with Phoenix power plug</td>
</tr>
<tr>
<td>1700031947</td>
<td>**Power cord 2P (USA)</td>
</tr>
<tr>
<td>1700001948</td>
<td>**Power cord 2P (EU)</td>
</tr>
<tr>
<td>1700031949</td>
<td>**Power cord 2P (UK)</td>
</tr>
</tbody>
</table>

*12V (60W/5A) Power adapter & 3P power cords are for ITM-5112R/5115R/5117R-M series
**19V (65W/3.42A) Power adapter & 2P power cords are for ITM-5115R-E Series
## Industrial Monitor Selection Guide

### Entry Level Monitor

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPM-2120G</td>
<td>12&quot; SVGA Industrial Monitor with Resistive Touchscreen and Direct-VGA Port</td>
<td>8-4</td>
</tr>
<tr>
<td>FPM-2150G</td>
<td>15&quot; XGA Industrial Monitor with Resistive Touchscreen and Direct-VGA Port</td>
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To view all of Advantech’s Industrial Monitors, please visit [www.advantech.com/products](http://www.advantech.com/products).
## Industrial Monitor Selection Guide

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<tr>
<td>Memory</td>
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</tr>
<tr>
<td>Display Type</td>
<td>12” SVGA / 15” XGA / 17” SXGA</td>
<td>12” SVGA / 15” XGA / 17” SXGA / 19” SXGA</td>
<td>15” XGA / 17” SXGA / 19” SXGA</td>
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<td>15”/17”/19”</td>
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<td>800 x 600 / 1024 x 768 / 1280 x 1024 / 1280 x 1024</td>
<td>1024 x 768 / 1280 x 1024 / 1280 x 1024</td>
<td>1024 x 768 / 1280 x 1024 / 1280 x 1024</td>
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<td>16.2M / 16.2M / 16.7M / 16.7M</td>
<td>16.2M / 16.7M / 16.7M</td>
<td>16.2M / 16.7M / 16.7M</td>
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<td>450 / 400 / 350 nits</td>
<td>450 / 350 / 350 nits</td>
<td>400 / 350 / 350 nits</td>
<td>350 / 350 / 350 nits</td>
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<td>50,000 hrs</td>
<td>50,000 hrs</td>
<td>50,000 hrs</td>
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<td>VGA/DVI</td>
<td>VGA/DVI</td>
<td>Display port</td>
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<td>Touchscreen</td>
<td>Resistive touch</td>
<td>Resistive touch</td>
<td>Resistive touch</td>
<td>Resistive touch</td>
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<tr>
<td>Network (LAN)</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>HDD (Optional)</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Enclosure</td>
<td>Front panel: Aluminum Rear cover: SECC chassis</td>
<td>Front panel: Aluminum with hard anodizing coating Rear cover: Stainless steel Ground Isolation Protection</td>
<td>Front panel: Aluminum and flat-sealed Rear cover: Anti-rust coating</td>
<td>Front panel: Aluminum and flat-sealed Rear cover: Anti-rust coating</td>
</tr>
<tr>
<td>Mounting</td>
<td>Panel, wall, desktop, VESA arm</td>
<td>Panel, wall, desktop, VESA arm</td>
<td>Panel, wall, desktop, VESA arm</td>
<td>Panel, wall, desktop, VESA arm</td>
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<td>Operating Temperature</td>
<td>0~50°C</td>
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<td>-20~60°C</td>
<td>-20~60°C</td>
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<tr>
<td>Dimensions</td>
<td>311 x 237 x 40.63mm / 363 x 307 x 48.5 mm / 413.72 x 347.22 x 52.13 mm</td>
<td>312 x 224 x 60 mm / 422 x 310 x 70 mm / 482 x 354.8 x 63.9 mm / 483 x 399 x 67.6 mm</td>
<td>449.92 x 315.63 x 50.5 mm / 481.9 x 355.9 x 55 mm / 481.93 x 384.6 x 59 mm</td>
<td>449.92 x 315.63 x 50.5 mm / 481.9 x 355.9 x 55 mm / 481.93 x 384.6 x 59 mm</td>
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<td>6kg / 8kg / 10kg</td>
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<tr>
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<td>Windows XP, Vista, 7, 8, XPe, CE and Linu x</td>
<td>Windows XP, Vista, 7, 8, XPe, CE and Linu x</td>
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<tr>
<td>Touch Operation System</td>
<td>PenMount 6000</td>
<td>FPM-3121G/3151G: PenMount 6000 FPM-3171G/3191G: Elo Touch</td>
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## Selection Guide

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<tr>
<td>Memory</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Display</td>
<td>WXGA TFT LED LCD</td>
<td>WXGA TFT LED LCD</td>
<td>Full HD TFT LED LCD</td>
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<td>Display Size</td>
<td>15.6&quot;</td>
<td>18.5&quot;</td>
<td>21.5&quot;</td>
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<tr>
<td>Max. Resolution</td>
<td>1366 x 768</td>
<td>1366 x 768</td>
<td>1920 x 1080</td>
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<td>Max. Colors</td>
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<td>16.7M</td>
<td>16.7M</td>
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<td>Luminance cd/m²</td>
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<td>300 nits</td>
<td>300 nits</td>
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<td>Viewing Angle (H/V°)</td>
<td>170/160</td>
<td>170/160</td>
<td>178/178</td>
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<td>Backlight MTBF (hrs)</td>
<td>50,000 hrs</td>
<td>50,000 hrs</td>
<td>50,000 hrs</td>
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<td>Video Port</td>
<td>VGA/DVI-D or VGA/HDMI</td>
<td>VGA &amp; DVI-D port</td>
<td>VGA &amp; DVI-D port</td>
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<tr>
<td>Touchscreen</td>
<td>Projected Capacitive touch</td>
<td>Projected Capacitive touch</td>
<td>Projected Capacitive touch</td>
</tr>
<tr>
<td>Network (LAN)</td>
<td>RS-232 and USB interface for touch screen</td>
<td>RS-232 and USB interface for touch screen</td>
<td>RS-232 and USB interface for touch screen</td>
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<td>HDD (Optional)</td>
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<td>Expansion Slots</td>
<td>-</td>
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<tr>
<td>Power Input Voltage</td>
<td>Phoenix x Jack: 24 Vdc input</td>
<td>Phoenix x Jack: 24 Vdc input</td>
<td>Phoenix x Jack: 24 Vdc input</td>
</tr>
<tr>
<td>DC Power Input (Voltage)</td>
<td>4 x external 57 W power adapter, with 100 ~ 240 Vdc input and 12 Vdc @ 4.75 A output</td>
<td>4 x external 57 W power adapter, with 100 ~ 240 Vdc input and 12 Vdc @ 4.75 A output</td>
<td>4 x external 57 W power adapter, with 100 ~ 240 Vdc input and 12 Vdc @ 4.75 A output</td>
</tr>
<tr>
<td>Ingress Protection (Front Panel)</td>
<td>IP66</td>
<td>IP66</td>
<td>IP66</td>
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<tr>
<td>Enclosure</td>
<td>Front panel: Die-cast magnesium alloy Rear cover: SECC</td>
<td>Front panel: Die-cast magnesium alloy Rear cover: SECC</td>
<td>Front panel: Die-cast magnesium alloy Rear cover: SECC</td>
</tr>
<tr>
<td>Mounting</td>
<td>Desktop, wall, VESA arm</td>
<td>Desktop, wall, VESA arm</td>
<td>Desktop, wall, VESA arm</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0 ~ 55°C (32 ~ 131°F)</td>
<td>0 ~ 55°C (32 ~ 131°F)</td>
<td>0 ~ 55°C (32 ~ 131°F)</td>
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<tr>
<td>Storage Temperature</td>
<td>-20 ~ 60°C (-4 ~ 140°F)</td>
<td>-20 ~ 60°C (-4 ~ 140°F)</td>
<td>-20 ~ 60°C (-4 ~ 140°F)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>419.7 x 289 x 47.7 mm (16.50&quot; x 10.59&quot; x 1.88&quot;)</td>
<td>488 x 309 x 45.7 mm (19.21&quot; x 12.17&quot; x 1.88&quot;)</td>
<td>558.4 x 349.8 x 47.7 mm (21.98&quot; x 13.77&quot; x 1.88&quot;)</td>
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<tr>
<td>Weight</td>
<td>5 kg (11lbs)</td>
<td>6 kg (13.2 lbs)</td>
<td>8 kg (17.6 lbs)</td>
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<tr>
<td>Certification</td>
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<td>BSMI, CCC, CE, FCC Class A, UL</td>
<td>BSMI, CCC, CE, FCC Class A, UL</td>
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<tr>
<td>Operating System</td>
<td>Microsoft® XP, Vista, 7, 8, XPe, CE and Linu x</td>
<td>Microsoft® XP, Vista, 7, 8, XPe, CE and Linu x</td>
<td>Microsoft® XP, Vista, 7, 8, XPe, CE and Linu x</td>
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Introduction

The FPM-2120G is an industrial-grade 12" TFT LCD with LED backlight flat panel monitor with an Al-Mg front panel, a modern appearance, and one of the most competitive prices for 12" LCD with LED backlight monitor on the market. The FPM-2120G are also extremely light and thin, and provides many industrial-grade features such as a stainless steel chassis, VESA mounting flexibility, and more. The FPM-2120G are especially suitable for industrial PCs such as IPC-610 or IPC-6806. This combination leads to an extremely reliable and tough system, ready to operate in a wide variety of industrial applications.

Specifications

**General**
- **Button Controls**: OSD (Onscreen Display) control pad on rear cover
- **Certification**: BSMI, CCC, CE, FCC, UL
- **Dimensions (W x H x D)**: 311 x 237 x 40.63 mm (12.24" x 9.33" x 1.60")
- **Enclosure**: Front panel: Aluminum, Rear cover: SECC chassis
- **Mounting**: Panel, wall, desktop, VESA arm, or 19" rackmount with optional mounting kit
- **Power Input**: External 60 W power adapter, with AC 100 V – 240 V input and DC +12 V @ 5 A output
- **Video Port**: VGA
- **Weight (Net)**: 4kg (8.82 lbs)

**LCD Display**
- **Display Type**: SVGA TFT LCD with LED backlight
- **Display Size**: 12"
- **Max. Resolution**: 800 x 600
- **Max. Color**: 16.2M
- **Viewing Angle (H/V)**: 160°(V),140°(H)
- **Luminance (cd/m2)**: 450
- **Backlight Life (hrs)**: 50,000
- **Contrast Ratio**: 700:1

**Features**
- 12" SVGA TFT LED with 50,000 backlight life time
- Robust design with aluminum front panel
- Anti-glare screen with tempered glass
- Supports Panel, Wall, Desktop, Rack or VESA arm mounting
- Combo RS-232 & USB interface for touchscreen function

**Touchscreen (Optional)**
- **Interface**: Combo RS-232 & USB interface
- **Lifespan**: 36 millions times with a silicone rubber of R8 finger, hitting rate is calculated as being 250g at 2 times per second
- **OS Support**: Windows® XP/Vista,7,8,XPe,CE and Linux

**Environment**
- **Operation Temperature**: 0 – 50°C (32 ~ 122°F)
- **Storage Temperature**: -20 ~ 60°C (-4 ~ 140°F)
- **Humidity (Storage)**: 10 ~ 95% non-condensing
- **Waterproof**: Front Panel IP65 Compliant
- **Vibration**: 5 – 500 Hz, 1 Grms (Operating, Random)

**Ordering Information**
- **FPM-2120G-X0AE**: 12" SVGA Industrial LED Monitor
- **FPM-2120G-R3AE**: 12" SVGA Industrial LED Monitor w/Resistive TS (RS-232 and USB interfaces)
**Dimensions**

Panel Cut-out Dimensions: 303.3 x 229.3 mm (11.94" x 9.03")

**Accessories**
- FPM-2120G-SMKE  
  FPM-2120G/2150G/2170G Stand Kit
- FPM-2120G-RMKE  
  FPM-2120G Rack-Mount Kit
- 1702002605  
  Power Cable EU Plug 1.8 M
- 1702031801  
  Power Cable UK Plug 1.8 M
- 1700000596  
  Power Cable China/Australia Plug 1.8 M
- 1702002600  
  Power Cable US Plug 1.8 M

**I/O View**
- Touch Screen (USB)
- Touch Screen (RS-232)
- VGA Port
- 100 – 240 VAC Power Adapter

**Front View**

**Rear View**
- VESA Mount
- OSD Control Keys
- Wallmount
Introduction

The FPM-2150G is an industrial-grade 15” TFT LED LCD flat panel monitor with an Al-Mg front panel, a modern appearance, and one of the most competitive prices for 15” LCD monitors on the market. The FPM-2150G is also extremely light and thin, and provides, stainless steel chassis, VESA mounting flexibility, and more. The FPM-2150G is especially suitable for industrial PCs such as IPC-610 or IPC-6806. This combination leads to an extremely reliable and tough system, ready to operate in a wide variety of industrial applications.

Specifications

General
- **Button Controls**: OSD (Onscreen Display) control pad on rear cover
- **Certification**: BSMI, CCC, CE, FCC, UL
- **Dimensions (W x H x D)**: 383 x 307 x 48 mm (15.08” x 12.09” x 1.89”)
- **Enclosure**: Front panel: Aluminum, Rear cover: SECC chassis
- **Mounting**: Panel, wall, desktop, VESA arm, or rackmount with optional mounting kit
- **Power Input**: External 60 W power adapter, with AC 100 V – 240 V input and DC +24 V @ 5 A output
- **Video Port**: VGA/DVI
- **Weight (Net)**: 4.5 kg (9.9 lbs)

LCD Display
- **Display Type**: XGA TFT LED LCD
- **Display Size**: 15”
- **Max. Resolution**: 1024 x 768
- **Max. Color**: 16.2M
- **Viewing Angle (H/V)**: 140, 130
- **Luminance (cd/m2)**: 500
- **Backlight Life (hrs)**: 50,000
- **Contrast Ratio**: 500 : 1

Features

- 15” XGA TFT LED with 50,000 backlight life time
- Robust design with aluminum front panel
- Lockable OSD control pad on rear cover
- Supports Panel, Wall, Desktop, Rack or VESA arm mounting
- USB interface for touchscreen function

Touchscreen (Optional)
- **Interface**: USB interface
- **Lifespan**: 36 million times with a silicone rubber of R8 finger, hitting rate is calculated as being 250g at 2 times per second.
- **OS Support**: Windows XP, Vista, 7, 8, XPe, CE and Linux

Environment
- **Operation Temperature**: 0 – 50°C (32 – 122°F)
- **Storage Temperature**: -20 – 60°C (-4 – 140°F)
- **Humidity (Storage)**: 10 – 95% non-condensing
- **Vibration**: 5 – 500 Hz, 1 Grms (Operating, Random)

Ordering Information
- **FPM2150GR3A1311E-T**: XGA 24Vdc & VGA/DVI Inputs
Dimensions

Panel Cut-out Dimensions: 374.6 x 298.6 mm (14.75" x 11.75")

Accessories
- FPM-2150G-R1MKE FPM-2150G Rack-Mount Kit
- FPM-2150G-SMKE FPM-2150G Stand Kit
- PWR-246E Ind. DC to DC converter with 24 – 48 Vdc power input
- 1702002600 Power Cable US Plug 1.8 M
- 1702002605 Power Cable EU Plug 1.8 M
- 1702031801 Power Cable UK Plug 1.8 M
- 1700000596 Power Cable China/Australia Plug 1.8 M

I/O View
- Touch Screen (USB) 100 – 240 VAC Power Adapter DVI Port
- VGA Port

Rear View
- VESA Mount
- OSD Control Keys
- Wallmount
FPM-2170G 17" SXGA Industrial Monitor with Resistive Touchscreen and Direct-VGA Port

Introduction
The FPM-2170G is an industrial-grade 17" TFT LCD with LED backlight flat panel monitor with an Al-Mg front panel, a modern appearance, and one of the most competitive prices for 17" LCD with LED backlight monitor on the market. The FPM-2170G are also extremely light and thin, and provides many industrial-grade features such as a stainless steel chassis, VESA mounting flexibility, and more. The FPM-2170G are especially suitable for industrial PCs such as IPC-610 or IPC-6806. This combination leads to an extremely reliable and tough system, ready to operate in a wide variety of industrial applications.

Specifications
General
- Button Controls: OSD (Onscreen Display) control pad on rear cover
- Certification: BSMI, CCC, CE, FCC, UL
- Dimensions (W x H x D): 413.72 x 347.22 x 52.13 mm (16.29" x 13.67 x 2.05")
- Enclosure: Front panel: Aluminum, Rear cover: SECC chassis
- Mounting: Panel, wall, desktop, VESA arm, or 19" rackmount with optional mounting kit
- Power Input: External 60 W power adapter, with AC 100 V – 240 V input and DC +12 V @ 5 A output
- Video Port: VGA
- Weight (Net): 5.60 kg (12.34 lbs)

LCD Display
- Display Type: SXGA TFT LCD with LED Backlight
- Display Size: 17"
- Max. Resolution: 1280 x 1024
- Max. Color: 16.7M
- Viewing Angle (H/V): 170°(V), 160°(H)
- Luminance (cd/m2): 350
- Backlight Life (hrs): 50,000
- Contrast Ratio: 1000:1

Features
- 17" SXGA TFT LED LCD with 50,000 backlight life time
- Robust design with aluminum front panel
- Anti-glare screen with tempered glass
- Supports Panel, Wall, Desktop, Rack or VESA arm mounting
- Combo RS-232 & USB interface for touchscreen function

Touchscreen (Optional)
- Interface: Combo RS-232 & USB interface
- Lifespan: 36 millions times with a silicone rubber of R8 finger, hitting rate is calculated as being 250g at 2 times per second
- OS Support: Windows® XP/Vista,7,8,XPe,CE and Linux

Environment
- Operation Temperature: 0 – 50°C (32 – 122°F)
- Storage Temperature: -20 – 60°C (-4 – 140°F)
- Humidity (Storage): 10 – 95% non-condensing
- Waterproof: Front Panel IP65 Compliant
- Vibration: 5 – 500 Hz, 1 Grms (Operating, Random)

Ordering Information
- FPM-2170G-X0AE: 17" SXGA Industrial LED Monitor
- FPM-2170G-R3AE: 17" SXGA Industrial LED Monitor w/Resistive TS (RS-232 and USB interfaces)
**FPM-2170G**

### Dimensions

![Dimensions Diagram]

**Panel Cut-out Dimensions:** 400.92 x 334.42 mm (15.78” x 13.17”)

### Accessories

- **FPM-2170G-RMKE**  
  FPM-2170G Rack-Mount Kit
- **FPM-2120G-SMKE**  
  FPM-2120G/2150G/2170G Stand Kit
- **1702002600**  
  Power Cable US Plug 1.8 M
- **1702002605**  
  Power Cable EU Plug 1.8 M
- **1702031801**  
  Power Cable UK Plug 1.8 M
- **1700000596**  
  Power Cable China/Australia Plug 1.8 M

### I/O View

- Touch Screen (USB)
- Touch Screen (RS-232)
- VGA Port
- 100 – 240 VAC Power Adapter

### Front View

![Front View Image]

### Rear View

- VESA Mount
- OSD Control Keys
- Wallmount

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- PACs
- Compact PCI Systems
- NVIM I/O Modules
- RS-485 I/O Modules
**Introduction**

The FPM-3121G is a particularly rugged and reliable 12.1" SVGA wide temperature industrial monitor for a variety of industry applications. Equipped with a hard anodized coating, stainless steel chassis, and -20 to 60°C operating temperature, it can satisfy demands in a wide range of harsh industrial applications. This model also features enhanced 5-wire resistive touch and system ground isolation protection to enhance the reliability. Lockable OSD keys on front panel with 2 user-defined contrast/brightness settings.

**Specifications**

**General**
- **Button Controls**: OSD control pad on front side with lockable function. Two user-defined contrast/brightness settings
- **Certification**: CE, FCC Class A, BSMI, CCC, UL, Energy Star
- **Dimensions (W x H x D)**: 312 x 224 x 60 mm (12.28" x 8.82" x 2.36")
- **Enclosure**: Front panel: Aluminum with hard anodized coating. Rear cover: Stainless steel chassis. Ground Isolation Protection
- **Mounting**: Panel, VESA arm, or wall & desktop mount with optional mounting kit
- **Power Input**: Phoenix Jack: 24 VDC input. DC Jack: external 57 W power adapter, with 100 ~ 240 VAC input and +12 VDC @ 4.75 A output
- **Power Consumption**: 9 W
- **Video Port**: VGA & DVI-D Port
- **Weight (Net)**: 4.07 kg (8.975 lbs)

**LCD Display**
- **Display Type**: SVGA TFT LCD
- **Backlight Type**: LED
- **Display Size**: 12.1"
- **Max. Resolution**: 800 x 600
- **Max. Color**: 16.2M (RGB 8-bit)
- **Viewing Angle (H/V°)**: 160 / 140
- **Luminance (cd/m²)**: 450
- **Operation Life (hrs)**: 50,000
- **Contrast Ratio**: 700:1

**Features**
- 12.1" SVGA TFT LED LCD with 50,000 backlight life time
- Robust anodized coated aluminum front bezel and stainless steel rear cover
- Supports wide operating temperatures
- Increase reliability by enhanced 5-wire resistive touch sensor
- Anti-glare screen with tempered glass and IP65 certified front panel
- Full enclosure ground isolation protection
- Supports VGA/DVI input, dual touch interfaces and two power inputs
- Front lockable OSD membrane keys with user-defined brightness setting
- Energy Star certification
- Front panel is IP65 compliant
- Supports panel, VESA, wall and desktop stand mounting

**Touchscreen (Optional)**
- **Sensor**: AMT
- **Driver**: Penmount 6000
- **Type**: 5-wire Resistive with enhanced ITO film
- **Interface**: USB & RS-232 (Combo)
- **Lifespan**: 36 million with a silicone rubber of R8 finger, writing rate is by 250g at 2 times/s
- **Light Transmission**: > 80%
- **OS Support**: Windows XP, Vista, 7, 8, XPe, CE and Linux
- **Power Consumption**: +5 V @ 100 mA
- **Touch Resolution**: Linearity

**Environment**
- **Operation Temperature**: -20 ~ 60°C (-4 ~ 140°F)
- **Storage Temperature**: -30 ~ 80°C (-22 ~ 176°F)
- **Humidity (Storage)**: 10 ~ 95% non-condensing
- **Waterproof**: Front panel is IP65 compliant
- **Shock**: 11ms, 10G (Non Operating, Half Sine Wave)
- **Vibration**: 5 – 500 Hz, 1 Grms (Operating, Random)

**Ordering Information**
- **FPM-3121G-X0AE**: 12.1" SVGA Ind. Monitor with Wide Temp
- **FPM-3121G-R3AE**: 12.1" SVGA Ind. Monitor w/ Wide Temp, Resistive TS
**Dimensions**

[Unit: [mm]]

![Dimensions Diagram]

Panel Cut-out Dimensions: 303.5 x 229.5 mm (11.95" x 9.04")

**Accessories**
- FPM-2150G-SMKE: Mounting kit for desktop stand & wall
- 1702002600: Power Cable US Plug 1.8 M
- 1702031801: Power Cable UK Plug 1.8 M
- 1702026005: Power Cable EU Plug 1.8 M
- 1700000596: Power Cable China/Australia Plug 1.8 M

**I/O View**

**Mounting Method**

- Wall Mount
- Power Adapter Mount
- Desktop Stand Kit

VESA Mount (75/100 mm)
FPM-3151G

15” XGA Industrial Monitor with Resistive Touchscreen, Direct-VGA, DVI Ports, and Wide Operating Temperature

Introduction
The FPM-3151G is a particularly rugged and reliable 15” XGA wide temperature industrial monitor for a variety of industry applications. Equipped with a hard anodized coating, stainless steel chassis, and -20 to 60°C operating temperature, it can satisfy demands in a wide range of harsh industrial applications. This model also features enhanced 5-wire resistive touch and system ground isolation protection to enhance the reliability. FPM-3151G also provides lockable OSD keys on the front panel with two user-defined contrast/brightness settings.

Specifications

General
- Button Controls: OSD control pad on front panel with lockable function, Two user-defined contrast/brightness settings
- Certification: CE, FCC Class A, BSMI, CCC, UL, Energy Star
- Dimensions (W x H x D): 422 x 310 x 70 mm (16.61” x 12.2” x 2.76”)
- Enclosure: Front panel: Aluminum with hard anodizing coating, Rear cover: Stainless steel
- Mounting: Panel, wall, desktop, VESA arm, or 19” rackmount with optional mounting kit
- Power Input: Phoenix x Jack: 24 VDC input, DC jack: external 57 W power adapter, with 100 – 240 VAC input and 12 VDC @ 4.75 A output
- Power Consumption: 12W
- Video Port: VGA & DVI-D Port
- Weight (Net): 7.73 kg (17.04 lbs)

LCD Display
- Display Type: XGA TFT LCD
- Backlight Type: LED
- Display Size: 15’
- Max. Resolution: 1024 x 768
- Max. Color: 16.2M (RGB 8-bit)
- Viewing Angle (H/V°): 160/140
- Luminance (cd/m²): 350
- Backlight Life (hrs): 50,000
- Contrast Ratio: 700:1

Touchscreen (Optional)
- Sensor: AMT
- Driver: Penmount 6000
- Type: 5-wire resistive with enhanced ITO film
- Interface: USB & RS-232 (Combo)
- Lifespan: 36 million with a silicone rubber R8 finger, writing rate is by 250g at 2 times/s > 80%
- Light Transmission: > 80%
- OS Support: Windows XP/Vista/7, 8, XP, CE and Linux
- Power Consumption: +5 V @ 100 mA
- Touch Resolution: Linearity

Environment
- Operation Temperature: -20 – 60°C (-4 ~ 140°F)
- Storage Temperature: -30 – 80°C (-22 ~ 176°F)
- Humidity (Storage): 10 – 95% non-condensing
- Waterproof: Front panel is IP65 compliant
- Shock: 11ms, 10G (Non Operating, Half Sine Wave)
- Vibration: 5 – 500 Hz, 1 Grms (Operating, Random)

Ordering Information
- FPM-3151G-X0AE: 15” XGA Ind. Monitor with Wide Temp
- FPM-3151G-R3AE: 15” XGA Ind. Monitor w/ Wide Temp, Resistive TS
- FPM-3151SR-R3AE: 15” XGA Ind. Monitor w/ Sunlight Readable Display
**Dimensions**

Panel Cut-out Dimensions: 396 x 296 mm (15.59" x 11.65")

**Accessories**
- **FPM-3151G-RMKE**: Mounting kit for 19" industrial rack
- **170202600**: Power Cable US Plug 1.8 M
- **170202605**: Power Cable EU Plug 1.8 M
- **1702031801**: Power Cable UK Plug 1.8 M
- **170000596**: Power Cable China/Australia Plug 1.8 M
- **FPM-2120G-SMKE**: FPM-2120G/2150G/2170G Stand Kit

**I/O View**
- 100 ~ 240 VAC Power Adapter
- 24 VDC Input
- VGA Port
- DVI-D
- Touch Screen (RS-232)
- Touch Screen (USB)

**Rack Mount (FPM-3151G-RMKE)**
Introduction

FPM-3171G is a 17"color TFT LCD flat panel monitor specifically designed for industrial applications. With a viewing size as large as 17", it presents a simple display area as well as vivid and sharp images for your HMI. It features direct VGA signal transmission. You can thus upgrade the displays without making changes to the existing system. The onscreen display function also makes it easy to adjust the images on the screen. The whole chassis is designed in stainless steel and the front panel is made of aluminum with front panel IP65 compliance.

Specifications

General
- Button Controls: OSD (Onscreen Display) control pad on front panel
- Certification: BSMI, CCC, CE, FCC Class A, UL
- Dimensions (W x H x D): 482 x 354.8 x 63.9 mm (18.98" x 13.97" x 2.52")
- Enclosure: Front panel: Aluminum with coating
Rear cover: Stainless steel chassis
*Mounting holes on rear cover are designed for PWR-246E DC Source
- Mounting: Panel, wall, desktop, VESA arm & 19" rackmount
- Power Input: Phoenix Jack: 24 VDC input
DC Jack: external 57 W power adapter, with 100 ~ 240 VAC input and 12 VDC @ 4.75 A output
Note: AC power adapter is included.
- Power Consumption: 35 W + 20%
- Video Port: VGA & DVI-D port
- Weight (Net): 9.25 kg (20.39 lbs)

LCD Display
- Display Type: 'SXGA TFT LCD with LED backlight
- Display Size: 17"
- Max. Resolution: 1280 x 1024
- Max. Color: 16.2 M
- Viewing Angle (H/V°): 160/140
- Luminance (cd/m²): 350
- Backlight Life (hrs): 50,000
- Contrast Ratio: 1000:1

Touchscreen (Optional)
- Type: 5-wire Resistive
- Interface: RS-232 and USB
- Lifespan: 35 million touches at a single point
- Light Transmission: 80% ±5
- OS Support: Windows XP, Vista, 7, 8, XPe, CE and Linux
- Power Consumption: +5 V @ 100 mA
- Touch Resolution: Linearity

Environment
- Operation Temperature: -20 ~ 60°C (-4 ~ 140°F)
- Storage Temperature: -30 ~ 80°C (-22 ~ 176°F)
- Humidity (Storage): 95% @ 60°C . non-condensing
- Waterproof: Front panel is IP65 compliant
- Vibration: 5 ~ 500 Hz, 1 Grms (Operating, Random)
FPM-3171G

**Dimensions**

Diameters of the rackmount holes:
- Vertical: 6.5 mm
- Horizontal: 9 mm

Panel Cut-out Dimensions: FPM-3171G: 447.5 x 329.5 mm (17.62” x 12.97”)

**Ordering Information**
- FPM-3171G-X0AE  17” SXGA WT Ind. Monitor with VGA, DVI
- FPM-3171G-R3AE  17” SVGA WT Ind. Monitor w/Resistive TS (Combo)

**Accessories**
- 1702002600  Power Cable US Plug 1.8 M
- 1702002605  Power Cable EU Plug 1.8 M
- 1702031801  Power Cable UK Plug 1.8 M
- 170000596   Power Cable China/Australia Plug 1.8 M  (Direct rack mounting, no need accessory)

**I/O View**

- VGA Port
- DVI-D
- DC-Jack 12VDC for Power Adapter
- Phoenix Jack: 24 VDC
- T/S USB Port
- T/S RS-232 Port
Introduction

FPM-3191G is a 19" color TFT LCD flat panel monitor specifically designed for industrial applications. With a viewing size as large as 19", it presents an simple display area as well as vivid and sharp images for your HMI. It features direct VGA signal transmission. You can thus upgrade the displays without making changes to the existing system. The onscreen display function also makes it easy to adjust the images on the screen. The whole chassis is designed in stainless steel and the front panel is made of aluminum with front panel IP65 compliance.

Specifications

<table>
<thead>
<tr>
<th>General</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Button Controls</td>
<td>OSD (Onscreen Display) control pad on front panel</td>
</tr>
<tr>
<td>Certification</td>
<td>BSMI, CCC, CE, FCC Class A, UL</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>482mm x 399mm x 67 mm (18.98&quot; x 15.71&quot; x 2.64&quot;)</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Front panel: Aluminum with coating  Rear cover: Stainless steel chassis</td>
</tr>
<tr>
<td>*Mounting holes on rear cover are designed for PWR-246E DC Source</td>
<td></td>
</tr>
<tr>
<td>Mounting</td>
<td>Panel, wall, desktop, VESA arm &amp; 19&quot; rackmount</td>
</tr>
<tr>
<td>Power Input</td>
<td>Phoenix x Jack: 24 Vdc input  DC Jack: x terminal 57 W power adapter, with 100 – 240 Vdc input and 12 Vdc @ 4.75 A output</td>
</tr>
<tr>
<td>Note: AC power adapter is included.</td>
<td></td>
</tr>
<tr>
<td>Power Consumption</td>
<td>35 W + 20%</td>
</tr>
<tr>
<td>Video Port</td>
<td>VGA &amp; DVI-D port</td>
</tr>
<tr>
<td>Weight (Net)</td>
<td>10.65 kg (23.46 lbs)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LCD Display</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Type</td>
<td>SXGA TFT LCD with LED backlight</td>
</tr>
<tr>
<td>Display Size</td>
<td>19&quot;</td>
</tr>
<tr>
<td>Max. Resolution</td>
<td>1280 x 1024</td>
</tr>
<tr>
<td>Max. Color</td>
<td>16.2 M</td>
</tr>
<tr>
<td>Viewing Angle (H/V°)</td>
<td>170/160</td>
</tr>
<tr>
<td>Luminance (cd/m²)</td>
<td>350</td>
</tr>
<tr>
<td>Backlight Life (hrs)</td>
<td>50,000</td>
</tr>
<tr>
<td>Contrast Ratio</td>
<td>1000:1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Touchscreen (Optional)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>5-wire Resistive</td>
</tr>
<tr>
<td>Interface</td>
<td>RS-232 and USB</td>
</tr>
<tr>
<td>Lifespan</td>
<td>35 million touches at a single point</td>
</tr>
<tr>
<td>Light Transmission</td>
<td>80% ±5</td>
</tr>
<tr>
<td>OS Support</td>
<td>Windows XP, Vista, 7, 8, XP, CE and Linux</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>+5 V @ 100 mA</td>
</tr>
<tr>
<td>Touch Resolution</td>
<td>Linearity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation Temperature</td>
<td>0 – 50°C (32 – 122°F)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-20 – 60°C (-4 – 140°F)</td>
</tr>
<tr>
<td>Humidity (Storage)</td>
<td>10 – 90% non-condensing</td>
</tr>
<tr>
<td>Waterproof</td>
<td>Front panel is IP65 compliant</td>
</tr>
<tr>
<td>Vibration</td>
<td>5 – 500 Hz, 1 Grms (Operating, Random)</td>
</tr>
</tbody>
</table>

Features

- 19" SXGA TFT LED LCD with 50,000 backlight life time
- Robust design with stainless steel chassis and aluminum front panel
- Anti-glare screen with tempered glass and IP65 certified front panel
- Lockable OSD control pad on rear cover
- Supports industrial 24 Vdc power input
- Supports panel, wall, desktop, rack or VESA arm mounting
- Supports 9U pre-drill Rackmount mounting hole
FPM-3191G

Dimensions

Diameters of the rackmount holes:
Vertical: 6.5 mm
Horizontal: 9 mm

Panel Cut-out Dimensions: 444 x 376.4 mm (17.48" x 14.82")

Ordering Information
- FPM-3191G-X0AE
  19" SXGA Ind. Monitor with VGA, DVI
- FPM-3191G-R3AE
  19" SXGA Ind. Monitor w/ Resistive TS (Combo)

Mounting with DC Source

Accessories
- 170202600
  Power Cable US Plug 1.8 M
- 170202605
  Power Cable EU Plug 1.8 M
- 1702031801
  Power Cable UK Plug 1.8 M
- 1700000596
  Power Cable China/Australia Plug 1.8 M
  (Direct rack mounting, no need accessory)

I/O View

VGA Port
DVI-D
DC-Jack 12Vdc for Power Adapter
Phoenix x Jack: 24 Vdc
T/S USB Port
T/S RS-232 Port
### Introduction

The FPM-5000G series provides 15", 17" and 19" color TFT LCD with LED backlight flat panel monitors specifically designed for industrial applications. With a viewing size from 15" to 19", they present ample display areas as well as vivid and sharp images. It features Direct-VGA & DVI-D signal transmission, which allows VGA control cards to be used in your system. The onscreen display allows users to adjust the images on the screen with two user-defined settings. The front access USB connector provides easy access the controller, and the industrial 10-30 V_{DC} wide range power support makes this product an excellent option for Factory and Machine Automation display solutions.

### Specifications

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Button Controls</td>
</tr>
<tr>
<td>Certification</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
</tr>
<tr>
<td>5151G:</td>
</tr>
<tr>
<td>5171G:</td>
</tr>
<tr>
<td>5191G:</td>
</tr>
</tbody>
</table>

| Enclosure |
| Front panel: Aluminum and flat-sealed |
| Rear cover: Anti-rust coating |

| Mounting |
| Panel, wall, desktop, VESA arm, or 19" rackmount |

| Power Input |
| PhoeniX jack - 10 ~ 30 V_{DC} input |
| Optional external 57 W power adapter, with AC 100 V ~ 240 V input and DC +12 V @ 4.7A output |

| Power Consumption |
| 18 W + 20%/31 W + 20%/32 W + 20% |

| USB |
| Front USB access for expansion |

| Video Port |
| VGA & DVI-D |

| Weight (Net) |
| 6 kg (13.22 lbs)/8 kg (17.63 lbs)/10 kg (22.04 lbs) |

| LCD Display |
| Display Type | XGA/SXGA/SXGA TFT LCDs |
| Display Size | 15"/17"/19" |
| Max. Resolution | 1024 x 768/1280 x 1024/1280 x 1024 |
| Max. Color | 16.2M / 16.7M / 16.7M |
| Viewing Angle (H/V°) | 160/140, 170/160, 170/160 |
| Luminance (cd/m²) | 400/350/350 |
| Backlight Life (hrs) | 50,000 |
| Contrast Ratio | 700:1 / 1000:1 / 1000:1 |

| Touchscreen (Optional) |
| Sensor | AMT |
| Driver | Penmount 6000 |
| Type | 5-wire Resistive |
| Interface | RS-232 & USB |
| Lifespan | 10/10/36 million with a silicone rubber of R8 finger, writing rate is by 250g at 2 times/s |
| Light Transmission | > 80% |
| OS Support | Windows XP, Vista, 7, 8, XPe, CE and Linux |
| Power Consumption | +5 V @ 100 mA |

| Environment |
| Operation Temperature | 0 ~ 50°C (32 ~ 122°F) |
| Storage Temperature | -20 ~ 60°C (-4 ~ 140°F) |
| Humidity (Storage) | 10 ~ 90% non-condensing |
| Waterproof | Front panel is IP65 compliant |
| Vibration | 5 ~ 500 Hz, 1 Grms (Operating, Random) |

| Ordering Information |
| FPM-5151G-X0BE | 15"XGA Ind. Monitor |
| FPM-5151G-R3BE | 15"XGA Ind. Monitor w/Resistive TS(RS-232,USB) |
| FPM-5171G-X0BE | 17"SXGA Ind. Monitor |
| FPM-5171G-R3BE | 17"SXGA Ind. Monitor w/Resistive TS(RS-232,USB) |
| FPM-5191G-X0BE | 19"SXGA Ind. Monitor |
| FPM-5191G-R3BE | 19"SXGA Ind. Monitor w/Resistive TS(RS-232,USB) |
Dimensions

Panel Cut-out Dimensions: FPM-5151G: 424 x 293 mm (16.69" x 11.54")
FPM-5171G: 454 x 338 mm (17.87" x 13.31")
FPM-5191G: 454 x 338 mm (17.87" x 13.31")

Accessories

- FPM-5151G-SMKE FPM-5151G/5171G Stand Kit
- FPM-5191G-SMKE FPM-5191G Stand Kit
- IPPC-6152A-RMKE IPPC-6152A/FPM-5151G Rack Mount Kit
- IPPC-6172A-RMKE IPPC-6172A/FPM-5171G Rack Mount Kit
- IPPC-6192A-RMKE IPPC-6192A/FPM-5191G Rack Mount Kit
- 1702002600 Power Cable US Plug 1.8 M
- 1702002605 Power Cable EU Plug 1.8 M
- 1702001801 Power Cable UK Plug 1.8 M
- 1700000596 Power Cable China/Australia Plug 1.8 M
- 1757003822 ADAPTER 100-240V57W12V4.75A W/O PFC SPU63-105 L5

Note: VESA mounting screw length: M4 x 6mm

Front Accessible USB Port

I/O View

10-30 Vdc Power Input with Phoenix x Jack
12V Power Input with DIN-rail
VGA Port

TS Interface - USB Port
Panel Mount TS Interface Switch DVI-D port

Back View

VESA Mount

LCD OSD Control Keys Wallmount
Introduction
The FPM-5000G series provides 15”, 17” and 19” color TFT LCD with LED backlight flat panel monitors specifically designed for industrial applications. With a viewing size from 15” to 19”, they present ample display areas as well as vivid and sharp images. It features display port signal transmission and onscreen display allows users to adjust the images on the screen. The front access USB connector provides easy access the controller, and the industrial 18-32VDC wide range power support makes this product an excellent option for Factory and Machine Automation display solutions.

Specifications

General
- **Button Controls**: OSD control pad on rear side with lockable function
- **Certification**: BSMI, CCC, CE, FCC Class B, UL
- **Dimensions (W x H x D)**:
  - 5152G: 449.92 x 315.63 x 50.5 mm (17.71” x 12.43” x 1.99”)
  - 5172G: 481.9 x 355.9 x 55 mm (18.97” x 14.01” x 2.17”)
  - 5192G: 481.93 x 384.6 x 59 mm (18.97” x 15.14” x 2.32”)
- **Enclosure**: Front panel: Aluminum and flat-sealed
- **Mounting**: Panel, wall, desktop, VESA arm, or 19” rackmount
- **Power Input**: Phoenix Jack 18 - 32VDC input
- **USB**: Front USB access for extension
- **Weight (Net)**: 6 kg (13.22 lbs) / 8 kg (17.63 lbs) / 10 kg (22.04 lbs)

LCD Display
- **Display Type**: XGA/ SXGA/ SXGA TFT LCD LED backlight
- **Display Size**: 15” / 17” / 19”
- **Max. Resolution**: 1024 x 768 / 1280 x 1024 / 1280 x 1024
- **Max. Color**: 16.2M / 16.7M / 16.7M
- **Viewing Angle (H/V°)**: 160/140; 170/160; 170/160
- **Luminance (cd/m²)**: 350
- **Backlight Life (hrs)**: 50,000
- **Contrast Ratio**: 700:1/1000:1 /1000:1

Touchscreen
- **Sensor**: AMT
- **Driver**: Penmount 6000
- **Type**: 5-wire Resistive
- **Interface**: USB
- **Light Transmission**: > 80%
- **OS Support**: Windows XP/Vista,7,8,XPe,CE and Linux
- **Touch Resolution**: Linearity

Environment
- **Operation Temperature**: 0 - 50°C (32 - 122°F)
- **Storage Temperature**: -20 - 60°C (-4 - 140°F)
- **Humidity (Storage)**: 10 – 90% non-condensing
- **Waterproof**: Front panel is IP65 compliant
- **Vibration**: 5 – 500 Hz, 1 Grms (Operating, Random)

Ordering Information
- **FPM-5192G-R2AE**: 19” SXGA Ind. DP Monitor w/Resistive TS (USB)
- **FPM-5172G-R2AE**: 17” SXGA Ind. DP Monitor w/Resistive TS (USB)
- **FPM-5152G-R2AE**: 15” XGA Ind. DP Monitor w/Resistive TS (USB)
FPM-5152G / FPM-5172G / FPM-5192G

Dimensions

Panel Cut-out Dimensions: FPM-5152G: 424 x 293 (16.69" x 11.54")
FPM-5172G: 454 x 338 (17.87" x 13.31")
FPM-5192G: 454 x 338 (17.87" x 13.31")

Accessories
- FPM-5151G-SMKE
- FPM-5171G-SMKE
- IPPC-6152A-RMKE
- IPPC-6172A-RMKE
- IPPC-6192A-RMKE
- 1757002321
- FPM-5151G/5171G Stand Kit
- FPM-5191G Stand Kit
- IPPC-6152A/FPM-5151G Rack Mount Kit
- IPPC-6172A/FPM-5171G Rack Mount Kit
- IPPC-6192A/FPM-5191G Rack Mount Kit
- ADAPTER 100-240V 63W 24V 2.62A IPU63-108

Note: VESA mounting screw length: M4 x 10mm

I/O View

18-32 Vdc Power Input with Phoenix Jack
Display Port
TS Interface - USB Port
Panel Mount
Panel Mount

Front Accessible USB Port

Back View

VESA Mount
LCD OSD Control Keys
Wallmount
**FPM-7151W**

**NEW**

**15.6” Industrial Monitor with Projected Capacitive Touchscreen, Direct-VGA/DVI or VGA/HDMI ports**

### Introduction

With its brand new design, the FPM-7151W provides a new wide screen display size with industrial grade design concept. By truly-flat touch screen, the front bezel meets IP66 testing criteria. FPM-7151W projected capacitive touch can support 10 points (via USB interface in Windows 7/8) touch application. New easy installation design can help you with one person for panel mounting. FPM-7151W monitor with slim enclosure is ideally suited to being either panel or wall mounted.

### Specifications

#### General
- **OSD Controls**: OSD control in rear cover
- **Certification**: BSMI, CCC, CE, FCC Class A, UL
- **Dimensions (W x H x D)**: 419.7 x 269 x 47.7 mm (16.52” x 10.59” x 1.88”)
- **Enclosure**: Front panel: Die-cast Magnesium alloy, Rear cover: SECC
- **Mounting**: Panel, wall, desktop, VESA (MIS,100,C)
- **Power Input**: Phoenix x Jack: 24 VDC input, DC Jack: external 57 W power adapter, with 100 ~ 240 VAC input and 12 VDC @ 4.75 A output

Note: AC power adapter is included.
- **Power Consumption**: 20 W + 20%
- **Video Port**: VGA & DVI-D or VGA & HDMI
- **Weight (Net)**: 5kg (11lbs)

#### LCD Display
- **Display Type**: WXGA TFT LED LCD
- **Display Size**: 15.6”
- **Max. Resolution**: 1366 x 768
- **Max. Color**: 16.7 M
- **Viewing Angle (H/V°)**: 170/160
- **Luminance (cd/m²)**: 300
- **Backlight Life (hrs)**: 50,000
- **Contrast Ratio**: 500:1

#### Touchscreen
- **Type**: Projected capacitive touch
- **Interface**: RS-232 and USB
- **Light Transmission**: Above 75%
- **OS Support**: Windows XP/Vista, 7, 8, XP, CE and Linux
- **Multi Touch**: 10 points, USB interface in Win 7/8.
- **Hardness**: 7H

#### Environment
- **Operation Temperature**: 0 ~ 55°C (32 ~ 131°F)
- **Storage Temperature**: -20 ~ 60°C (-4 ~ 140°F)
- **Humidity (Storage)**: 10 ~ 90% non-condensing
- **Waterproof**: Front panel is IP66 compliant
- **Vibration**: 5 ~ 500 Hz, 1 Grms (Operating, Random)

### Ordering Information

- **FPM-7151W-P3AE**: 15.6” WXGA Ind Monitor w/PCT TS (VGA/DVI)
- **FPM-7151SW-P3AE**: 15.6” WXGA Ind Monitor w/PCT TS (VGA/HDMI)

### Accessories

- **PWR-246E**: Ind. DC to DC w/24-48 VDC 1.4-2.9A In 12 VDC 5A Out
- **1702002600**: Power Cable US Plug 1.8 M
- **1702002605**: Power Cable EU Plug 1.8 M
- **1702031801**: Power Cable UK Plug 1.8 M
- **1700000596**: Power Cable China/Australia Plug 1.8 M
- **FPM-7181W-SMKE**: FPM-7181W Mounting kit for desktop & wall
**FPM-7151W**

**Dimensions**

Panel Cut-out Dimensions: 412 x 261 mm (16.22" x 10.28")

**Easy Installation**

- Snap hook in rear cover
- Stopper Screw in rear cover

**Rear View**

- Easy Installation: Snap hook x2
- TS Interface - RS232 Port
- TS Interface - USB Port
- 24VDC Power Input with Phoenix Connector
- 12VDC Power Input with DC Jack
- DVI or HDMI Port
- VGA Port

Screw to set up the snap hook out of upper side

Screw for the stopper screw out of down side
Introduction

With its brand new design, the FPM-7181W provides a new wide screen display size with industrial grade design concept. By truly-flat touch screen, the front bezel meets IP66 testing criteria. FPM-7181W projected capacitive touch can support 4-points touch application. New easy installation design can help you with one person for panel mounting. FPM-7181W monitor with slim enclosure is ideally suited to being either panel or wall mounted.

Specifications

General
- **OSD Controls**: OSD control in rear cover
- **Certification**: BSMI, CCC, CE, FCC Class A, UL
- **Dimensions (W x H x D)**: 488 x 309 x 47.7 mm (19.21” x 12.17” x 1.88”)
- **Enclosure**: Front panel: Die-cast Magnesium alloy
  Rear cover: SECC
- **Mounting**: Panel, wall, desktop, VESA (MIS,100,C)
- **Power Input**: Phoenix Jack: 24 VDC input
  DC Jack: external 57 W power adapter, with 100 ~ 240 VAC input and 12 VDC @ 4.75 A output
  Note: AC power adapter is included.
- **Power Consumption**: 20 W + 20%
- **Video Port**: VGA & DVI-D port
- **Weight (Net)**: 6kg (13.2lbs)

LCD Display
- **Display Type**: WXGA TFT LED LCD
- **Display Size**: 18.5”
- **Max. Resolution**: 1366 x 768
- **Max. Color**: 16.7M
- **Viewing Angle (H/V°)**: 170/160
- **Luminance (cd/m²)**: 300
- **Backlight Life (hrs)**: 50,000
- **Contrast Ratio**: 1000:1

Touchscreen
- **Type**: Projected capacitive touch
- **Interface**: RS-232 and USB
- **Light Transmission**: Above 75%
- **OS Support**: Windows XP, Vista, 7, 8, XPe, CE and Linux
- **Multi Touch**: 4 points, USB interface in Win 7/8.
- **Hardness**: 7H

Environment
- **Operation Temperature**: 0 ~ 55°C (32 ~ 131°F)
- **Storage Temperature**: -20 ~ 60°C (-4 ~ 140°F)
- **Humidity (Storage)**: 10 ~ 90% non-condensing
- **Waterproof**: Front panel is IP66 compliant
- **Vibration**: 5 ~ 500 Hz, 1 Grms (Operating, Random)

Ordering Information
- **FPM-7181W-P3AE**: 18.5” WXGA Ind Monitor w/PCT TS (RS-232, USB)

Accessories
- **PWR-246E**: Ind. DC to DC w/24-48 VDC 1.4-2.9A In 12 VDC 5A Out
- **17020025600**: Power Cable US Plug 1.8 M
- **170202605**: Power Cable EU Plug 1.8 M
- **1702031801**: Power Cable UK Plug 1.8 M
- **1700000596**: Power Cable China/Australia Plug 1.8 M
- **FPM-7181W-SMKE**: FPM-7181W Mounting kit for desktop & wall
**Dimensions**

Panel Cut-out Dimensions: 479 x 300 mm (18.86" x 11.81")

**Easy Installation**

Snap hook in rear cover

Screw to set up the snap hook out of upper side

Stopper Screw in rear cover

Screw for the stopper screw out of down side

**Rear View**

Easy Installation: Snap hook

TS Interface - RS232 Port

TS Interface - USB Port

24VDC Power Input with Phoenix Jack

12VDC Power Input with DC Jack

Easy Installation: Snap hook

DVI Port

VGA Port

Easy Installation: Snap hook x2
Introduction
With its brand new design, the FPM-7211W provides a new wide screen display size with industrial grade design concept. By truly-flat touch screen, the front bezel meets IP66 testing criteria. FPM-7211W projected capacitive touch can support 5-points touch application. New easy installation design can help you with one person for panel mounting. FPM-7211W monitor with slim enclosure is ideally suited to being either panel or wall mounted.

Specifications

**General**
- **OSD Controls**: OSD control in rear cover
- **Certification**: BSMI, CCC, CE, FCC Class A, UL
- **Dimensions (W x H x D)**: 558.4 x 349.8 x 47.7 mm (21.98" x 13.77" x 1.88")
- **Enclosure**: Front panel: Die-cast Magnesium alloy Rear cover: SECC
- **Mounting**: Panel, wall, desktop, VESA (MIS,100,C)
- **Power Input**: Phoenix x Jack: 24 Vdc input
  DC Jack: external 57 W power adapter, with 100 ~ 240 VAC input and 12 VDC @ 4.75 A output
  Note: AC power adapter is included.
- **Power Consumption**: 25 W + 20%
- **Video Port**: VGA & DVI-D port
- **Weight (Net)**: 8kg (17.6lbs)

**LCR Display**
- **Display Type**: Full HD TFT LED LCD
- **Display Size**: 21.5"
- **Max. Resolution**: 1920 x 1080
- **Max. Color**: 16.7 M
- **Viewing Angle (H/V°)**: 178/178
- **Luminance (cd/m²)**: 300
- **Backlight Life (hrs)**: 50,000
- **Contrast Ratio**: 5000:1

**Touchscreen**
- **Type**: Projected Capacitive touch
- **Interface**: RS-232 and USB
- **Light Transmission**: Above 75%
- **OS Support**: Windows XP/Vista, 7, 8, XPe, CE and Linux
- **Multi Touch**: 5 points, USB interface in Win 7/8.
- **Hardness**: >6H

**Environment**
- **Operation Temperature**: 0 ~ 55°C (32 ~ 131°F)
- **Storage Temperature**: -20 ~ 60°C (-4 ~ 140°F)
- **Humidity (Storage)**: 10 ~ 90% non-condensing
- **Waterproof**: Front panel is IP66 compliant
- **Vibration**: 5 ~ 500 Hz, 1 Grms (Operating, Random)

**Ordering Information**
- **FPM-7211W-P3AE**: 21.5" Full HD Ind Monitor w/PCT TS (RS-232, USB)

**Accessories**
- **PWR-246E**: Ind. DC to DC w/24-48 Vdc 1.4-2.9A In 12 Vdc 5A Out
- **1702002600**: Power Cable US Plug 1.8 M
- **1702002605**: Power Cable EU Plug 1.8 M
- **1702031801**: Power Cable UK Plug 1.8 M
- **1700000596**: Power Cable China/Australia Plug 1.8 M
- **FPM-7181W-SMKE**: FPM-7211W Mounting kit for desktop & wall
**Dimensions**

Panel Cut-out Dimensions: 550.5 x 345.2 mm (21.67" x 13.59")

**Easy Installation**

Snap hook in rear cover

Screw to set up the snap hook out of upper side

Stopper Screw in rear cover

Screw for the stopper screw out of down side

**Rear View**

Easy Installation: Snap hook x2

TS Interface - RS232 Port
TS Interface - USB Port
24VDC Power Input with Phoenix x Jack
12VDC Power Input with DC Jack
DVI Port
VGA Port

WebAccess+ Solutions
Motion Control
Power & Energy Automation
Automation Software
Operator Panels
Automation Panel PCs
Industrial Ethernet Solutions
Industrial Wireless Solutions
Industrial Monitors
Compact PCI Systems
Industrial Panel Computers & Panel PCs
Automation Software
Operator Panels
Ethernet I/O Modules
## FPM Accessories

### Panel Mount

<table>
<thead>
<tr>
<th>Model Name</th>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>All FPM Series</td>
<td>196205040*</td>
<td>CLAMPER PPC-55 M1632611 A2</td>
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<td>FPM-2150G Rack-Mount Kit</td>
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<td>FPM-2170G</td>
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<td>FPM-3151G</td>
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<td>FPM-3171G</td>
<td>FPM-3171S</td>
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<td>FPM-3191G</td>
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<td>Direct rack mounting, no need accessory</td>
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### Stand/Wall Mount

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<tr>
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<td>FPM-2120G/2150G/2170G Stand Kit</td>
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<td>FPM-3121G</td>
<td>FPM-2150G-SMKE</td>
<td>Mounting kit for desktop stand &amp; wall</td>
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<td>FPM-3151G</td>
<td>FPM-2170G-SMKE</td>
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### Adapter

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<td>FPM-3000 series</td>
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### Cable

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## Industrial Wireless Solutions

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<tr>
<td>EKI-6310GN</td>
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To view all of Advantech's Industrial Ethernet Solutions, please visit [www.advantech.com/products](http://www.advantech.com/products).
# Industrial Wireless Product Selection Guide

## Wireless Access Point/CPE

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<th>EKI-6331AN</th>
<th>EKI-6340-1</th>
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*Note: Transmit Output Power & Receive Sensitivity are specified on data sheet.*
Introduction to Industrial IEEE 802.11 Wireless

In the past, wireless deployment has been limited by security concerns, the cost of deployment, inadequate management solutions, lack of standards, and availability of innovative solutions. Rapid advances in wireless local area network (WLAN) technology in recent years, along with the widespread adoption of the technology in the industrial and enterprise space, have eliminated many of these roadblocks. WLAN is not a wholesale replacement for broadband, but it is a fast and cost-effective way to construct backhaul broadband transmissions. Wireless communication provides an easier way to connect devices, particularly those in dispersed locations or harsh environments. Today, a new wave of opportunity exists for industrial industries to improve margins through the use of wireless technology.

802.11 Standard Evolution

The IEEE 802.11 standard specifies a way to use radio frequency (RF) technology to send Ethernet packets over the air. Wireless LAN is based on the IEEE 802.11 standard and is referred to as Wi-Fi. The 802.11b standard, which operates in the 2.4 GHz frequency band at 11 Mbps, was the first commercially successful WLAN technology. As wireless technology evolved, a higher transmission rate of 54 Mbps was achieved with 802.11g, which uses the 2.4 GHz band, and 802.11a, which uses the 5 GHz frequency band with the same transmission rate of 54 Mbps. To extend the wireless communication distance and bandwidth, IEEE 802.11n has added more specifications in the MIMO standard and dual-band support. The transmission rate of 802.11n is up to 600 Mbps. 802.11n offers a suite of advanced new features that increase effective data throughput, extended wireless coverage, and creates more reliable networks. Choosing the right WLAN technology is an important factor in determining the performance of your wireless network and overall return on investment.
Wireless Architecture

AP-CPE mode
EKI-6300 series products can perform as Access Points (AP) or Customer Premises Equipment (CPE). When it plays as AP, it’s connected to a wired network via the Ethernet port and accepted connections from wireless clients and passes data upwards to a network wirelessly. In CPE mode, it receives a wireless signal over last mile application, helping WISPs deliver wireless broadband Internet service to residents and business customers. In CPE mode, it does not accept wireless associations from wireless clients.

WDS mode
A Wireless Distribution System (WDS) provides an easy way for APs to communicate wirelessly with each other. In this mode, it can support single or multiple WDS links and no wireless clients can be associated with it.

AP-Repeater mode
EKI-6300 series products can be used as a CPE to receive wireless signals over the last mile, helping WISPs deliver wireless broadband Internet service to new residential and business customers. And it can be used as an AP to accept wireless connections from client devices in this mode.

Fast Roaming
Advantech Wi-Fi Mesh provides the ability to roam seamlessly, potentially at very high speeds, throughout the Advantech wireless mesh infrastructure. The mesh infrastructure has the roaming capabilities needed to allow clients to move from wireless mesh router AP to AP in less than 20 milliseconds. Fast roaming maintains a continuous connection, which is critical for latency-sensitive applications such as voice and video.

By incorporating information about the cost of multi-paths, roaming facilitates direct and rapid handoff of RF communications from one AP to another across the wireless mesh. This design yields a more efficient network traffic flow and makes it possible to support applications that require seamless, real-time roaming.

Self-Forming and Self-Healing
The wireless infrastructure always maintains the best connection path to the destination. So, the overall wireless network ensures the best performance even if some of the nodes are dead. When any error in one of wireless AP, it will build another redundant path to ensure communication reliability.

High Bandwidth after Multi-hopping
Issues with throughput, quality and security in a wireless mesh network have largely been resolved, but scalable capacity remains an obstacle with some vendor solutions. Many wireless solutions simply cannot scale without compromising performance or availability across multiple hops in a wireless infrastructure. And in always-on, mission-critical communications environments, that’s simply not acceptable.

Advantech’s enhancements deliver industry-leading performance and scalability and with a 100 Mbps transmission rate and sustained performance across 10 hops.
**EKI-6310GN**

**IEEE 802.11 b/g/n Wi-Fi AP / CPE**

**Features**
- Compliant with IEEE802.11b/g/n
- IP66 waterproof certification
- High output power 27dBm
- Standard PoE (802.3af) support
- Support distances up to 5Km
- Support wireless data encryption with 64/128 bits WEP/WPA/WPA2/TKIP with IEEE 802.1X-Enterprise encryption for a highly secure wireless network
- WEP/WPA/WPA2/IEEE 802.1x authentication support
- Support WPS by software

**Introduction**
The EKI-6310GN is a feature rich wireless AP/CPE which provides a reliable wireless connectivity for industrial environments. The standard PoE input enhances flexibility in deployment of this AP/CPE even where the DC power supply is hard to fulfill. As an 802.11n compliant device, EKI-6310GN provides 3 times higher data rates than legacy 802.11g devices. EKI-6310GN, with an integrated Type N RF connector that can be directly plugged in to any antenna to create a robust outdoor AP/CPE, effectively improves the reliability of wireless connectivity, especially in applications that need high reliability and high throughput data transmission. To secure wireless connections, EKI-6310GN implements the latest encryption technologies including WEP/WPA/WPA2/802.1x for powerful security authentication.

**Specifications**

### Standard Support
- **Wireless**
  - IEEE802.11b/g/n
- **Ethernet**
  - IEEE802.3u MDI / MDIX 10/100 Fast Ethernet
- **LAN**
  - IEEE802.11b/g wireless LAN interface IEEE 802.11n wireless LAN standard
  - Standard PoE 802.3af
- **Data Rates**
  - 802.11b 11, 5.5, 2, 1 Mbps, auto-fallback,
  - 802.11g 54, 48, 36, 24, 18, 12, 9, 6 Mbps, auto-fallback

### Physical Specifications
- **Power**
  - Standard PoE 802.3af
- **Dimensions (W x H x D)**
  - 61.7 x 206.2 x 47.7 mm (2.43" x 8.12" x 1.88")
- **Mounting**
  - DIN-rail, Wall, Pole
- **Weight**
  - 0.5 Kg

### Environment
- **Operating Temp.**
  - Non Heater: -30 – 70°C (-22 – 158°F)
- **Storage Temperature**
  - -30 – 80°C (-22 – 176°F)
- **Humidity**
  - 10% – 95% non-condensing

### Interface Operation Modes
- **Access Point (AP) / Customer Premise Equipment (CPE)**
- **Antenna Configuration**
  - 1x1 (1 Tx, 1 Rx)
  - Reserve N-type Connector (Plug)
  - *Equipped N-to-RSMA adaptor and 5dBi dipole antenna for indoor AP applications.

### Other Features
- Telnet, FTP, SNMP, Password Changes, Firmware updates, Configuration Files
- Output Power Control, Bandwidth Control, Distance Adjustment, Site survey
- Open System , Shared Key, Radius 802.1X , WPA, WPA2, WPA-PSK (TKIP)

### Modulation Techniques
- **802.11n**
  - OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
- **802.11b**
  - DSSS (DBPSK, DQPSK, CCK)
- **802.11g**
  - OFDM (BPSK, QPSK, 16-QAM, 64-QAM)

### Channel Support
- **802.11b/g/gn**
  - HT20
  - FCC: CH1 ~ CH11; ETSI: CH1 ~ CH13
- **802.11gn**
  - HT40
  - FCC: CH3 ~ CH9; ETSI: CH3 ~ CH11

### Wireless Transmission Rates
- **Transmitted Power**
  - Max. 27 dBm
- **Receiver Sensitivity**
  - -95dBm @ 11Mbps
  - -92dBm @ 54Mbps
  - -90dBm @ HT20

**Ordering Information**
- **EKI-6310GN**
  - 802.11 b/g/n Wireless Access Point/CPE (US)
- **EKI-6310GN-EU**
  - 802.11 b/g/n Wireless Access Point/CPE (EU)
Introduction
The EKI-6311GN is a feature rich wireless AP/CPE which provides a reliable wireless connectivity for industrial environments. The PoE injector enhances flexibility in deployment of this AP/CPE even where the DC power supply is hard to fulfill. As an 802.11n compliant device, EKI-6311GN provides 3 times higher data rates than legacy 802.11g devices. With the support of STP, WMM and IGMP snooping protocols, EKI-6311GN effectively improves the reliability of wireless connectivity, especially in applications that need high reliability and high throughput data transmission. To secure wireless connections, EKI-6311GN implements the latest encryption technologies including WPA2/WPA/802.1x for powerful security authentication.

Specifications

**Standard Support**
- **Wireless**: IEEE 802.11b/g/n
- **Ethernet**: IEEE 802.3u MDI / MDIX 10/100 Fast Ethernet
- **LAN**: IEEE 802.11b/g wireless LAN interface
- **IEEE 802.11n wireless LAN standard**
- **Certification**
  - US FCC Part 15 Class B & C & E
  - Europe ETSI 300 328, ETSI 301 489-1&17, EN 60950 compliant and CE Mark
- **Data Rates**
  - 802.11b 11, 5.5, 2, 1 Mbps, auto-fallback,
  - 802.11g 54, 48, 36, 24, 18, 12, 9, 6 Mbps, auto-fallback

**Physical Specifications**
- **Power**: DC 15 V / 0.8A, AC Adapter 100 V ~ 240 V
- **Dimensions (W x H x D)**: 60 x 165 x 34 mm (2.36” x 6.50” x 1.34”)
- **Mounting**: Wall, Pole
- **Weight**: 0.5 Kg

**Environment**
- **Operating Temperature**: Non Heater: -20 ~ 70°C (-4 ~ 158°F)
- **Storage Temperature**: -30 ~ 60°C (-22 ~ 176°F)
- **Humidity**: 10% ~ 95% non-condensing

**Interface Operation Modes**
- **Access Point (AP) / Customer Premise Equipment (CPE)**

**Antenna**
- **Antenna Configuration**: 1x1 (1 Tx, 1 Rx)
- **Default embedded 8 dBi directional antenna** (Vertical-Pol)
- **Reserve N-type Connector (Plug)** *Switchable by software*
- **Equipped N-to-RSMA adaptor and 5dBi dipole antenna for indoor AP applications.**

**Features**
- Compliant with IEEE 802.11 b/g/n
- IP55 waterproof certification
- Embedded 8 dBi directional antenna with external N-type connector for optional antenna
- High output power 26 dBm
- MIMO 1 x 1.11n
- Passive 15 V PoE
- Support distances up to 5 km
- WPA/WPA2-Enterprise encryption for a highly secure wireless network
- WEP/WPA/WPA2/IEEE 802.1x authentication support
- Spanning Tree and IGMP snooping protocol support

**Other Features**
- Telnet, FTP, SNMP, Password Changes, Firmware updates, Configuration Files
- Radio on/off, WMM/Regatta Mode, Output Power Control, Fragmentation Length, Beacon Interval
- RTS/CTS threshold, DTIM Interval

**Modulation Techniques**
- **IEEE 802.11n**: OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
- **IEEE 802.11b**: DSSS (DBPSK, DQPSK, CCK)
- **IEEE 802.11g**: OFDM (BPSK, QPSK, 16-QAM, 64-QAM)

**Channel Support**
- **IEEE 802.11b/g/gn**: HT20
  - FCC, CH1 – CH11, ETSI: CH1 – CH13
- **IEEE 802.11gn**: HT40
  - FCC: CH3 – CH9, ETSI: CH3 – CH11

**Wireless Transmission Rates**
- **Transmitted Power**
  - 802.11b: 26 dBm
  - 802.11g: 26 dBm @ 6 Mbps, 24 dBm @ 54 Mbps
  - 802.11gn HT20: 26 dBm @ MCS0, 22 dBm@ MCS7
  - 802.11gn HT40: 26 dBm @ MCS0, 21 dBm@ MCS7

**Receiver Sensitivity**
- **802.11b Sensitivity**: -93 dBm @ 1 Mbps; -88 dBm @ 11 Mbps
- **802.11g Sensitivity**: -89 dBm @ 6 Mbps; -73 dBm @ 54 Mbps
- **802.11n HT20**: -88 dBm @ MCS0; -70 dBm @ MCS7
- **802.11n HT40**: -84 dBm @ MCS0; -67 dBm @ MCS7

**Ordering Information**
- **EKI-6311GN**: 802.11 b/g/n Wireless Access Point/CPE (US)
- **EKI-6311GN-EU**: 802.11 b/g/n Wireless Access Point/CPE (EU)
EKI-6331AN
IEEE 802.11 a/n Wi-Fi AP/CPE

Introduction
The EKI-6331AN is a feature rich wireless AP/CPE which provides a reliable 5GHz wireless connectivity for industrial environments. The PoE injector enhances flexibility in deployment of this AP/CPE even where the DC power supply is hard to fulfill. As an 802.11n compliant device, EKI-6331AN provides 3 times higher data rates than legacy 802.11a devices. With MIMO 2 x 2 technology, EKI-6331AN provides both robust wireless connectivity as well as high throughput rate in wireless transmission. With the support of WMM and IGMP snooping protocols, EKI-6331AN effectively improves the reliability of wireless connectivity, especially in applications that need high reliability and high throughput data transmission. To secure wireless connections, EKI-6331AN implements the latest encryption technologies including WPA2/WPA/802.1x for powerful security authentication.

Specifications

Standard Support
- **Wireless**
- IEEE 802.11 a/n
- **Ethernet**
- IEEE 802.3u MDI / MDIX 10/100 Fast Ethernet
- **LAN**
- IEEE 802.11a wireless LAN interface
  - IEEE 802.11n wireless LAN standard
  - Passive 15 V PoE
- **Certification**
  - US FCC Part 15
  - EN 301 489-1
  - EN 301 489-17
  - EN 301 893 (5470-5725MHz DFS)
  - EN 302 502 (5725-5850 MHz DFS)
- **Data Rates**
  - IEEE 802.11a: 54, 48, 36, 24, 18, 12, 9, 6 Mbps, auto-fallback
  - IEEE 802.11n: 6, 6.5, 13, 13.5, 19.5, 24, 30, 40, 53, 54, 55, 80.5
  - 65, 78, 81, 104, 108, 117, 121.5, 130, 135, 150 Mbps, up to 300 Mbps

Physical Specifications
- **Power**
  - 15 VDC @ 0.8A; AC Adapter 100 V ~ 240 V
- **Dimensions (W x H x D)**
  - 111 x 256 x 48 mm (4.37” x 10.08” x 1.89”)
- **Weight**
  - 0.5 Kg

Environment
- **Operating Temp.**
  - -20 ~ 70°C (-4 ~ 158°F)
- **Storage Temperature**
  - -30 ~ 80°C (-22 ~ 176°F)
- **Humidity**
  - 5% ~ 95% non-condensing

Interface Operation Modes
- **Access Point (AP) / Customer Premise Equipment (CPE)**

Antenna
- **Antenna Configuration**
  - 2 x 2 (2T2R)
  - Default embedded 14–16 dBi (Dual-polarity)
  - Reverse SMA Connectors (configured by software)

Features
- **Compliant with IEEE 802.11 a/n**
- **IP55 waterproof certification**
- **MIMO 2 x 2 11n**
- **Embedded 16 dBi dual-polarity directional antenna with external R-SMA connector for optional antenna**
- **High output power 24 dBm**
- **Passive 15 V PoE**
- **Supports distances up to 10 km**
- **WEP/WPA/WPA2 / IEEE 802.1x authentication support**
- **IGMP snooping protocol support**

Other Features
- **Management**
  - Telnet, FTP, SNMP, Web UI
- **Security**
  - Open System, Shared Key, 802.1X only, WPA, WPA2, WPA-PSK (TKIP)
- **Wireless**
  - Radio on/off, WMM/Regatta Mode, Output Power Control, Fragmentation Length, Beacon Interval, RTS/CTS threshold, DTIM Interval

Modulation Techniques
- **IEEE 802.11n**
  - OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
- **IEEE 802.11a**
  - OFDM (BPSK, QPSK, 16-QAM, 64-QAM)

Channel Support
- **FCC**
  - 5725-5850 MHz
- **CE**
  - 5470-5725 MHz, 5725-5850 MHz

Wireless Transmission Rates
- **IEEE 802.11a**
  - 6-24 Mbps: 24 dBm
  - 54 Mbps: 21 dBm
- **IEEE 802.11n**
  - HT20 - MCS0: 23 dBm
  - MCS15: 20 dBm
  - HT40 - MCS0: 23 dBm
  - MCS15: 19 dBm

Note: bandedge exclusive (Controllable for different country regulations)

Receiver Sensitivity
- **IEEE 802.11a**
  - 54 Mbps: -76 dBm
- **IEEE 802.11n**
  - HT20 - MCS15: -70 dBm
  - HT40 - MCS15: -66 dBm

Ordering Information
- **EKI-6331AN**
  - IEEE 802.11 a/n Wireless AP/CPE
- **EKI-6331AN-EU**
  - IEEE 802.11 a/n Wireless AP/CPE (EU)
Introduction

The EKI-6340 series are perfect wireless Mesh AP for your outdoor deployment. With self-healing & self-forming capabilities, the wireless network is free from interruption even part of Mesh nodes failed. It’s especially critical to infrastructures where wired solutions are hard to deploy. The ultra-fast roaming seamlessly enables the applications of high-speed mobility. The low latency and high throughput multiple hopping features greatly enables the extension of network coverage. This high throughput Mesh network perfectly covers growing rich data demands such as video security, surveillance and entertainment. Comprehensive security features prevent system from intrusion. IP67 sturdy waterproof enclosure with wide-temperature design enables excellent performances under all harsh outdoor environments.

Specifications

Standard Support
- Wireless: IEEE 802.11a/b/g/n compliant
- Ethernet: IEEE 802.3/802.3u/802.3ab, IEEE 802.3at PoE
- Data Rates:
  - IEEE 802.11b: 1, 2, 5.5, 11 Mbps
  - IEEE 802.11a, g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
  - IEEE 802.11n: @ 800ns (400ns) GI 20 MHz BW
    - 1 Nss: 65 (72.2) Mbps maximal
    - 2 Nss: 130 (144.4) Mbps maximal
    - 40 MHz BW
      - 1 Nss: 135 (150) Mbps maximal
      - 2 Nss: 270 (300) Mbps maximal

Physical Specifications
- Power: Dual redundant 12 ~ 48 Vdc
- Power Consumption:
  - Normal operation: EKI-6340-1 Max. 17 W
  - Cold start: EKI-6340-1 Max. 13 W
  - Dimen (W x H x D): 225 x 242 x 65 (8.86” x 9.53” x 2.56”)
  - Weight: 2.25 Kg
  - Enclosure: Metal, IP67 protection
  - Mounting: Pole, Wall, VESA

Environment
- Operating Temperature: -35 ~ 75°C (-31 ~ 167°F)
- Storage Temperature: -40 ~ 85°C (-40 ~ 185°F)
- Ambient Relative Humidity: 5% ~ 100% (non-condensing)

Features
- Highly secured self-healing & self-forming Mesh capability
- Ultra-fast roaming (hand-over switch time ≤ 20 ms)
- High throughput multiple hopping (≥100 Mbps @10 hops)
- Ease of use installation utilities: antenna alignment, distance calculation and site survey tools
- Compliant with IEEE 802.11 a/b/g/n
- Up to 3 radios for Mesh back haul and Access Point
- MIMO 2 x 2, up to 300 Mbps data rate
- Dual 12 ~ 48 V redundant DC input power
- 802.3 at PoE input
- Gigabit Ethernet support
- WEP, WPA, WPA2-PSK/EAP (IEEE 802.1X/RADIUS, TKIP and AES)
- IP67 enclosure, wide operating temperature range
- EN50155 compliant

Interface
- Antenna: N-type female connector
- Power: M12 D-code connector
- LAN: M25 cable gland

System Operation Mode
- Bridge/Router/Mesh

Other Features
- DHCP Client/Server, Static routing table, RIPv1&v2, WMM, Multi-SSID (up to 16x ESSID for each radio), traffic limitation, IEEE 802.11h DFS, Syslog, L2 management utility, HTTP(s), Telnet, SSH, CLI, SNMP, installation utilities.

Modulation Techniques
- IEEE 802.11a/n: OFDM (GPSK, QPSK, 16-QAM, 64-QAM)
- IEEE 802.11b: DSSS (DBPSK, DQPSK, CCK)
- IEEE 802.11g/n: OFDM (GPSK, QPSK, 16-QAM, 64-QAM)

Frequency Range
- USA: 2.400 ~ 2.483 GHz, 5.725 ~ 5.825 GHz
- Europe: 2.400 ~ 2.483 GHz, 5.15 ~ 5.35 GHz, 5.47 ~ 5.725 GHz
- China: 2.400 ~ 2.483 GHz, 5.725 ~ 5.85 GHz

Note: radio is capable to be operated within FCC DFS2 band or ETSI/EC DFS band, or other countries which is regulating or is planning to regulate mid-5 GHz band. The usage of mid-5 GHz band is subject to the regulatory approval status.
Transmit Power Settings (Typical Composite Power) Tolerance: +2/-2 dB

<table>
<thead>
<tr>
<th>Data Rate</th>
<th>Typical/Maximum (2 Rx dBm)</th>
<th>IEEE Spec (1 Rx dBm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>802.11a</td>
<td>+19 dBm @ 6, 9, 12, 18, 24 Mbps</td>
<td>802.11a HT20 +22 dBm @ 6, 9, 12, 18, 24 Mbps</td>
</tr>
<tr>
<td></td>
<td>+18 dBm @ 36 Mbps</td>
<td>+20 dBm @ MCS 0/8 +20 dBm @ MCS 1/9 +20 dBm @ MCS 2/10 +20 dBm @ MCS 3/11</td>
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<tr>
<td></td>
<td>+17 dBm @ 48 Mbps</td>
<td>+20 dBm @ MCS 2/10 +20 dBm @ MCS 3/11 +20 dBm @ MCS 4/12 +20 dBm @ MCS 4/12</td>
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<td>+15 dBm @ 54 Mbps</td>
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<td>+16 dBm @ MCS 7/15 +16 dBm @ MCS 7/15 +16 dBm @ MCS 7/15 +16 dBm @ MCS 7/15</td>
</tr>
<tr>
<td>802.11b</td>
<td>+19 dBm</td>
<td>+20 dBm @ MCS 0/8 +20 dBm @ MCS 1/9 +20 dBm @ MCS 2/10 +20 dBm @ MCS 3/11</td>
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<tr>
<td></td>
<td>-</td>
<td>+18 dBm @ MCS 4/12 +18 dBm @ MCS 4/12 +18 dBm @ MCS 7/15 +18 dBm @ MCS 7/15</td>
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<td>+16 dBm @ MCS 7/15 +16 dBm @ MCS 7/15 +16 dBm @ MCS 7/15 +16 dBm @ MCS 7/15</td>
</tr>
<tr>
<td>802.11g</td>
<td>+19 dBm</td>
<td>+20 dBm @ MCS 0/8 +20 dBm @ MCS 1/9 +20 dBm @ MCS 2/10 +20 dBm @ MCS 3/11</td>
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<tr>
<td></td>
<td>-</td>
<td>+18 dBm @ MCS 4/12 +18 dBm @ MCS 4/12 +18 dBm @ MCS 7/15 +18 dBm @ MCS 7/15</td>
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<td>+16 dBm @ MCS 7/15 +16 dBm @ MCS 7/15 +16 dBm @ MCS 7/15 +16 dBm @ MCS 7/15</td>
</tr>
<tr>
<td>802.11a/ HT20</td>
<td>+19 dBm</td>
<td>+20 dBm @ MCS 0/8 +20 dBm @ MCS 1/9 +20 dBm @ MCS 2/10 +20 dBm @ MCS 3/11</td>
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<td>+18 dBm @ MCS 4/12 +18 dBm @ MCS 4/12 +18 dBm @ MCS 7/15 +18 dBm @ MCS 7/15</td>
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<td>+16 dBm @ MCS 7/15 +16 dBm @ MCS 7/15 +16 dBm @ MCS 7/15 +16 dBm @ MCS 7/15</td>
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</table>

Receiver Sensitivity

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<th>Data Rate</th>
<th>Typical/Maximum (2 Rx dBm)</th>
<th>IEEE Spec (1 Rx dBm)</th>
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<tr>
<td>802.11a</td>
<td>+19 dBm</td>
<td>802.11a HT40 +22 dBm @ 6, 9, 12, 18, 24 Mbps</td>
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<td>+20 dBm @ MCS 0/8 +20 dBm @ MCS 1/9 +20 dBm @ MCS 2/10 +20 dBm @ MCS 3/11</td>
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<td>+18 dBm @ MCS 4/12 +18 dBm @ MCS 4/12 +18 dBm @ MCS 7/15 +18 dBm @ MCS 7/15</td>
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<td>+16 dBm @ MCS 7/15 +16 dBm @ MCS 7/15 +16 dBm @ MCS 7/15 +16 dBm @ MCS 7/15</td>
</tr>
<tr>
<td>802.11b</td>
<td>+19 dBm</td>
<td>802.11b/g HT20 +20 dBm @ MCS 0/8 +20 dBm @ MCS 1/9 +20 dBm @ MCS 2/10 +20 dBm @ MCS 3/11</td>
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<td>+18 dBm @ MCS 4/12 +18 dBm @ MCS 4/12 +18 dBm @ MCS 7/15 +18 dBm @ MCS 7/15</td>
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</tr>
<tr>
<td>802.11g</td>
<td>+19 dBm</td>
<td>802.11g HT40 +20 dBm @ MCS 0/8 +20 dBm @ MCS 1/9 +20 dBm @ MCS 2/10 +20 dBm @ MCS 3/11</td>
</tr>
<tr>
<td></td>
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<td>+18 dBm @ MCS 4/12 +18 dBm @ MCS 4/12 +18 dBm @ MCS 7/15 +18 dBm @ MCS 7/15</td>
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<tr>
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<td>-</td>
<td>+16 dBm @ MCS 7/15 +16 dBm @ MCS 7/15 +16 dBm @ MCS 7/15 +16 dBm @ MCS 7/15</td>
</tr>
<tr>
<td>802.11a/ HT20</td>
<td>+19 dBm</td>
<td>802.11a/ HT40 +20 dBm @ MCS 0/8 +20 dBm @ MCS 1/9 +20 dBm @ MCS 2/10 +20 dBm @ MCS 3/11</td>
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<td>+18 dBm @ MCS 4/12 +18 dBm @ MCS 4/12 +18 dBm @ MCS 7/15 +18 dBm @ MCS 7/15</td>
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- - - +20 dBm @ MCS 4/12 +19 dBm @ MCS 4/12 +18 dBm @ MCS 4/12 +17 dBm @ MCS 4/12 |
- - - +18 dBm @ MCS 7/15 +17 dBm @ MCS 7/15 +16 dBm @ MCS 7/15 +16 dBm @ MCS 7/15 |
- - - +16 dBm @ MCS 7/15 +15 dBm @ MCS 7/15 +13 dBm @ MCS 7/15 +12 dBm @ MCS 7/15 |
## Introduction

The EKI-6351-A are perfect wireless AP/stations for your deployment. With self-healing & self-forming capabilities, the wireless network is free from interruption even if part of the Mesh node fails. Ultra-fast roaming seamlessly enables the applications to achieve high-speed mobility. This high throughput Mesh network covers the increasing data demands of applications such as video security, surveillance and entertainment.

Comprehensive security features prevent the system from intrusion whilst the wide operating temperature range enables excellent performances in harsh outdoor environments.

## Specifications

### Standard Support

- **Wireless**: IEEE 802.11a/b/g/n compliant
- **Ethernet**: IEEE 802.3/802.3u/802.3ab, 802.1d, 802.1q, 802.1p
- **Data Rates**:
  - 802.11b: 1, 2, 5.5, 11 Mbps
  - 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
  - 802.11n: @ 800ns (400ns) GI, 20 MHz BW
  - 1 Nss: maximal
  - 2 Nss: 135 (150) Mbps maximal
  - 40 MHz BW
  - 1 Nss: 135 (150) Mbps maximal
  - 2 Nss: 270 (300) Mbps maximal
- **Power**: Dual redundant 12 ~ 48 VDC, IEEE 803.2at PoE
- **Power Consumption**:
  - Normal operation: Max. 17 W
  - Cold start: Max. 13W
- **Dimensions (W x H x D)**: 37 x 140 x 95 mm (1.46” x 5.51” x 3.74”)
- **Weight**: 0.63 Kg
- **Enclosure**: Metal, IP30 protection
- **Mounting**: DIN-rail, Wall

### Environment

- **Operating Temperature**: -35 ~ 75°C (-31 ~ 167°F)
- **Storage Temperature**: -40 ~ 65°C (-40 ~ 185°F)
- **Ambient Relative Humidity**: 5% ~ 100% (non-condensing)

### Interface

- **Antenna**: 2 x RSMA connector
- **Power**: Terminal block
- **LAN**: RJ-45

## System Operation Mode

- **EKI-6351-A - Bridge/Router/Mesh**

## Other Features

- DHCP Client/Server*, Statistic routing table*, RIP v1&v2*, WMM, Multi-SSID (up to 16x ESSID for each radio), traffic limitation, IEEE 802.11h DFS, Syslog, L2 management utility, HTTP(s), Telnet, SSH, CLI, SNMP, installation utilities.

## Modulation Techniques

- **IEEE 802.11a/n**: OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
- **IEEE 802.11b**: DSSS (DBPSK, DQPSK, CCK)
- **IEEE 802.11g/n**: OFDM (BPSK, QPSK, 16-QAM, 64-QAM)

## Frequency Range

- **USA**: 2.400 ~ 2.483 GHz, 5.15 ~ 5.25GHz, 5.725 ~ 5.825 GHz
- **Europe**: 2.400 ~ 2.483 GHz, 5.15 ~ 5.35 GHz, 5.47 ~ 5.725 GHz
- **China**: 2.400 ~ 2.483 GHz, 5.725 ~ 5.85 GHz

Note: radio is capable to be operated within FCC DFS2 band or ETSI/EC DFS band, or other countries which is regulating or is planning to regulate mid-5 GHz band. The usage of mid-5 GHz band is subject to the regulatory approval status.

## Certificates

- **EMC**: US FCC Part 15 Class B & C & E, Europe ETSI 301 489-1 & 17
- **Radio**: EN50155, EN50121-1/-4
- **Safety**: EN 60950

## Ordering Information

- **EKI-6351-A**: 802.11 a/b/g/n Wi-Fi Mesh AP/Station
- **EKI-6351-U**: 802.11 a/b/g/n Wi-Fi Mesh AP/Station (EU)
## Accessories

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<td>20 W (cw)</td>
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<td>-40 to +80</td>
<td>-40 to +80</td>
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## Accessories

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<td>1.5M N-Plug to SMA-Plug cable</td>
<td>3M N-Plug to SMA-Plug cable</td>
<td>1M N-Plug to N-Plug cable</td>
<td>3M N-Plug to N-Plug cable</td>
<td>6M N-Plug to N-Plug cable</td>
<td>9M N-Plug to N-Plug cable</td>
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<td>1.5 : 1 Max @ DC – 3.0 GHz 2.0 : 1 Max @ 3.0 – 6.0 GHz</td>
<td>1.5 : 1 Max @ DC – 6.0 GHz</td>
<td>1.5 : 1 Max @ DC – 6.0 GHz</td>
<td>1.5 : 1 Max @ DC – 6.0 GHz</td>
<td>1.5 : 1 Max @ DC – 6.0 GHz</td>
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<td>2.0 dB Max @ DC – 3.0 GHz 2.5 dB Max @ 3.0 – 6.0 GHz</td>
<td>2.5 dB Max @ 3.0 – 6.0 GHz</td>
<td>3.5 dB Max @ DC – 3.0 GHz 4 dB Max @ 3.0 – 6.0 GHz</td>
<td>0.7 dB Max @ DC – 3 GHz 1.0 dB Max @ 3 – 6.0 GHz</td>
<td>1.0 dB Max @ DC – 3 GHz 1.5 dB Max @ 3 – 6.0 GHz</td>
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<td>1KV Aurge Arrestor N-Plug to N-Jack</td>
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<td>N plug to N Jack</td>
<td>N- jack to N- jack</td>
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Industrial Ethernet Solutions

Industrial Ethernet Product Selection Guide

**ENS0155 Ethernet Switches**
- **EKI-6558TI**
  ENS0155 IP67 8-port M12 Managed Ethernet Switch with Wide Temperature
- **EKI-6559TMI**
  ENS0155 IP67 8-port M12 + 2-port Fiber Optic Managed Ethernet Switch with Wide Temperature
- **EKI-6528TI**
  ENS0155 8-port M12 Unmanaged Switch with Wide Temperature
- **EKI-6528TPI**
  ENS0155 8-port M12 Unmanaged PoE Switch with Wide Temperature

**PoE Switch**
- **EKI-7659CPI**
  EN50155 8-port M12 Unmanaged PoE Switch with Wide Temperature
- **EKI-7656C/CI**
  16+2G Combo Port Gigabit Managed Redundant Industrial Ethernet Switch
- **EKI-7659C/CI**
  8+2G Combo Port Gigabit Managed Redundant Industrial Ethernet Switch
- **EKI-7657C/CI**
  7+3G Combo Port Gigabit Managed Redundant Industrial Ethernet Switch with 2 x DI/O
- **EKI-7654C**
  4+2G Combo Port Gigabit Managed Redundant Industrial Ethernet Switch
- **EKI-7526I**
  16-port Unmanaged Industrial Ethernet Switch with Wide Temperature Range
- **EKI-7529MI/ST**
  8+2 Multi-Mode Fiber Optic Unmanaged Ethernet Switch with Wide Temperature

**Managed Ethernet Switch**
- **EKI-4654R**
  24 Fe + 2 SFP (Mini-GBIC) Managed Redundant Ethernet Switch
- **EKI-7758F**
  4x+4 SFP Gigabit Managed Redundant Industrial Ethernet Switch
- **EKI-7656C/CI**
  16+2G Combo Port Gigabit Managed Redundant Industrial Ethernet Switch
- **EKI-7659C/CI**
  8+2G Combo Port Gigabit Managed Redundant Industrial Ethernet Switch
- **EKI-7657C/CI**
  7+3G Combo Port Gigabit Managed Redundant Industrial Ethernet Switch with
  2 x DI/O
- **EKI-7654C**
  4+2G Combo Port Gigabit Managed Redundant Industrial Ethernet Switch
- **EKI-7559S/MI**
  8+2 SC Type Fiber Optic Managed Industrial Ethernet Switch with Wide Temperature
- **EKI-7554S/MI**
  4+2 SC Type Fiber Optic Managed Industrial Ethernet Switch with Wide Temperature
- **EKI-2748F1**
  4Gx+4SFP Managed Ethernet Switch with Wide Temperature
- **EKI-2748CI**
  6Gx+2 Combo Managed Ethernet Switch with Wide Temperature
- **EKI-2548I**
  8Tx Managed Ethernet Switch with Wide Temperature

**Unmanaged Ethernet Switch**
- **EKI-4524I**
  24-port Ethernet Unmanaged Switch with Wide Temperature
- **EKI-4524RI**
  24+2 SFP Port Unmanaged Industrial Ethernet Switch with Wide Temperature
- **EKI-7626C/CI**
  16+2G Combo Port Gigabit Unmanaged Industrial Ethernet Switch
- **EKI-7629C/CI**
  8+2G Combo Port Gigabit Unmanaged Industrial Ethernet Switch
- **EKI-7528I**
  16-port Unmanaged Industrial Ethernet Switch with Wide Temperature Range
- **EKI-7529MI/ST**
  8+2 Multi-Mode Fiber Optic Unmanaged Ethernet Switch with Wide Temperature
- **EKI-2525S/I**
  5-port Unmanaged Industrial Ethernet Switch
- **EKI-2528/I**
  8-port Unmanaged Industrial Ethernet Switch
- **EKI-2525M**
  4+1 100FX Port Multi-Mode Unmanaged Industrial Ethernet Switch
- **EKI-2526M/S**
  4+2 100FX Port Unmanaged Industrial Ethernet Switch
- **EKI-3725**
  5-port Gigabit Unmanaged Industrial Ethernet Switch
- **EKI-3728**
  8-port Gigabit Unmanaged Industrial Ethernet Switch
- **EKI-3525**
  5-port 10/100Mbps Unmanaged Industrial Ethernet Switch
- **EKI-3528**
  8-port 10/100Mbps Unmanaged Industrial Ethernet Switch
- **EKI-3525M**
  5-port 10/100Mbps + 1-port 100FX Multi-mode Unmanaged Industrial Ethernet Switch
- **EKI-3528S**
  4-port 10/100Mbps + 1-port 100FX Single-mode Unmanaged Industrial Ethernet Switch

**Media Converter**
- **EKI-2541MI/MI**
  10/100T (X) to Multi-Mode SC Type Fiber Optic Industrial Media Converter
- **EKI-2541Si/MI**
  10/100T (X) to Single-Mode SC Type Fiber Optic Industrial Media Converter
- **EKI-3541M**
  10/100T (X) to Multi-Mode SC Type Fiber Optic Industrial Media Converter
- **EKI-3541S**
  10/100T (X) to Single-Mode SC Type Fiber Optic Industrial Media Converter
- **EKI-2741 Series**
  10/100/1000T (X) to Fiber Optic Gigabit Industrial Media Converters

**Accessories**
- SFP Transceiver Modules

To view all of Advantech’s Industrial Ethernet Solutions, please visit www.advantech.com/products.
## Industrial Ethernet Product Selection Guide

### EN50155 Ethernet Switches

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<th>EKI-6559TMI</th>
<th>EKI-6528TI</th>
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### Certification

- CE
- FCC
- Class I, Division 2

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## PoE Switches

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## Industrial Ethernet Solutions

### Industrial Ethernet Product Selection Guide

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# Selection Guide

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# Media Converters

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Introduction
EKI-6558TI and EKI-6559TMI are EN50155 certified IP67 wide temperature industrial switches which are especially designed for railway industry and harsh environments. M12 connectors secure highly reliable connectivity for industrial communication applications. EN50155 certification ensures the use of railway application. EKI-6559TMI also provides two additional fiber optic ports to extend communication range. Both EKI-6558TI and EKI-6559TMI provide Advantech’s X-Ring Pro protocol, which enables users to establish a redundant Ethernet network with ultra high-speed recovery (less than 20 ms). They also support advanced network standards to optimize network performance, reduce maintenance cost, and secure network safety.

Specifications

Communications
- **Standard**: IEEE 802.3, 802.3u, 802.3x, 802.1Ad, 802.1w, 802.1p, 802.10, 802.1X
- **LAN**: 10/100Base-T (X), 100Base-FX
- **Transmission Speed**: Up to 100 Mbps

Interface
- **Ethernet**: M12, 4-pole D-coded, Female x 8
- **Fiber Optic**: LC type waterproof x 2, Multi-mode (EKI-6559TMI)
- **Console**: M12, 8-pole A-coded, Female x 1

Network Management
- **Configuration**: Web browser, Telnet, Serial console, TFTP, SNMPv1/v2c/v3, Port Speed/Duplex Configuration, IPv6
- **VLAN**: IEEE 802.1Q, GVRP, Port-based VLAN
- **Redundancy**: Advantech X-Ring Pro (Recovery time < 20 ms at 250 pcs full loading ring structure), Dual Homing, Dual Ring, Couple Ring, 802.1w/D RSTP/STP
- **Security**: IP Access security, port security, DHCP Server, Port and IP Binding, 802.1X Port Access Control, SSL
- **Traffic Control**: IGMP Snooping/Query for multicast group management, Port Trunking, Static/802.3ad, LACP Rate limit and storm control, IEEE 802.1p CoS CoS/TOS/DSCP priority queuing, IEEE 802.3x flow control
- **Diagnostics**: Port Mirroring, Real-time traffic statistic, MAC Address Table, SMTP, Syslog, Email Alert, SNMP Trap, RMON

Mechanism
- **Enclosure**: IP67, aluminum shell with solid mounting kits
- **Dimensions (W x H x D)**: 193 x 176 x 62.5 mm (7.59” x 6.93” x 2.46”)
- **Mounting**: Wall

Power
- **Power Consumption**: Max. 8.1 W
- **Power Input**: 12 ~ 48 VDC, redundant dual inputs
- **Power Connector**: M12, 5-pole A-coded, male x 1
- **P-Fail Output**: 1A @ 24 VDC
- **P-Fail Connector**: M12, 8-pole A-coded, Female x 1

Protection
- **Power Reverse**: Present

Environment
- **Operating Temperature**: -40 ~ 75°C (-40 ~ 167°F)
- **Storage Temperature**: 40 ~ 85°C (-40 ~ 185°F)
- **Operating Humidity**: 5 ~ 95% (non-condensing)
- **Storage Humidity**: 0 ~ 95% (non-condensing)
- **MTBF**: 388,201 hours (EKI-6558TI)
  320,420 hours (EKI-6559TMI)

Certification
- **Safety**: UL 508
- **EMI**: FCC Part 15 Subpart B Class A, EN 55022 Class A
- **EMS**: EN 61000-4-2
  EN 61000-4-3
  EN 61000-4-4
  EN 61000-4-5
  EN 61000-4-6
  EN 61000-4-8
- **Shock**: IEC 61373
- **Freefall**: IEC 60068-2-32
- **Vibration**: IEC 61373
- **Railway**: EN50155, EN 50121-3-2, EN 50121-4

Ordering Information
- **EKI-6558TI**: EN50155 8-port M12 Managed Ethernet Switch
- **EKI-6559TMI**: EN50155 8-port M12 + 2-port Fiber Optic Managed Ethernet Switch
Introduction

EKI-6528TI and EKI-6528TPI are EN50155 certified industrial switches with IP40 protection and wide temperature support designed for railway applications. EKI-6528TPI provides four PoE ports that support IEEE 802.3af and can provide up to 15.4 watts of power per port. M12 connectors ensure highly reliable connectivity for industrial communication applications. With IP40 compact metal housings, these switches are protected against dusty environments and are a good fit for many industrial applications. Under no-power condition, ‘Auto Bypass’ function ensures the Ethernet signal connection through internal circuitry. This feature provides non-stop communication to rolling stocks even no power exists in some of the carriages.

Specifications

Communications
- **Standard**
  - IEEE 802.3
  - IEEE 802.3u
  - IEEE 802.3x
  - IEEE 802.3af
- **LAN**
  - 10/100Base-T (X)
- **Transmission Speed**
  - Up to 100 Mbps

Interface
- **Ethernet**
  - M12, 4-pole D-coded, Female x 8

Mechanism
- **Enclosure**
  - IP40 protected metal shell
- **Dimensions (W x H x D)**
  - 92 x 180 x 42 mm (3.62" x 7.08" x 1.65")
- **Mounting**
  - DIN-rail, Wall

Power
- **Power Consumption**
  - Max. 3.36 W (EKI-6528TI)
  - Max. 72 W (EKI-6528TPI)
- **Power Input**
  - 24 – 48 Vdc, redundant dual inputs (for EKI-6528TPI)
  - 12 – 48 Vdc, redundant dual inputs (for EKI-6528TI)
- **Power Connector**
  - M12, 5-pole A-coded, male x 1
- **P-Fail Output**
  - 1A @ 24 Vdc
- **P-Fail Connector**
  - M12, 8-pole A-coded, Female x 1

Protection
- **Power Reverse**
  - Present
- **Overload Current**
  - Present

Environment
- **Operating Temperature**
  - -40 – 75°C (-40 ~ 167°F)
- **Storage Temperature**
  - -40 – 85°C (-40 ~ 185°F)
- **Operating Humidity**
  - 5 – 95% (non-condensing)
- **Storage Humidity**
  - 0 – 95% (non-condensing)
- **MTBF**
  - 391,307 hours (EKI-6528TI)
  - 348,384 hours (EKI-6528TPI)

Certification
- **Safety**
  - UL 60950-1
  - FCC Part 15 Subpart B Class A, EN 55022 Class A
- **EMI**
  - EN 61000-4-2
  - EN 61000-4-3
  - EN 61000-4-4
  - EN 61000-4-6
  - EN 61000-4-8
- **Shock**
  - IEC 61373
- **Freefall**
  - IEC 60068-2-32
- **Vibration**
  - IEC 61373
- **Railway**
  - EN50155, EN 50121-3-2, EN 50121-4

Ordering Information
- **EKI-6528TI**
  - EN50155 8-port M12 Unmanaged Ethernet Switch
- **EKI-6528TPI**
  - EN50155 8-port M12 Unmanaged PoE Switch
**Introduction**

EKI-7659CPI supports 8 Power over Ethernet (PoE) ports and 2 Gigabit combo ports. The PoE device helps realize a centralized power supply solution and provides up to 15.4 watts of power per port. To create reliability in your network, the EKI-7659CPI comes equipped with a proprietary redundant network protocol — X-Ring Pro that was developed by Advantech, which provides users with an easy way to establish a redundant Ethernet network with ultra high-speed recovery time less than 20 ms. Furthermore, EKI-7659CPI also supports many advanced network standards to optimize network performance, ease maintenance issues, and secure network safety.

**Specifications**

### Communications

- **Standard**: IEEE 802.3, 802.3u, 802.3z, 802.3af, 802.1D, 802.1w, 802.1p, 802.1Q, 802.1X
- **LAN**: 10/100/1000Base-T (X), Optional 100Base-FX, 1000Base-SX/LX/LHX/XD/ZX/EZX
- **Transmission Distance**: Ethernet: Up to 100 m (4-wire Cat.5e, Cat.6 RJ45 cable suggested for Gigabit port)
- **Transmission Speed**: Ethernet: 10/100 Mbps Auto-Negotiation
  - Gigabit Copper: 10/100/1000 Mbps, Auto-Negotiation
  - Gigabit Fiber: Up to 1000 Mbps

### Interface

- **Connectors**: 8 x RJ45 (Ethernet), 2 x RJ45/SFP (mini-GBIC) combo ports
- **LED Indicators**: System: PWR, PWR1, PWR2, R.M., P-Fail
  - Gigabit Copper: Link/Activity, Duplex/Collision
  - Gigabit Fiber: Link/Activity, Speed (1000 Mbps)
- **Console**: RS-232 (RJ45)

### Network Management

- **Configuration**: Web browser, Telnet, Serial console, TFTP, SNMPv1/v2c/V3, Port Speed/Duplex Control, IPv6
- **VLAN**: IEEE 802.1Q, GVRP, Port-based VLAN
- **Redundancy**: Advantech X-Ring Pro (Recovery time < 20 ms at 250 pcs full loading ring structure), Dual Homing, Dual Ring, Couple Ring, 802.1w/DTP/STP
- **Security**: IP Access control, port security, DHCP Server, Port and IP Binding, 802.1X Port Access Control, SSL
- **Traffic Control**: IGMP Snooping/Query for multicasting group management, Port Trunking, Static/80.3ad, LACP Rate limit and storm control, IEEE 802.1p CoS/TOS/DCP priority queuing, IEEE 802.3x flow control
- **Diagnostics**: Port Mirroring, Real-time traffic statistic, MAC Address Table, SNTP, Syslog, E-Mail Alert, SNMP Trap, RMON

### Mechanism

- **Enclosure**: IP30, metal shell with solid mounting kits
- **Dimensions (W x H x D)**: 79 x 152 x 105 mm (3.11” x 5.98” x 4.13”)
- **Mounting**: DIN-rail, Wall
- **Power Consumption**: 116 W (Full load PoE)
- **Power Input**: 48 Vdc, redundant dual power input
- **Power Output**: 15.4W at 48V (per PoE port)
- **Fault Output**: 1 Relay Output

### Protection

- **Power Reverse**: Present
- **Overload Current**: Present

### Environment

- **Operating Temperature**: -40 ~ 75°C (-40 ~ 167°F)
- **Storage Temperature**: -40 ~ 85°C (-40 ~ 185°F)
- **Operating Humidity**: 5 ~ 95% (non-condensing)
- **Storage Humidity**: 0 ~ 95% (non-condensing)
- **MTBF**: 190,200 hours

### Certification

- **Safety**: UL 60950-1, CAN/CSA-C22.2 No.60950
- **EMI**: FCC Part 15 Subpart B Class A, EN 55022 Class A
- **EMS**: EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-8
- **Shock**: IEC 60068-2-27
- **Freefall**: IEC 60068-2-32
- **Vibration**: IEC 60068-2-6

### Ordering Information

- **EKI-7659CPI**: 8FE + 2G Combo Port Managed PoE Ethernet Switch w/Wide Temp
**Introduction**

The EKI-2726 FHPI switch has 4 x 10/100/1000BASE-T Ethernet ports with PoE+ function and 2 x SFP sockets, it has been designed to work within a wide operating temperature range. This cost-effective solution meets the high reliability requirements and demands of industrial applications. The equipment also meets the IEEE 802.3 at standard and can provide 30Watts output per PoE port.

**Specifications**

**Communications**
- **Standard**: IEEE 802.3, 802.3u, 802.3x, 802.3af/at, 802.3ab, 802.3z
- **LAN**: 10/100/1000Base-T, 1000Base-SX/LX/LHX/XD/ZX/EZX
- **Transmission Distance**: Ethernet: up to 100 m, SFP: up to 110 km (depends on SFP)
- **Transmission Speed**: Copper: 10/100/1000 Mbps, Auto-Negotiation Gigabit Fiber: up to 1000 Mbps

**Interface**
- **Connectors**: 10/100/1000T(X): RJ-45*4, SFP: Gigabit Base *2
- **LED Indicators**: System: P1, P2, P-Fail, Per port: Link/Activity, Speed, PoE (1 to 4 ports)

**Power**
- **Power Consumption**: 5.5 watts @48Vdc (Ethernet only)
- **Power Input**: 48 Vdc (44Vdc to 57 Vdc), redundant dual inputs
- **Fault Output**: 1 Relay Output

**Mechanism**
- **Dimensions (W x H x D)**: 59.6 x 152 x 105 mm (2.35” x 5.98” x 4.13”)
- **Enclosure**: IP30, Metal shell with solid mounting kits
- **Mounting**: DIN-rail, Wall

**Protection**
- **Power Reverse**: Present
- **Overload Current**: Present

**Features**
- All Gigabit Ethernet ports for 4 Copper and 2 SFP
- Back-plane (Switching Fabric): 12Gbps
- Embedded 4 ports PoE inject function
- Provide 30W at 55V power output
- Redundant Power Design
- IP30 Chassis Design
- Supports operating temperatures from -40 – 75°C

**Environment**
- **Operating Temperature**: -40 – 75°C (-40 – 167°F)
- **Storage Temperature**: -40 – 85°C (-40 – 185°F)
- **Operating Humidity**: 5 – 95% (non-condensing)
- **MTBF**: 339,740

**Certification**
- **Safety**: UL/cUL508 Class I, Division 2, Groups A, B, C and D (pending)
- **EMI**: FCC Part 15 Subpart B Class A, EN 55022 Class A
- **EMS**: EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8
- **Shock**: IEC 60668-2-27
- **Freefall**: IEC 60668-2-32
- **Vibration**: IEC 60668-2-6

**Ordering Information**
- **EKI-2726FHPI**: 4G+2 SFP Unmanaged Gigabit Switch with 4-port PoE+(IEEE 802.3af/at)
**Introduction**

The EKI-2525P is a 5-port unmanaged PoE (Power-over-Ethernet) Industrial Ethernet switch and EKI-2526PI is a 6-port unmanaged PoE Industrial Ethernet switch, they support 4 PoE ports which are classified as power source equipments (PSE). The PoE devices makes centralized power supply come true and provides up to 15.4 watts of power per port. Advantech EKI PoE devices can be used to power IEEE 802.3af compliant powered devices (PD) by Ethernet cable and eliminates the need for additional power wiring. Advantech EKI PoE devices come equipped with all the standard features of the EKI family. Furthermore, it offers a 48 VDC redundant power input design (EKI-2525P/EKI-2526PI), and is secured with a double protection mechanism; Power Polarity Reverse Protect and an Overload Current Resettable Fuse. Advantech EKI PoE devices come with compact metal housing that rates IP30 to help against from dusty industrial environments.

**Specifications**

**Communications**
- **Standard**: IEEE 802.3, 802.3u, 802.3x, 802.3af
- **LAN**: 10/100Base-T (X)
- **Transmission Distance**: Ethernet: Up to 100 m (EKI-2525P/EKI-2526PI)
- **Transmission Speed**: Up to 100 Mbps

**Fiber Optics (EKI-2525PI)**
- **Single-mode**: 1310 nm
- **Tx Power**: -8/-15 dBm
- **Rx Sensitivity**: -34 dBm
- **Parameters**: 9/125 um

**Interface**
- **Connectors**: PoE Ports: 4 (Ports 1 – 4), Ethernet x1 (EKI-2525P), Ethernet x2 (EKI-2526PI), 6-pin removable screw terminal (power & relay)
- **LED Indicators**: P1, P2, P-Fail, 10/100TX: Link/Activity, Duplex/Collision

**Power**
- **Power Consumption**: EKI-2525P: 65 W (Full load PoE), EKI-2526PI: 62.6 W (Full load PoE)
- **Power Input**: 48 VDC (EKI-2525P/EKI-2526PI), redundant dual inputs
- **Power Output**: 15.4 W at 48 V (per PoE port)
- **Fault Output**: 1 Relay Output

**Mechanism**
- **Dimensions (W x H x D)**: 37 x 140 x 95 mm (1.46” x 5.51” x 3.74”) (EKI-2525P), 48.6 x 140 x 95 mm (1.91” x 5.51” x 3.74”) (EKI-2526PI)
- **Enclosure**: IP30, Metal shell with solid mounting kits
- **Mounting**: DIN-rail, Wall

**Protection**
- **Reverse Polarity**: Present
- **Overload current**: Present

**Environment**
- **Operating Temperature**: -10 – 60°C (14 – 140°F) (EKI-2525P), -40 – 75°C (-40 – 167°F) (EKI-2526PI)
- **Storage Temperature**: -40 – 85°C (-40 – 185°F)
- **Operating Humidity**: 5 – 95% (non-condensing)
- **Storage Humidity**: 0 – 95% (non-condensing)
- **MTBF**: 440,132 hours

**Certification**
- **Safety**: UL 60950-1, CAN/CSA-C22.2 No.60950
- **EMI**: FCC Part 15 Subpart B Class A, EN 55022 Class A
- **EMS**: EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8
- **Shock**: IEC 60068-2-27
- **Freefall**: IEC 60068-2-32
- **Vibration**: IEC 60068-2-6

**Ordering Information**
- **EKI-2525P**: 5-port Switch with 4 port-PoE
- **EKI-2526PI**: 6-port Switch with 4 port-PoE
Introduction

The EKI-2525PA and EKI-2528PAI are a 5/8-port unmanaged PoE (Power-over-Ethernet) Industrial Ethernet switches that supports 4 PoE ports which are classified as power source equipment (PSE). These PoE devices make centralized power supply possible and provide up to 15.4 watts of power per port. Advantech EKI PoE devices can be used to power IEEE 802.3af compliant powered devices (PD) through Ethernet cable and eliminate the need for additional power wiring. Advantech EKI PoE devices come equipped with all the standard features of the EKI family. Furthermore, they offer a 24/48 VDC, redundant power input design and is secured with a double protection mechanism; Power Polarity Reverse Protect and an Overload Current Resettable Fuse. Advantech EKI PoE devices come with compact metal housing that rates IP30 to help against from dusty industrial environments.

Specifications

Communications
- **Standard**: IEEE 802.3, 802.3u, 802.3x, 802.3af
- **LAN**: 10/100Base-T (X)
- **Transmission Distance**: Up to 100 m
- **Transmission Speed**: Up to 100 Mbps

Interface
- **Connectors**: PoE Ports: 4 (Ports 1 – 4)
  - Ethernet ports: 1 (Port 5 – Port 8), EKI-2525PA
  - Ethernet ports: 4 (Port 5 – Port 8), EKI-2528PAI
- **6-pin removable screw terminal (power & relay)**
- **LED Indicators**: P1, P2, P-Fail
  - 10/100TX: Link/Activity, Duplex/Collision

Power
- **Power Consumption**: EKI-2525PA: 62.5 W (Full load PoE)
  - EKI-2528PAI: 65 W (Full load PoE)
- **Power Input**: 24/48 VDC, redundant dual inputs
- **Power Output**: 15.4 W at 48 V (per PoE port)
- **Fault Output**: 1 Relay Output

Mechanism
- **Dimensions (W x H x D)**: 48.6 x 140 x 95 mm (1.91" x 5.51" x 3.74")
- **Enclosure**: IP30, Metal shell with solid mounting kits
- **Mounting**: DIN-rail, Wall

Protection
- **Reverse Polarity**: Present
- **Overload current**: Present

Environment
- **Operating Temperature**: -10 – 60°C (14 – 140°F) (EKI-2525PA)
  - Wide temp. model: -40 – 75°C (-40 – 167°F) (EKI-2528PAI)
- **Storage Temperature**: -40 ~ 85°C (-40 ~ 185°F)
- **Storage Humidity**: 0 ~ 95% (non-condensing)
- **Operating Humidity**: 5 ~ 95% (non-condensing)
- **MTBF**: 440,132 hours

Certification
- **Safety**: UL508
- **EMI**: FCC Part 15 Subpart B Class A, EN 55022 Class A
- **EMS**: EN 61000-4-2
  - EN 61000-4-3
  - EN 61000-4-4
  - EN 61000-4-5
  - EN 61000-4-6
  - EN 61000-4-8
- **Shock**: IEC 60668-2-27
- **Freefall**: IEC 60668-2-32
- **Vibration**: IEC 60668-2-6

Ordering Information
- **EKI-2525PA**: 5-port Switch with 4 port-PoE and 24/48 VDC Power Input
- **EKI-2528PAI**: 8-port Switch with 4 port-PoE and 24/48 VDC Power Input (Wide Temp)
Introduction

With the technology of PoE (Power over Ethernet), we can transfer both data and electrical power to Ethernet-enabled devices using a standard CAT5 cable. EKI-2701HPI is compliant IEEE 802.3af/at and inject 30W for PD device. This product can operate in a wide range of Temp. between -40 to 75°C and support wide power input range between 24 to 48 VDC.

Specifications

Communications
- Standard: IEEE 802.3, 802.3u, 802.3x, 802.3af/at, 802.3ab
- LAN: 10/100/1000Base-T (X)
- Transmission Distance: Up to 100 m
- Transmission Speed: up to 1000 Mbps

Interface
- Connectors: PoE OUT: RJ45, DATA IN: RJ45, 6-pin removable screw terminal
- LED Indicators: PWR1, PWR2, PoE status, Link/Activity

Power
- Power Consumption: Max. 33.36 W @ 24 VDC (Full load PoE)
- Power Input: 24 – 48 VDC, redundant dual power inputs
- Power Output: 30 W @ 24 VDC

Mechanism
- Dimensions (W x H x D): 37 x 140 x 95 mm (1.46” x 5.51” x 3.74”)
- Enclosure: IP30, Metal shell with solid mounting kits
- Mounting: DIN-rail, Wall

Protection
- Reverse: Present
- Overload Current: Present

Environment
- Operating Temperature: -40 – 75°C (-40 – 167°F)
- Storage Temperature: -40 – 85°C (-40 – 185°F)
- Operating Humidity: 5 – 95% (non-condensing)
- Storage Humidity: 0 – 95% (non-condensing)
- MTBF: 1,419,817 hours

Certification
- Safety: UL508
- EMI: FCC Part 15 Subpart B Class A, EN 55022 Class A
- EMS: EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8
- Shock: IEC 60068-2-27
- Freefall: IEC 60068-2-32
- Vibration: IEC 60068-2-6

Ordering Information
- EKI-2701HPI: PoE+ Injector, support a full 30 W output
Introdction

The EKI-4654R supports 24 Fast Ethernet ports and 2 x 1000Base SFP slots for different SFP modules for various applications. EKI-4654R has long range voltage redundancy power input which provides convenient and uninterrupted power supply. EKI-4654R also supports many advanced network standards to optimize performance, ease maintenance issues and secure network safety.

Specifications

Communications
- **Standard**
  - IEEE 802.3, 802.3u, 802.3z, 802.1D, 802.1w, 802.1p, 802.1Q, 802.1X
- **LAN**
  - 10/100Base-T(X), Optional 1000Base-SX/LX/LHX/XD/ZX/EZX
- **Transmission Distance**
  - Ethernet: Up to 100m (4- wire Cat.5e)
  - SFP: Up to 110 km (depends on SFP)
- **Transmission Speed**
  - Ethernet: 10/100 Mbps Auto-Negotiation
  - Copper: 10/100 Mbps, Auto-Negotiation
  - Fiber: Up to 1000 Mbps

Interface
- **Connectors**
  - 24 x 10/100 Base-TX + 2 x SFP (mini-GBIC) ports
- **LED Indicators**
  - System: PWR, PWR1, PWR2, PWR3, R.M., P-Fail
  - 10/100 T(X): Link/Activity, Duplex/Collision
  - Gigabit Copper: Link/Activity, Speed
  - SFP: Link/Activity
- **Console**
  - RS-232 (RJ-45)

Network Management
- **Configuration**
  - Web browser, Telnet, Serial console, TFTP, SNMP v1/2c/3, Port Speed/Duplex Configuration
- **VLAN**
  - IEEE 802.1Q, GVRP, Port-based VLAN
- **Redundancy**
  - Advantech X-Ring Pro (Recovery time < 20 ms at 250 pcs full loading ring structure), Dual Homing, Dual Ring, Couple Ring, 802.1w/RSTP/STP
- **Security**
  - IP Access security, port security, DHCP Server, Port and IP Binding, 802.1X Port Access Control
- **Traffic Control**
  - IGMP Snooping/Query for multicast group management, Port Trunking, Static/802.3ad, LACP Rate limit and storm control, IEEE 802.1p CoS/TOS/ DSCP priority queuing, IEEE 802.3x flow control
- **Diagnostics**
  - Port Mirroring, Real-time traffic statistic, MAC Address Table, SNMP, Systool, E-Mail Alert, SNMP Trap, RMON

Mechanics
- **Enclosure**
  - IP20, Metal shell with solid mounting kits
- **Dimensions (W x H x D)**
  - 440 x 44 x 280 mm
- **Mounting**
  - 1U 19” Rack mount

Power
- **Power Consumption**
  - Max. 36 W
- **Power Input**
  - 2 x 100 – 240 Vac/100 – 240 Vdc (Redundancy)
- **Fault Output**
  - 1 Relay Output

Protection
- **Power Reverse**
  - Present
- **Overload**
  - 3.15 A @ 110 V (Fuse)

Environment
- **Operating Temperature**
  - -40 ~ 85°C (-40 ~ 185°F)
- **Storage Temperature**
  - -40 ~ 85°C (-40 ~ 185°F)
- **Operating Humidity**
  - 0 ~ 95% (non-condensing)
- **Storage Humidity**
  - 0 ~ 95% (non-condensing)
- **MTBF**
  - 284,009 hours

Certification
- **Safety**
  - UL 60950-1, CAN/CSA-C22.2 No.60950
- **EMC**
  - U.S.A.: FCC Part 15 CISPR 22
  - EU: EN55011, EN61000-6-4, EN55022 Class A, EN61000-3-2/3, EN55024, IEC61000-4-2/3/4/5/6/8/10, EN61000-6-2/4
  - IEC60968-2-27
  - IEC60968-2-32
  - IEC60968-2-6

Ordering Information
- **EKI-4654R**
  - 24+2 SFP Managed Redundant Ethernet Switch
EKI-7758F supports 8 Gigabit ports with 4 x Ethernet and 4 x SFP. To create reliability in your network, the EKI-7758F comes equipped with a proprietary redundant network protocol -- X-Ring that was developed by Advantech, which provides users with an easy way to establish a redundant Ethernet network with ultra high-speed recovery time less than 20 ms. Furthermore, EKI-7758F also supports many advanced network standards to optimize network performance, ease maintenance issues, and secure network safety.

**Features**

- All Gigabit Ethernet ports for 4 Copper and 4 SFP
- SFP sockets for easy and flexible fiber expansion
- Redundancy: Gigabit X-Ring Pro (ultra high-speed recovery time < 20 ms), RSTP/STP (802.1w/1D)
- Management: Web, Telnet, Serial Console, SNMP
- Control: VLAN/GVRP, QoS, IGMP Snooping/Query, LACP, Rate Limit
- Security: IP/MAC and port binding, DHCP Server, IP access list, 802.1X, SSL
- Diagnostic: Port statistic, Port Mirroring, RMON, Trap, Email Alert, Syslog
- Dual 12 – 48 Vdc power input and 1 relay output

**Introduction**

**Specifications**

**Communications**

- **Standard**
  - IEEE 802.3, 802.3u, 802.3z, 802.1Q, 802.1w, 802.1p, 802.10, 802.1X, 802.3ab
- **LAN**
  - 100Base-T (X), 10/1000Base-T, Optional 100Base-FX, 1000Base-SX/LX/LHX/XD/ZX/EZX
- **Transmission Distance**
  - Ethernet: Up to 100 m (4- wire Cat.5e, Cat.6 RJ45 cable suggested for Gigabit port)
  - SFP: Up to 110 km (depends on SFP)
- **Transmission Speed**
  - Gigabit Copper: 10/100/1000 Mbps, Auto-Negotiation
  - SFP: Up to 1000 Mbps

**Interface**

- **Connectors**
  - 4 x RJ45 (Ethernet)
  - 4 x SFP (mini-GBIC) ports
- **LED Indicators**
  - System: PWR, R.M., PWR1, PWR2, P-Fail
  - Gigabit Copper: Link/Activity, Speed
  - SFP: Link/Activity
- **Console**
  - RS-232 (RJ45)

**Mechanism**

- **Enclosure**
  - IP30, metal shell with solid mounting kits
- **Dimensions (W x H x D)**
  - 79 x 152 x 105 mm (3.11” x 5.98” x 4.13”)
- **Mounting**
  - DIN-rail, Wall

**Power**

- **Power Consumption**
  - Max. 17 W
- **Power Input**
  - 12 – 48 Vdc, redundant dual inputs
- **Fault Output**
  - 1 Relay Output

**Protection**

- **Power Reverse**
  - Present
- **Overload Current**
  - Present

**Environment**

- **Operating Temperature**
  - -10 – 60°C (14 – 140°F)
- **Storage Temperature**
  - -40 – 85°C (-40 – 185°F)
- **Operating Humidity**
  - 5 – 95% (non-condensing)
- **Storage Humidity**
  - 0 – 95% (non-condensing)
- **MTBF**
  - 289,777 hours

**Certification**

- **Safety**
  - UL 60950-1, CAN/CSA-C22.2 No.60950
- **EMI**
  - FCC Part 15 Subpart B Class A, EN 55022 Class A
- **EMS**
  - EN 61000-4-2
  - EN 61000-4-3
  - EN 61000-4-4
  - EN 61000-4-5
  - EN 61000-4-6
  - EN 61000-4-8
  - IEC 60668-2-27
  - IEC 60668-2-32
  - IEC 60668-2-6

**Ordering Information**

- **EKI-7758F**
  - 4G+4 SFP Managed Gigabit Ethernet Switch
Introduction

EKI-7656C supports 16 Fast Ethernet ports and 2 Gigabit combo ports. To create reliability in your network, the EKI-7656C comes equipped with a proprietary redundant network protocol -- X-Ring Pro that was developed by Advantech, which provides users with an easy way to establish a redundant Ethernet network with ultra high-speed recovery time less than 20 ms. Furthermore, EKI-7656C also supports many advanced network standards to optimize network performance, ease maintenance issues, and secure network safety.

Features

- 2 Gigabit Copper/SFP combo ports, plus 16 Fast Ethernet ports
- SFP socket for Easy and Flexible Fiber Expansion
- Redundancy: Gigabit X-Ring Pro (ultra high-speed recovery time < 20 ms), RSTP/STP (802.1w/1D)
- Management: Web, Telnet, Serial Console, SNMP
- Control: VLAN/GVRP, QoS, IGMP Snooping/Query, LACP, Rate Limit
- Security: IP/MAC and port binding, DHCP Server, IP address list, 802.1X, SSL, SNMPv3
- Diagnostic: Port Statistic, Port Mirroring, RMON, Trap, Email Alert, Syslog
- Dual 12 – 48 Vdc power inputs and 1 relay output
- Supports wide operating temperatures from -40 to 75°C (EKI-7656CI)

Specifications

Communications

- **Standard**
  - IEEE 802.3, 802.3u, 802.3x, 802.3z, 802.1Q, 802.1w, 802.1p, 802.1Q, 802.1X, 802.3ad, 802.3ab
- **LAN**
  - 10/100/1000Base-T(X), Optional 100Base-FX, 1000Base-SX/LX/LH/XD/ZX
- **Transmission Distance**
  - Ethernet: Up to 100 m (4- wire Cat.5e, Cat.6 RJ45 cable suggested for Gigabit port)
- **Transmission Speed**
  - Ethernet: 10/100/1000 Mbps Auto-Negotiation
  - Gigabit Copper: 10/100/1000 Mbps, Auto-Negotiation, SFP, Up to 1000 Mbps

Interface

- **Connectors**
  - 16 x RJ45 (Ethernet)
  - 2 x RJ45/SFP (mini-GBIC) combo ports
- **LED Indicators**
  - 6-pin removable screw terminal (Power&Relay)
- **Console**
  - System: PWR, PWR1, PWR2, R.M., P-Fail
  - Ethernet: Link/Activity, Duplex/Collision
  - Gigabit Copper: Link/Activity, Speed (1000 Mbps)
  - SFP: Link/Activity
- **Mechanism**
  - IP30, metal shell with solid mounting kits
- **Dimensions (W x H x D)**
  - 79 x 152 x 105 mm (3.11" x 5.98" x 4.13")
- **Mounting**
  - DIN-rail, Wall

Power

- **Power Consumption**
  - Max. 10.7 W
- **Power Input**
  - 12 – 48 Vdc, redundant dual inputs
- **Fault Output**
  - 1 Relay Output

Protection

- **Power Reverse**
  - Present
- **Overload Current**
  - Present

Environment

- **Operating Temperature**
  - -10 ~ 60°C (-14 ~ 140°F)
  - -40 ~ 75°C (-40 ~ 167°F) (EKI-7656CI)
- **Storage Temperature**
  - -40 ~ 85°C (-40 ~ 185°F)
- **Operating Humidity**
  - 5 ~ 95% (non-condensing)
- **Storage Humidity**
  - 0 ~ 95% (non-condensing)
- **MTBF**
  - 295,000 hours

Certification

- **Safety**
  - UL 60950-1, CAN/CSA-C22.2 No.60950
- **EMI**
  - FCC Part 15 Subpart B Class A, EN 55022 Class A
- **EMS**
  - EN 61000-4-2
  - EN 61000-4-4
  - EN 61000-4-4
  - EN 61000-4-5
  - EN 61000-4-6
  - EN 61000-4-8

Ordering Information

<table>
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<tr>
<th>Model</th>
<th>Description</th>
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<tbody>
<tr>
<td>EKI-7656C</td>
<td>16FE + 2G Combo Port Managed Ethernet Switch</td>
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<tr>
<td>EKI-7656CI</td>
<td>16FE + 2G Combo Port Managed Ethernet Switch w/ Wide Temp</td>
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</tbody>
</table>
Introduction
EKI-7659C support 8 Fast Ethernet ports and 2 Gigabit combo ports. To create reliability in your network, the EKI-7659C comes equipped with a proprietary redundant network protocol -- X-Ring Pro that was developed by Advantech, which provides users with an easy way to establish a redundant Ethernet network with ultra high-speed recovery time less than 20 ms. Furthermore, EKI-7659C also supports many advanced network standards to optimize network performance, ease maintenance issues, and secure network safety.

Specifications

Communications
- Standard: IEEE 802.3, 802.3u, 802.3z, 802.1D, 802.1w, 802.1p, 802.1Q, 802.1x, 802.3ad, 802.3ab
- LAN: 10/100/1000Base-T (X), Optional 100Base-FX, 1000Base-SX/LX/LHX/XD/XZ/EZX
- Transmission Distance: Ethernet: Up to 100 m (4-wire Cat.5e, Cat.6 RJ45 cable suggested for Gigabit port)
- Transmission Speed: Ethernet: 10/100 Mbps Auto-Negotiation
  - Gigabit Copper: 10/100/1000 Mbps, Auto-Negotiation
  - Gigabit Fiber: Up to 1000 Mbps

Interface
- Connectors: 8 x RJ45 (Ethernet)
  - System: PWR, PWR1, PWR2, R.M., P-Fail
  - Gigabit Copper: Link/Activity, Speed (1000 Mbps)
  - SFP: Link/Activity
- LED Indicators: RS-232 (RJ45)
- Console: 2 x RJ45/SFP (mini-GBIC) combo ports

Network Management
- Configuration: Web browser, Telnet, Serial console, TFTP, SNMPv1/2c/3, Port Speed/Duplex Configuration, IPv6
- VLAN: IEEE 802.1Q, VRRP, Port-based VLAN
- Redundancy: Advantech X-Ring Pro (Recovery time < 20 ms at 250 pcs full loading ring structure), Dual Homing, Dual Ring, Couple Ring, 802.1w/D RSTP/STP
- Security: IP Access security, port security, DHCP Server, Port and IP Binding, 802.1X Port Access Control, SSL
- Traffic Control: IGMP Snooping/Query for multicast group management, Port Trunking, Static/802.3ad, LACP Rate limit and storm control, IEEE 802.1p CoS/ToS/DSCP priority queuing, IEEE 802.3x flow control
- Diagnostics: Port Mirroring, Real-time traffic statistic, MAC Address Table, SNTP, Syslog, E-Mail Alert, SNMP Trap, RMON

Mechanism
- IP30, metal shell with solid mounting kits
- Dimensions (W x H x D): 79 x 152 x 105 mm (3.11” x 5.98” x 4.13”)
- Mounting: DIN-rail, Wall

Power
- Power Consumption: Max. 10.7 W
- Power Input: 12 ~ 48 Vdc, redundant dual inputs
- Fault Output: 1 Relay Output

Protection
- Power Reverse: Present
- Overload Current: Present

Environment
- Operating Temperature: -10 ~ 60°C (14 ~ 140°F) (EKI-7659CI)
- Storage Temperature: -40 ~ 85°C (-40 ~ 185°F)
- Operating Humidity: 5 ~ 95% (non-condensing)
- Storage Humidity: 0 ~ 95% (non-condensing)
- MTBF: 284,409 hours

Certification
- Safety: UL 60950-1, CAN/CSA-C22.2 No.60950
- EMI: FCC Part 15 Subpart B Class A, EN 55022 Class A
- EMS: EN 61000-4-2
  - EN 61000-4-4
  - EN 61000-4-5
  - EN 61000-4-6
  - EN 61000-4-8
- Shock: IEC 60068-2-27
- Freefall: IEC 60068-2-32
- Vibration: IEC 60068-2-6

Ordering Information
- EKI-7659C: 8FE + 2G Combo Port Managed Ethernet Switch
- EKI-7659CI: 8FE + 2G Combo Port Managed Ethernet Switch w/ Wide Temp

Features
- 2 Gigabit Copper/SFP combo ports, plus 8 Fast Ethernet ports
- SFP socket for Easy and Flexible Fiber Expansion
- Redundancy: Gigabit X-Ring Pro (ultra high-speed recovery time < 20 ms), RSTP/STP (802.1w/1D)
- Management: Web, Telnet, Serial Console, SNMP
- Control: VLAN/GVRP, QoS, IGMP Snooping/Query, LACP, Rate Limit
- Security: IP/MAC and port binding, DHCP Server, IP access list, 802.1X, SSL, SNMPv3
- Diagnostic: Port Statistic, Port Mirroring, RMON, Trap, Email Alert, Syslog
- Dual 12 ~ 48 Vdc power input and 1 relay output
- Supports wide operating temperatures from -40 to 75°C (EKI-7669CI)
Introduction

EKI-7657C/CI supports 7 Fast Ethernet ports and 3 Gigabit combo ports with 2 x Digital Input and Digital Output ports. To create reliability in your network, the EKI-7657C/CI comes equipped with a proprietary redundant network protocol — X-Ring Pro that was developed by Advantech, which provides users with an easy way to establish a redundant Ethernet network with ultra high-speed recovery time less than 20 ms. Furthermore, EKI-7657C/CI also supports many advanced network standards to optimize network performance, ease maintenance issues, and secure network safety.

Specifications

Communications
- **Standard**
  - IEEE 802.3, 802.3u, 802.3x, 802.1Q, 802.1Ad, 802.1w
- **LAN**
  - 10/100/100Base-T(X), Optional 100Base-FX
  - 1000Base-SX/SLX/HLX/XD/ZE/EX
- **Transmission Distance**
  - Ethernet: Up to 100 m (4- wire Cat.5e, Cat.6)
  - SFP: Up to 110 km (depends on SFP)
- **Transmission Speed**
  - Ethernet: 10/100/1000 Mbps, Auto-Negotiation
  - Gigabit Copper: 10/100/1000 Mbps, Auto-Negotiation
  - Gigabit Fiber: Up to 1000 Mbps

Interface
- **Connectors**
  - 7 x RJ45 (Ethernet)
  - 3 x RJ45/SFP (mini-GBIC) combo ports
  - 1 x 6-pin removable terminal (DI/DD)
- **LED Indicators**
  - System: PWR, PWR1, PWR2, R.M., P-Fail
  - 10/100T (X): Link/Activity, Duplex/Collision
  - Gigabit Copper: Link/Activity, Speed (1000 Mbps)
  - SFP: Link/Activity
- **Console**
  - RS-232 (RJ45)

Network Management
- **Configuration**
  - Web browser, Telnet, Serial console, TFTP, SNMPv1/v2c/v3, Port Speed/Duplex Configuration, IPv6
- **VLAN**
  - IEEE 802.1Q, GVRP, Port-based VLAN
- **Redundancy**
  - Advantech X-Ring Pro (ultra high-speed recovery time < 20 ms)
- **Security**
  - IP Access control, port security, DHCP server, Port and IP binding, 802.1X Port Access Control, SSL
  - IGMP Snooping/Query for multicast group management, Port Trunking, Static 802.3ad, LACP Rate limit and storm control, IEEE 802.1p CoS/TOS/DCSP priority queueing, IEEE 802.3x flow control
- **Traffic Control**
  - Port Mirroring, Real-time traffic statistic, MAC Address Table, SNMP, Syslog, Email Alert, SNMP Trap, RMON

Mechanism
- **Enclosure**
  - IP30, metal shell with solid mounting kits
- **Dimensions (W x H x D)**
  - 79 x 152 x 105 mm (3.11" x 5.98" x 4.13")
- **Mounting**
  - DIN-rail, Wall

Power
- **Power Consumption**
  - Max. 10.7 W
- **Power Input**
  - 12 – 48 Vdc, redundant dual inputs
- **Fault Output**
  - 1 Relay Output

Protection
- **Power Reverse**
  - Present
- **Overload Current**
  - Present

Environment
- **Operating Temperature**
  - -10 – 60°C (14 – 140°F)
  - -40 – 75°C (-40 – 167°F) (EKI-7657CI)
- **Storage Temperature**
  - -40 – 85°C (-40 – 185°F)
- **Operating Humidity**
  - 5 – 95% (non-condensing)
- **Storage Humidity**
  - 0 – 95% (non-condensing)
- **MTBF**
  - 284,409 hours

Certification
- **Safety**
  - UL 60950-1, CAN/CSA-C22.2 No.60950
- **EMI**
  - FCC Part 15 Subpart B Class A, EN 55022 Class A
- **EMS**
  - EN 61000-4-2
  - EN 61000-4-3
  - EN 61000-4-4
  - EN 61000-4-5
  - EN 61000-4-6
  - EN 61000-4-8
  - EN 61000-4-11
- **Shock**
  - IEC 6068-2-27
- **Freefall**
  - IEC 6068-2-32
- **Vibration**
  - IEC 6068-2-6

Ordering Information
- **EKI-7657C**
  - 7FE + 3G Combo Port Managed Ethernet Switch
  - w/2 x DIO/DI
- **EKI-7657CI**
  - 7FE + 3G Combo Port Managed Ethernet Switch
  - w/ 2 x DI/DO and Wide Temp

Features
- **3 Gigabit Copper/SFP combo ports, plus 7 Fast Ethernet ports**
- **2 Digital Inputs and 2 Digital Outputs for Events and Alarms in the Network**
- **SFP socket for Easy and Flexible Fiber Expansion**
- **Redundancy: Gigabit X-Ring Pro (ultra high-speed recovery time < 20 ms), RSTP/STP (802.1w/1D)**
- **Management: Web, Telnet, Serial Console, SNMP**
- **Control: VLAN/GVRP, CoS, IGMP Snooping/Query, LACP, Rate Limit**
- **Security: IP/ Mac and port binding, DHCP Server, IP access list, 802.1X, SSL, SNMPv3**
- **Diagnostic: Port Statistic, Port Mirroring, RMON, Trap, Email Alert, Syslog**
- **Dual 12 – 48 Vdc power input and 1 relay output**
- **Operating temperature from -40 to 75°C (EKI-7657CI)**
**EKI-7654C**

**4+2G Combo Port Gigabit Managed Redundant Industrial Ethernet Switch**

### Introduction

EKI-7654C supports 4 Fast Ethernet ports and 2 Gigabit combo ports. To create reliability in your network, the EKI-7654C comes equipped with a proprietary redundant network protocol -- X-Ring Pro that was developed by Advantech, which provides users with an easy way to establish a redundant Ethernet network with ultra high-speed recovery time less than 20 ms. Furthermore, EKI-7654C also supports many advanced network standards to optimize network performance, ease maintenance issues, and secure network safety.

### Specifications

#### Communications

- **Standard**: IEEE 802.3, 802.3u, 802.3z, 802.1D, 802.1w, 802.1p, 802.1Q, 802.1X, 802.3ad, 802.3ab
- **LAN**: 10/100Base-TX, 10/1000Base-T, Optional 100Base-FX, 1000Base-SX/LX/LHX/XD/ZX/EZX
- **Transmission Distance**: Ethernet: Up to 100 m (4-wire Cat.5e, Cat.6 RJ45 cable suggested for Gigabit port), SFP: Up to 110 km (depends on SFP)
- **Transmission Speed**: Ethernet: 10/100 Mbps Auto-Negotiation, Gigabit Copper: 10/100/1000 Mbps, Auto-Negotiation, Gigabit Fiber: Up to 1000 Mbps

#### Interface

- **Connectors**: 4 x RJ45 (Ethernet) 2 x RJ45/SFP (mini-GBIC) combo ports 6-pin removable screw terminal (Power & Relay)
- **LED Indicators**: System: PWR, PWR1, PWR2, R.M., P-Fail 10/100T (X): Link/Activity, Duplex/Collision Gigabit Copper: Link/Activity, Speed (1000 Mbps) SFP: Link/Activity
- **Console**: RS-232 (RJ45)

#### Network Management

- **Configuration**: Web browser, Telnet, Serial console, TFTP, SNMPv1/v2c/v3, Port Speed/Duplex Configuration, IPv6
- **VLAN**: IEEE 802.1Q, GVRP, Port-based VLAN
- **Redundancy**: Advantech X-Ring Pro (Recovery time < 20 ms at 250 pcs full loading ring structure), Dual Homing, Dual Ring, Couple Ring, 802.1w/D RSTP/STP
- **Security**: IP Access security, port security, DHCP Server, Port and IP Binding, 802.1X Port Access Control, SSL
- **Traffic Control**: IGMP Snooping/Query for multicast group management, Port Trunking, Static/802.3ad, LACP Rate limit and storm control, IEEE 802.1p QoS CoS/TOS/DSCP priority queuing, IEEE 802.3x flow control
- **Diagnostics**: Port Mirroring, Real-time traffic statistic, MAC Address Table, SNTP, Syslog, E-Mail Alert, SNMP Trap, RMON

#### Mechanism

- **Enclosure**: IP30, metal shell with solid mounting kits
- **Dimensions (W x H x D)**: 79 x 152 x 105 mm (3.11” x 5.98” x 4.13”)
- **Mounting**: DIN-rail, Wall
- **Power Consumption**: Max. 10.7 W
- **Power Input**: 12 ~ 48 Vdc, redundant dual inputs
- **Fault Output**: 1 Relay Output
- **Protection**: Power Reverse Present, Overload Current Present

#### Environment

- **Operating Temperature**: -10 ~ 60°C (14 ~ 140°F)
- **Storage Temperature**: -40 ~ 85°C (-40 ~ 185°F)
- **Operating Humidity**: 5 ~ 95% (non-condensing)
- **Storage Humidity**: 0 ~ 95% (non-condensing)
- **MTBF**: 284,409 hours

#### Certification

- **Safety**: UL 60950-1, CAN/CSA-C22.2 No.60950
- **EMI**: FCC Part 15 Subpart B Class A, EN 55022 Class A
- **EMS**: EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, IEC 60668-2-27
- **Shock**: IEC 60668-2-32
- **Freefall**: IEC 60668-2-6
- **Vibration**: IEC 60668-2-6

### Ordering Information

- **EKI-7654C**: 4FE + 2G Combo Port Managed Ethernet Switch
8+2 SC Type Fiber Optic Managed Industrial Ethernet Switch with Wide Temperature

4+2 SC Type Fiber Optic Managed Industrial Ethernet Switch with Wide Temperature

Features

- 2 x SC type fiber ports, plus 4 Fast Ethernet ports. (EKI-7554SI/MI)
- 2 x SC type fiber ports, plus 8 Fast Ethernet ports. (EKI-7559SI/MI)
- Redundancy: X-Ring Pro (high-speed recovery time < 20 ms), RSTP/STP (802.1w/1D)
- Management: Web, Telnet, Serial Console, SNMP
- Control: VLAN/GVRP, QoS, IGMP Snooping/Query, LACP, Rate Limit
- Security: IP/MAC port binding, DHCP Server, IP access list, 802.1X, SSL, SNMPv3
- Diagnostic: Port Statistic, Port Mirroring, RMON, Trap, Email Alert, Syslog
- Dual 12 – 48 Vdc power input and 1 relay output
- Supports wide operating temperature -40 ~ 75°C

Introduction

Both EKI-7554SI/MI and EKI-7559SI/MI support 2 SC type Fiber ports, EKI-7554SI/MI 4 Fast Ethernet ports and EKI-7559SI/MI can support up to 8 Fast Ethernet ports. To create reliability in your network, the EKI-7554SI/MI come equipped with a proprietary redundant network protocol – X-Ring Pro that was developed by Advantech, which provides users with an easy way to establish a redundant Ethernet network with ultra high-speed recovery time less than 20 ms. Furthermore, EKI-7554SI/MI also supports many advanced network standards to optimize network performance, ease maintenance issues, and secure network safety.

Specifications

Communications

- Standard: IEEE 802.3, 802.3u, 802.3ad, 802.1Q, 802.1w, 802.1p, 802.1Q, 802.1X
- LAN: 10/100/100Base-T X, 100Base-FX
- Transmission Distance: Ethernet: Up to 100 m
  - Multi-mode Fiber: Up to 2 km (EKI-7554SI)
  - Single-mode Fiber: Up to 30 km (EKI-7554SI)
- Transmission Speed: Up to 100 Mbps

Interface

- Connectors: 4 x RJ45 ports (EKI-7554SI/MI)
  - 8 x RJ45 ports (EKI-7559SI/MI)
- LED Indicators: System: PWR, PWR1, PWR2, R.M., P-Fail
- Console: RS-232 (RJ45)

Network Management

- Configuration: Web browser, Telnet, Serial console, TFTP, SNMPv1/v2c/v3, Port Speed/Duplex Configuration, IPv6
- VLAN: IEEE 802.1Q, GVRP, Port-based VLAN
- Redundancy: Advantech X-Ring Pro (Recovery time < 20 ms at 250 packets full loading ring structure)
- Security: Port Trunking, Static/802.3ad, LACP Rate limit and storm control, IEEE 802.1p QoS CoS/TOS, DSCP priority queuing, IEEE 802.3x flow control
- Traffic Control: IGMP Snooping/Query for multicast group
- Diagnostics: Port Mirroring, Real-time traffic statistic, MAC Address Table, SNTP, Syslog, Email Alert, SNMP Trap, RMON

Mechanism

- Enclosure: IP30, metal shell with solid mounting kits
- Dimensions (W x H x D): 79 x 152 x 105 mm (3.11” x 5.98” x 4.13”)
- Mounting: DIN-rail, Wall

Power

- Power Consumption: 7.7 W (EKI-7554SI/MI)
  - 8.4 W (EKI-7559SI/MI)
- Power Input: 12 – 48 Vdc, redundant dual inputs
- Fault Output: 1 Relay Output

Protection

- Power Reverse: Present
- Overload Current: Present

Environment

- Operating Temperature: -40 ~ 75°C (-40 ~ 167°F)
- Storage Temperature: -40 ~ 85°C (-40 ~ 185°F)
- Operating Humidity: 5 – 95% (non-condensing)
- Storage Humidity: 0 – 95% (non-condensing)
- MTBF: 262,230 hours (EKI-7554SI/MI)
  - 264,964 hours (EKI-7559SI/MI)

Certification

- Safety: UL 60950-1, CAN/CSA-C22.2 No.60950 Class I, Division 2 (EKI-7559MI/SI)
- EMI: FCC Part 15 Subpart B Class A, EN 55022 Class A
- EMS: EN 61000-4-2, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6
- Shock: IEC 68068-2-27
- Freesall: IEC 60068-2-32
- Vibration: IEC 60068-2-6

Ordering Information

- EKI-7554SI: 4FE + 2-port Single-mode Fiber Managed Ethernet Switch w/Wide Temp
- EKI-7554MI: 4FE + 2-port Multi-mode Fiber Managed Ethernet Switch w/Wide Temp
- EKI-7559SI: 8FE + 2-port Single-mode Fiber Managed Ethernet Switch w/Wide Temp
- EKI-7559MI: 8FE + 2-port Multi-mode Fiber Managed Ethernet Switch w/Wide Temp

Table, SNTP, Syslog, Email Alert, SNMP Trap, RMON
DSCP priority queuing, IEEE 802.3x flow control
IGMP Snooping/Query for multicast group
Port Trunking, Static/802.3ad, LACP Rate limit and storm control, IEEE 802.1p QoS CoS/TOS, DSCP priority queuing, IEEE 802.3x flow control
Port Mirroring, Real-time traffic statistic, MAC Address Table, SNTP, Syslog, Email Alert, SNMP Trap, RMON
- Power: 7.7 W (EKI-7554SI/MI)
  - 8.4 W (EKI-7559SI/MI)
- Power Input: 12 – 48 Vdc, redundant dual inputs
- Fault Output: 1 Relay Output

Protection

- Power Reverse: Present
- Overload Current: Present

Environment

- Operating Temperature: -40 ~ 75°C (-40 ~ 167°F)
- Storage Temperature: -40 ~ 85°C (-40 ~ 185°F)
- Operating Humidity: 5 – 95% (non-condensing)
- Storage Humidity: 0 – 95% (non-condensing)
- MTBF: 262,230 hours (EKI-7554SI/MI)
  - 264,964 hours (EKI-7559SI/MI)

Certification

- Safety: UL 60950-1, CAN/CSA-C22.2 No.60950 Class I, Division 2 (EKI-7559MI/SI)
- EMI: FCC Part 15 Subpart B Class A, EN 55022 Class A
- EMS: EN 61000-4-2, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6
- Shock: IEC 68068-2-27
- Freesall: IEC 60068-2-32
- Vibration: IEC 60068-2-6

Ordering Information

- EKI-7554SI: 4FE + 2-port Single-mode Fiber Managed Ethernet Switch w/Wide Temp
- EKI-7554MI: 4FE + 2-port Multi-mode Fiber Managed Ethernet Switch w/Wide Temp
- EKI-7559SI: 8FE + 2-port Single-mode Fiber Managed Ethernet Switch w/Wide Temp
- EKI-7559MI: 8FE + 2-port Multi-mode Fiber Managed Ethernet Switch w/Wide Temp
**Introduction**

EKI-2748FI and EKI-2748CI support Gigabit with Ethernet and SFP/Combo ports. To enhance reliability in industrial communication networks, they are equipped with Advantech-owned redundant network protocols – X-Ring Pro, which provides users with an easy way to establish a redundant Ethernet network with ultra-high-speed recovery time less than 20 ms. Furthermore, EKI-2748FI and EKI-2748CI also support advanced network standards to optimize network performance, reduce maintenance cost, and secure network safety.

**Specifications**

**Communications**
- **Standard**: IEEE 802.3, 802.3u, 802.3z, 802.1w, 802.1Q, 802.1p, 802.1d, 802.1X, 802.3ad, 802.3ab
- **LAN**: 100Base-T (X), 10/1000Base-T, Optional 100Base-FX, 1000Base-SX/LX/LHX/XD/ZX/EZX
- **Transmission Speed**: Gigabit Copper: 10/100/1000 Mbps, Auto-Negotiation SFP: Up to 1000 Mbps

**Interface**
- **Connectors**: RJ45 x 4; SFP Combo: 100/1000 SFP *4 (EKI-2748FI), RJ45 x 6; SFP Combo: RJ45 x 2; 100/1000 Mini-GBIC x 2 (EKI-2748CI)
- **LED Indicators**: System: PWR1, PWR2, P-Fail, R-Master Gigabit Copper: Link/Activity, Speed SFP: Link/Activity
- **Console**: RS-232 (RJ45)

**Network Management**
- **Configuration**: SNMP v1/v2c/v3, Web, Telnet, CLI, IPv6
- **VLAN**: IEEE 802.1Q, GVRP, Port-based VLAN
- **Redundancy**: Advantech X-Ring Pro (Recovery time < 20 ms at 250 pcs full loading ring structure), Dual Homing, Dual Ring, Couple Ring, IEEE 802.1w/d RSTP/STP
- **Security**: IP Access security, port security, DHCP Server, Port and IP Binding, 802.1x Port Access Control, SSL
- **Traffic Control**: IGMP Snooping/Query for multicast group management, Port Trunking, Static/802.3ad, LAPC Rate Limit and storm control, IEEE 802.1p QoS CoS/TOS/DSCP priority queuing, IEEE 802.3x flow control
- **Diagnostics**: Port Mirroring, Real-time traffic statistic, MAC Address Table, SNTP, Syslog, E-Mail Alert, SNMP Trap, RMON, DMI

**Mechanism**
- **Enclosure**: IP30, metal shell with solid mounting kits
- **Dimensions (W x H x D)**: 59.6 x 152 x 105 mm (2.35” x 5.98” x 4.13”)
- **Mounting**: DIN-rail, Wall

**Power**
- **Power Consumption**: Max. 12.21 W (EKI-2748FI), Max. 15.12 W (EKI-2748CI)
- **Power Input**: 12 ~ 48 VDC, 24 VAC (18 ~ 30 VAC)
- **Fault Output**: 1 Relay Output

**Protection**
- **Power Reverse**: Present
- **Overload Current**: Present

**Environment**
- **Operating Temperature**: -40 ~ 75°C (-40 ~ 167°F)
- **Storage Temperature**: -40 ~ 85°C (-40 ~ 185°F)
- **Operating Humidity**: 5 ~ 95% (non-condensing)
- **Storage Humidity**: 5 ~ 95% (non-condensing)
- **MTBF**: 248,507 hours (EKI-2748CI), 289,385 hours (EKI-2748FI)

**Certification**
- **Safety**: UL 508 Class I, Division 2
- **EMI**: FCC Part 15 Subpart B Class A, EN 55022 Class A
- **EMS**: EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6
- **Shock**: IEC 60068-2-27
- **Freefall**: IEC 60068-2-32
- **Vibration**: IEC 60068-2-6

**Ordering Information**
- **EKI-2748FI**: 4Gx+2SFP Managed Ethernet Switch w/ Wide Temp
- **EKI-2748CI**: 4Gx+4SFP Managed Ethernet Switch w/ Wide Temp
Introduction
EKI-2548I is a cost effective managed industrial Ethernet switch which supports Fast Ethernet. To enhance reliability in industrial communication network, it is equipped with Advantech owned redundant network protocol -- X-Ring Pro, which provides users with an easy way to establish a redundant Ethernet network with ultra high-speed recovery time less than 20 ms. Furthermore, EKI-2548I also supports advanced network standards to optimize network performance, reduce maintenance cost, and secure network safety.

Specifications

Communications
- Standard: IEEE 802.3, 802.3u, 802.3z, 802.1d, 802.1w, 802.1p, 802.1Q
- LAN: 10/100Base-TX
- Transmission Distance: Ethernet: Up to 100 m
- Transmission Speed: Up to 100 Mbps

Interface
- Connectors: 8 x RJ45 ports
- LED Indicators: System: PWR1, PWR2, P-Fail, R-Master
- Ethernet port: Link/Activity, Speed
- Fiber port: Link/Activity
- Reset Button: Reset and restore to factory default

Network Management
- Configuration: SNMP v1/v2c, Web
- VLAN: IEEE 802.1Q, Port based VLAN
- Redundancy: Advantech X-Ring Pro, Dual Homing, Couple Ring, IEEE 802.1d STP, and IEEE 802.1w RSTP
- Security: IP access security
- Traffic Control: IGMP Snooping/Query for multicast group management, rate limit and storm control
- Diagnostics: Port Mirroring, SNTP, Syslog, SNMP Trap, Email Alert

Mechanism
- Enclosure: IP30, metal shell with solid mounting kits
- Dimensions (W x H x D): 59.6 x 152 x 105 mm (2.35” x 5.98” x 4.13”)
- Mounting: DIN-rail, Wall

Power
- Power Consumption: Max. 7.6 W
- Power Input: 12 ~ 48 Vdc, 24 Vdc (18 ~ 30 Vdc)
- Fault Output: 1 Relay Output, 1A @ 24 Vdc

Features
- All Fast Ethernet ports for 8 Copper (EKI-2548I)
- Redundancy: Advantech X-Ring Pro, Dual Homing, Couple Ring, and RSTP/STP (802.1w/1d)
- Configuration: SNMP v1/v2c, Web
- Backplane (Switching Fabric): 1.6 Gbps
- Dual 12 ~ 48 Vdc power input and 1 relay output
- Supports wide operating temperature -40 ~ 75°C
- DIP switch for configure port alarm and enable Ring master

Protection
- Power Reverse: Present
- Overload Current: Present

Environment
- Operating Temperature: -40 ~ 75°C (-40 ~ 167°F)
- Storage Temperature: -40 ~ 85°C (-40 ~ 185°F)
- Operating Humidity: 5 ~ 95% (non-condensing)
- Storage Humidity: 5 ~ 95% (non-condensing)
- MTBF: 215,266 hours

Certification
- Safety: UL 508 Class 1, Division 2
- EMI: FCC Part 15 Subpart B Class A, EN 55022 Class A
- EMS: EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8

Ordering Information
- EKI-2548I: 8Tx Managed Ethernet Switch with Wide Temperature

Ordering Information
- EKI-2548I: 8Tx Managed Ethernet Switch with Wide Temperature
Industrial Ethernet Solutions

**Features**
- Backplane (Switching Fabric): 4.8 Gbps
- Provides 8K MAC address
- Supports 100 – 240 VAC/ VDC power input and power relay alarm
- Front panel LEDs simplify the monitoring and management
- Rear-end wiring with LED indicator (EKI-4524RI)
- Wide operating temperature -40 ~ 75°C
- 1U 19” Rack mount design

**Introduction**
EKI-4524I/4524RI are designed for power automation systems and supports 24 Fast Ethernet ports and 2 x 100Base SFP slots for different SFP modules in any application. EKI-4524I/4524RI has wide range voltage power input which provides convenient and uninterrupted power supply. EKI-4524RI has two sides (Front and Rear) LED indicator to show the link status conveniently. It also provides relay output for an event alarm. Quick notification and fast response time can shorten service procedures and reduce data loss in the field.

**Specifications**

**Communications**
- **Standard**: IEEE 802.3, 802.3u, 802.3x
- **LAN**: 10/100Base-TX
- **Transmission Distance**: Ethernet: Up to 100 m
- **Transmission Speed**: Up to 100 Mbps

**Interface**
- **Connectors**: 24 x RJ45 (Ethernet)
- **LED Indicators**: System: PWR
- **Copper**: Link/Activity, Speed
- **SFP**: Link/Activity

**Mechanism**
- **Enclosure**: IP30, metal shell with solid mounting kits
- **Dimensions (W x H x D)**:
  - EKI-4524RI: 440 x 44 x 224 mm (17.31” x 1.73” x 8.81”)
  - EKI-4524I: 440 x 44 x 280 mm (17.31” x 1.73” x 11.02”)
- **Mounting**: 1U 19” Rack mount

**Power**
- **Power Input**: 100 – 240 VAC 50/60 Hz
  - 100 – 240 VDC
- **Fault Output**: 1 Relay Output (20 mA @ 250 VDC)

**Protection**
- **Power Reverse**: Present

**Environment**
- **Operating Temperature**: -40 ~ 75°C (-40 ~ 167°F)
- **Storage Temperature**: -40 ~ 85°C (-40 ~ 185°F)
- **Operating Humidity**: 5 ~ 95% (non-condensing)
- **Storage Humidity**: 5 ~ 95% (non-condensing)

**Certification**
- **EMI**: FCC Part 15 Subpart B Class A
- **EMS**: EN 61000-4-2, Level 4
  - EN 61000-4-3, Level 3
  - EN 61000-4-4, Level 4
  - EN 61000-4-5, Level 3
  - EN 61000-4-6, Level 3
  - EN 61000-4-8, Level 4
  - EN 61000-4-11
- **Shock**: IEC 60068-2-27
- **Freefall**: IEC 60068-2-32
- **Vibration**: IEC 60068-2-6

**Ordering Information**
- **EKI-4524I**: 24FE Ethernet Switch w/ Wide Temp
- **EKI-4524RI**: 24FE+2 FX-SFP Port Ethernet Switch w/ Wide Temp
### Introduction

Aside from 2 Gigabit fiber optic/copper combo ports, the EKI-7626C/CI comes equipped with 16 x 10/100Base-T (X) fast Ethernet ports. Traditional RJ45 ports can be used for up-linking wide-band paths in short distances (< 100 m), or the appropriate replaceable SFP module can be used for the application of wideband uploading and long distance transmissions to flexibly fit field requests. The long MTBF (Mean Time Between Failures) ensures low operation and maintenance cost. EKI-7626C/CI includes a switch controller that can automatically sense transmission speeds (10/100 Mbps) The RJ45 interface can also be auto-detected, so MDI or MDI-X is automatically selected and a cross-over cable is not required. All Ethernet ports have memory buffers that support the store-and-forward mechanism, which assures that data can be transmitted properly.

### Specifications

#### Communications
- **Standard**: IEEE 802.3, 802.3ab, 802.3u, 802.3z
- **LAN**: 100Base-TX, 10/100Base-T, Optional 100Base-FX, 1000Base-SX/LX/LH/XD/ZX/EZX
- **Transmission Distance**: Ethernet: Up to 100 m (4- wire Cat.5e, Cat.6 RJ45 cable suggested for Gigabit port), Gigabit Fiber: Up to 110 km (depending on SFP)
- **Transmission Speed**: Ethernet: 10/100 Mbps Auto-Negotiation, Gigabit Copper: 10/100/1000 Mbps, Auto-Negotiation, SFP: Up to 1000 Mbps

#### Interface
- **Connectors**: 16 x RJ45 (Ethnet) with 2 x RJ45/SFP (mini-GBIC) combo ports (EKI-7626C/CI), 6-pin removable screw terminal (Power & Relay)
- **LED Indicators**: System: PWR1, PWR2, P-Fail, Gigabit Copper: Link/Activity, Speed (1000 Mbps), Gigabit SFP: Link/Activity

#### Power
- **Power Consumption**: Max. 6.5 W
- **Power Input**: 12 – 48 VDC, redundant dual inputs
- **Fault Output**: 1 Relay Output

#### Mechanism
- **Dimensions (W x H x D)**: 79 x 152 x 105 mm (3.11” x 5.98” x 4.13”)
- **Enclosure**: IP30, Metal shell with solid mounting kits
- **Mounting**: DIN-rail, Wall

### Features

- Provides 2 Gigabit Copper/SFP combo port plus 16 Fast Ethernet ports (EKI-7626C/CI)
- SFP socket for Easy and Flexible Fiber Expansion
- Supports Auto Negotiation and Auto MDI/MDI-X
- Provides flexible mounting: DIN-rail and Wall mount
- Supports Dual 12 – 48 VDC power input and 1 relay output
- Supports wide operating temperatures from -40 to 75°C (EKI-7626CI)

### Protection

- **Reverse Polarity**: Present
- **Overload Current**: Present

### Environment

- **Operating Temperature**: -10 ~ 60°C (14 ~ 140°F)
- **Wide Temp. Model**: -40 ~ 75°C (-40 ~ 167°F)
- **Storage Temperature**: -40 ~ 85°C (-40 ~ 185°F)
- **Operating Humidity**: 5 ~ 95% (non-condensing)
- **Storage Humidity**: 0 ~ 95% (non-condensing)
- **MTBF**: 295,000 hours

### Certification

- **Safety**: UL 60950-1, CAN/CSA-C22.2 No.60950
- **EMI**: FCC Part 15 Subpart B Class A, EN 55022 Class A
- **EMS**: EN 61000-4-4
- **Shock**: IEC 60668-2-27
- **Freefall**: IEC 60668-2-32
- **Vibration**: IEC 60668-2-6

### Ordering Information

- **EKI-7626C**: 16+2G Combo Port Unmanaged Ethernet Switch
- **EKI-7626CI**: 16+2G Combo Port Unmanaged Ethernet Switch w/ Wide Temp
Industrial Ethernet Solutions

Features

- Provides 2 Gigabit Copper/SFP combo port plus 8 Fast Ethernet ports (EKI-7629C/CI)
- SFP socket for Easy and Flexible Fiber Expansion
- Supports Auto Negotiation and Auto MDI/MDI-X
- Provides flexible mounting: DIN-rail and Wall mount
- Supports Dual 12 – 48 Vdc power input and 1 relay output
- Supports wide operating temperatures from -40 to 75°C (EKI-7629C/CI)

Introduction

Aside from 2 Gigabit fiber optic/copper combo ports, the EKI-7629C/CI comes equipped with 8 x 10/100Base-TX fast Ethernet ports. Traditional RJ45 ports can be used for up-linking wide-band paths in short distances (< 100 m), or the appropriate replaceable SFP module can be used for the application of wideband uploading and long distance transmissions to flexibly fit field requests. The long MTBF (Mean Time Between Failures) ensures low operation and maintenance cost. EKI-7629C/CI includes a switch controller that can automatically sense transmission speeds (10/100 Mbps). The RJ45 interface can also be auto-detected, so MDI or MDI-X is automatically selected and a cross-over cable is not required. All Ethernet ports have memory buffers that support the store-and-forward mechanism, which assures that data can be transmitted properly.

Specifications

Communications

- **Standard**: IEEE 802.3, 802.3ab, 802.3u, 802.3x, 802.3z
- **LAN**: 10Base-T, 10/100Base-T, Optional 100Base-FX, 1000Base-SX/LX/MD/ED/ZX/E2X
- **Transmission Distance**: Ethernet: Up to 100 m (4-wire Cat.5e, Cat.6 RJ45 cable suggested for Gigabit port)
- **Transmission Speed**: Ethernet: 10/100 Mbps Auto-Negotiation
  - Gigabit Fiber: Up to 110 km (depending on SFP)
  - Gigabit Copper: 10/100/1000 Mbps, Auto-Negotiation
  - SFP: Up to 1000 Mbps

Interface

- **Connectors**: 8 x RJ45 (Ethernet) with 2 x RJ45/SFP (mini-GBIC) combo ports (EKI-7629C/CI)
- **LED Indicators**: System: PWR1, PWR2, P-Fail
  - Gigabit Copper: Link/Activity, Speed (1000 Mbps)
  - Gigabit SFP: Link/Activity

Power

- **Power Consumption**: Max. 6.5 W
- **Power Input**: 12 – 48 Vdc, redundant dual inputs
- **Fault Output**: 1 Relay Output

Mechanism

- **Dimensions (W x H x D)**: 79 x 152 x 105 mm (3.11” x 5.98” x 4.13”)
- **Enclosure**: IP30, Metal shell with solid mounting kits
- **Mounting**: DIN-rail, Wall

Protection

- **Reverse Polarity**: Present
- **Overload Current**: Present

Environment

- **Operating Temperature**: -10 – 60°C (14 – 140°F)
- **Wide Temp. Model**: -40 – 75°C (-40 – 167°F)
- **Storage Temperature**: -40 – 85°C (-40 – 185°F)
- **Operating Humidity**: 5 – 95% (non-condensing)
- **Storage Humidity**: 0 – 95% (non-condensing)
- **MTBF**: 295,000 hours

Certification

- **Safety**: UL 60950-1, CAN/CSA-C22.2 No.60950
- **EMI**: FCC Part 15 Subpart B Class A, EN 55022 Class A
- **EMS**: EN 61000-4-2
  - EN 61000-4-3
  - EN 61000-4-4
  - EN 61000-4-5
  - EN 61000-4-6
  - EN 61000-4-8
- **Shock**: IEC 60068-2-27
- **Freefall**: IEC 60068-2-32
- **Vibration**: IEC 60068-2-6

Ordering Information

- **EKI-7629C**: 8+2G Combo Port Unmanaged Ethernet Switch
- **EKI-7629CI**: 8+2G Combo Port Unmanaged Ethernet Switch w/ Wide Temp
EKI-7526I
16-port Unmanaged Industrial Ethernet Switch with Wide Temperature Range

Introduction
EKI-7526I are cost effective unmanaged industrial Ethernet switches which support 16 x 10/100Base-TX fast Ethernet ports. The long MTBF (Mean Time Between Failures) ensures low operation and maintenance costs. All Ethernet ports have memory buffers that support the store-and-forward mechanism, which assures that data can be transmitted properly. EKI-7526I supports advanced network standards to optimize network performance, reduce maintenance costs, and secure network safety.

Specifications

Communications
- **Standard**: IEEE 802.3, 802.3u, 802.3x
- **LAN**: 10/100Base-T (X), Optional 100Base-FX
- **Transmission Distance**: Ethernet: Up to 100 m (4- wire Cat.5e), Multi-mode Fiber: Up to 2 km
- **Transmission Speed**: Ethernet: 10/100 Mbps Auto-Negotiation

Interface
- **Connectors**: 16 x RJ45 (Ethernet), 6-pin removable screw terminal (Power & Relay)
- **LED Indicators**: System: PWR1, PWR2, P-Fail, 10/100T (X): Link/Activity, Duplex/Collision

Power
- **Power Consumption**: Max. 8.9 W
- **Power Input**: 12 – 48 Vdc, redundant dual inputs
- **Fault Output**: 1 Relay Output

Mechanism
- **Dimensions (W x H x D)**: 79 x 152 x 105 mm (3.11” x 5.98” x 4.13”)
- **Enclosure**: IP30, Metal shell with solid mounting kits
- **Mounting**: DIN-rail, Wall

Protection
- **Reverse Polarity**: Present
- **Overload Current**: Present

Environmental
- **Operating Temperature**: -40 – 75°C (-40 – 167°F)
- **Storage Temperature**: -40 – 85°C (-40 – 185°F)
- **Operating Humidity**: 5 – 95% (non-condensing)
- **Storage Humidity**: 0 – 95% (non-condensing)
- **MTBF**: 237,130 hours

Certification
- **Safety**: UL 508
- **EMI**: FCC Part 15 Subpart B Class A, EN 55022 Class A
- **EMS**: EN 61000-4-2, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8
- **Shock**: IEC 60068-2-27
- **Freefall**: IEC 60068-2-32
- **Vibration**: IEC 60068-2-6

Ordering Information
- **EKI-7526I**: 16FE Unmanaged Ethernet Switch w/Wide Temp.
EKI-7529MI/ST

**8+2 Multi-Mode Fiber Optic Industrial Unmanaged Ethernet Switch with Wide Temperature**

**Features**
- Provides ST type fiber optic ports plus 8 Fast Ethernet ports
- Supports Auto Negotiation and Auto MDI/MDI-X
- Provides flexible mounting: DIN-rail and Wall mount
- Supports Dual 12 ~ 48 VDC power input and 1 relay output
- Enable or disable broadcast storm protection through a simple dip switch
- Supports wide operating temperatures -40 ~ 75°C

**Introduction**

EKI-7529MI/ST come equipped with 8 x 10/100Base-TX fast Ethernet ports. Traditional ST fiber optic ports can be used for uplinking and long distance transmissions to flexibly fit field requests. The RJ45 interface can also be auto-detected, so MDI or MDI-X is automatically selected and a cross-over cable is not required. All Ethernet ports have memory buffers that support the store-and-forward mechanism, which assures that data can be transmitted properly. Furthermore, the power line of EKI-7529MI/ST supports Surge and EFT protection which secure equipment against unregulated voltage and make systems safer and more reliable.

**Specifications**

**Communications**
- **Standard**: IEEE 802.3, 802.3u, 802.3x
- **LAN**: 10/100Base-T (X), Optional 100Base-FX
- **Transmission Distance**:
  - Ethernet: Up to 100 m
  - Multi-mode Fiber: Up to 2 km

**Transmission Speed**
- **Ethernet**:
  - Port 1-2: 10 Mbps
  - Port 3-8: 10/100 Mbps Auto-Negotiation

**Interface**
- **Connectors**:
  - 8 x RJ45 (Ethernet) with 2 x ST-type fiber optic connectors
  - 6-pin removable screw terminal (Power & Relay)
- **LED Indicators**:
  - System: PWR1, PWR2, P-Fail
  - 10/100T (X): Link/Activity, Duplex/Collision
- **Dip Switch**:
  - DIP1 (Port 1 and 2): ON: 10M Full Force/ OFF: 10M Full Auto-Negotiation
  - DIP2: ON: Broadcast Storm filter enable/ OFF: Broadcast Storm filter Disable

**Power**
- **Power Consumption**: Max. 6.7W
- **Power Input**: 12 ~ 46 VDC, redundant dual inputs
- **Fault Output**: 1 Relay Output

**Mechanism**
- **Dimensions (W x H x D)**: 79 x 152 x 105 mm (3.11" x 5.98" x 4.13")
- **Enclosure**: IP30, Metal shell with solid mounting kits
- **Mounting**: DIN-rail, Wall

**Protection**
- **Reverse Polarity**: Present

**Environment**
- **Operating Temperature**: -40 ~ 75°C (-40 ~ 167°F)
- **Storage Temperature**: -40 ~ 85°C (-40 ~ 185°F)
- **Operating Humidity**: 5 ~ 95% (non-condensing)
- **Storage Humidity**: 0 ~ 95% (non-condensing)
- **MTBF**: 289,329 hours

**Certification**
- **Safety**: UL 508
- **EMI**: FCC Part 15 Subpart B Class A, EN 55022 Class A
- **EMS**: EN 61000-4-2
  - EN 61000-4-3
  - EN 61000-4-4
  - EN 61000-4-5
  - EN 61000-4-6
  - EN 61000-4-8
- **Shock**: IEC 60068-2-27
- **Freefall**: IEC 60068-2-32
- **Vibration**: IEC 60068-2-6

**Ordering Information**
- **EKI-7529MI/ST**: 8 + 2-port Multi-mode Fiber Ethernet Switch w/ ST and Wide Temp

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RoHS COMPLIANT 2002/95/EC
Features
- Provides 5/8 Fast Ethernet ports with Auto MDI/MDI-X
- Supports 10/100 Mbps Auto-Negotiation
- Provides broadcast storm protection
- Provides compact size with DIN-rail/Wall mount, and IP30 metal mechanism
- Supports redundant 12 – 48 Vdc power input and P-Fail relay
- Supports wide operating temperatures from -40 to 75°C (EKI-2525/EKI-2528I)

Introduction
The EKI-2525/2528 supports a Fast Ethernet solution. The power is a +12 – 48 Vdc redundant input design, and is secured with a double protection mechanism: Power Polarity Reverse Protect and an Overload Current Resettable Fuse. The former tolerates reverse power wiring while the later secures the system from overload currents. As the power supply turns normal, EKI-2525/2528 will automatically get back to work. Each port of EKI-2525/2528 has 2 LED’s to show the link status transmission speed and collision status. It also provides a relay output for an event alarm. In the event of a power failure, the built-in LED will activate the alarm to notify administrators. Engineers can simply verify the hardware status by checking the LED, and have troubleshooting easy and quick. EKI-2525/2528 comes with compact metal housing that rates IP30 to help against from dusty industrial environments.

Specifications

Communications
- Standard: IEEE 802.3, 802.3u, 802.3x
- LAN: 10/100Base-T (X)
- Transmission Distance: Up to 100 m
- Transmission Speed: Up to 100 Mbps

Interface
- Connectors: 8 x RJ45 (EKI-2528) or 5 x RJ45 (EKI-2525), 6-pin removable screw terminal (power & relay)
- LED Indicators: P1, P2, P-Fail, 10/100T (X): Link/Activity, Duplex/Collision

Power
- Power Consumption: EKI-2528: Max. 5 W, EKI-2525: Max. 3 W
- Power Input: 12 – 48 Vdc, redundant dual inputs
- Fault Output: 1 Relay Output

Mechanism
- Dimensions (W x H x D): 37 x 140 x 95 mm (1.46” x 5.51” x 3.74”)
- Enclosure: IP30, Metal shell with solid mounting kits
- Mounting: DIN-rail, Wall

Protection
- Reverse Polarity: Present
- Overload current: Present

Environment
- Operating Temperature: -10 – 60°C (14 – 140°F)
- Storage Temperature: -40 – 85°C (-40 – 187°F), (EKI-2525I and EKI-2528I)
- Operating Humidity: 5 – 95% (non-condensing)
- Storage Humidity: 5 – 95% (non-condensing)
- MTBF: 689,000 hours (EKI-2528), 412,590 hours (EKI-2525)

Certification
- Safety: UL 60950-1, CAN/CSA-C22.2 No. 60950 Class I, Division 2
- EMI: FCC Part 15 Subpart B Class A, EN 55022 Class A
- EMS: EN 61000-4-2, EN 55022-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8
- Shock: IEC 60668-2-27
- Freefall: IEC 60668-2-32
- Vibration: IEC 60668-2-6

Ordering Information
- EKI-2525: 5-port Ethernet Switch
- EKI-2525I: 5-port Ethernet Switch w/ Wide Temp
- EKI-2528: 8-port Ethernet Switch
- EKI-2528I: 8-port Ethernet Switch w/ Wide Temp
Introduction

EKI-2525M/2526M/2526S are industrial-grade Ethernet switches that enable you to expand your industrial network fast and cost-effectively. The EKI-2525M/2526M/2526S have four 10/100 Mbps Ethernet ports, and additionally the EKI-2525M/2526M provides one or two multi-mode fiber-optic ports, while the EKI-2526S provides two single-mode fiber-optic ports. Using fiber-optics, you can prevent noise from interfering with your system and supports high-speed (100 Mbps) and high-distance (up to 30 km) transmissions.

EKI-2525M/2526M/2526S have industrial-grade designs, assuring high reliability and stability in harsh environments, making it a robust bridge between enterprise fiber-optic backbones and Ethernet devices. EKI-2525M/2526M/2526S includes a switch controller that can automatically sense transmission speeds. The RJ45 interface can also be autodetected, so MDI or MDI-X is automatically selected and a crossover cable is not required. All the Ethernet ports have memory buffers that support the store and forward mechanism, assuring all data is transmitted properly.

Specifications

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<tr>
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<td>Tx Power: -14/-20 dBm</td>
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<td>Rx Sensitivity: -31 dBm</td>
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<td>EKI-2526M: Max. 6.41 W</td>
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<td>EKI-2526S: Max. 6.45 W</td>
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<td>12 – 48 Vdc, redundant dual inputs</td>
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<tr>
<td>Fault Output</td>
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<tr>
<td>1 Relay Output</td>
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</tbody>
</table>

Feature

- Provides 4 x 10/100 Mbps Ethernet ports with RJ45 connector
- Provides 1 x 100 Mbps Multi-mode SC type fiber optic port (EKI-2525M)
- Provides 2 x 100 Mbps Multi-mode SC type fiber optic port (EKI-2526M)
- Provides 2 x 100 Mbps Single-mode SC type fiber optic port (EKI-2526S)
- Supports full/half duplex flow control
- Supports MDI/MDI-X auto crossover
- Provides broadcast storm protection
- Provides redundant 12 – 48 Vdc power input
- Provides flexible mounting: DIN-rail and Wall mount

Mechanism

- Dimensions (W x H x D) 37 x 140 x 95 mm (1.46” x 5.51” x 3.74”)
- Enclosure IP30, Metal shell with solid mounting kits
- Mounting DIN-rail, Wall

Protection

- Reverse Polarity Present
- Overload Current Present

Environment

- Operating Temperature -10 – 60°C (14 – 140°F)
- Storage Temperature -40 – 85°C (-40 – 185°F)
- Operating Humidity 5 – 95% (non-condensing)
- Storage Humidity 0 – 95% (non-condensing)
- MTBF 610,453 hours

Certification

- Safety UL 60950-1, CAN/CSA-C22.2 No.60950, Class I, Division 2
- EMI FCC Part 15 Subpart B Class A, EN 55022 Class A
- EMI EN 61000-4-2, EN 61000-4-3, EN 61000-4-4
- EMI EN 61000-4-5, EN 61000-4-6, EN 61000-4-8
- Shock IEC60068-2-27
- Freefall IEC60068-2-32
- Vibration IEC60068-2-6

Ordering Information

- EKI-2525M 5-port Ethernet Switch w/ 1-port 100FX Multi-mode
- EKI-2526M 4-port Ethernet Switch w/ 2-port 100FX Multi-mode
- EKI-2526S 4-port Ethernet Switch w/ 2-port 100FX Single-mode
- EKI-2526S-ST 4-port Ethernet Switch w/ 2-port 100FX Single-mode (ST type connector)
- EKI-2526M-ST 4-port Ethernet Switch w/ 2-port 100FX Multi-mode (ST type connector)
**Introduction**

The EKI-3725/3728 are a new generation products with green Ethernet design. They feature green solutions that automatically adjust power consumption by detecting the link status and cable length. Designed with 1/2 "VIP" ports to get optimal bandwidth for media traffics through VIP ports users can experience better performance of multimedia streaming preferred through prioritized bandwidth setting. The devices come with compact metal and plastic housing that is IP40 rated to protect against dusty industrial environments. The wide power input power (8.4 to 52.4 VDC) is dedicated to operate in areas of unstable power and rugged environments. It also provides an event alarm and in the event of a power failure and connection loop, the integrated LED will activate the alarm to notify administrators.

**Specifications**

**Communications**
- **Standard**
  - IEEE 802.3, 802.3u, 802.3z, 802.1p, 802.3az, 802.3ab
- **LAN**
  - 1/10/100/1000Base-T(X)
- **Transmission Distance**
  - Up to 100 m
- **Transmission Speed**
  - Up to 1000 Mbps

**Interface**
- **Connectors**
  - 8 x RJ45 (EKI-3728) or 5 x RJ45 (EKI-3725)
  - 6-pin removable screw terminal (power & relay)
- **LED Indicators**
  - P1, P2, P-Fail, Loop detection
  - 10/100T (X): Link/Activity, Speed

**Switch Properties**
- **MAC Table Size**
  - 2K (EKI-3725)
  - 8K (EKI-3728)
- **Packet Buffer Size**
  - 1Mbit
- **Switch Fabric Speed**
  - 10Gbps (EKI-3725)
  - 16Gbps (EKI-3728)
- **Jumbo Frame**
  - 9,216 byte

**Power**
- **Power Consumption**
  - EKI-3725: Max. 2.7 W
  - EKI-3728: Max. 4.5W
- **Power Input**
  - 12 – 48 VDC, redundant dual inputs
- **Fault Output**
  - 1 Relay Output

**Mechanism**
- **Dimensions (W x H x D)**
  - 28.5 x 120 x 85.3 mm (1.02’ x 4.73’ x 3.35’') - EKI-3725
  - 44.5 x 120 x 85.3 mm (1.75’ x 4.73’ x 3.35’’) - EKI-3728
- **Enclosure**
  - IP40, plastic and metal shell with solid mounting kits
- **Mounting**
  - DIN-rail, Wall

**Protection**
- **Reverse Polarity**
  - Present
- **Overload current**
  - Present

**Environment**
- **Operating Temperature**
  - -10 – 60°C (14 – 140°F)
- **Storage Temperature**
  - -40 – 85°C (-40 – 185°F)
- **Operating Humidity**
  - 5 – 95% (non-condensing)
- **Storage Humidity**
  - 0 – 95% (non-condensing)
- **MTBF**
  - 1,478,582 hours (EKI-3728)
  - 1,545,555 hours (EKI-3725)

**Certification**
- **Safety**
  - UL 60950-1, CAN/CSA-C22.2 No.60950
- **EMI**
  - FCC Part 15 Subpart B Class A, EN 55011/55022 Class A
- **EMS**
  - EN 61000-4-2 (Level 3)
  - EN 61000-4-3 (Level 3)
  - EN 61000-4-4 (Level 4)
  - EN 61000-4-5 (Level 3)
  - EN 61000-4-6 (Level 3)
  - EN 61000-4-8 (Level 4)

**Ordering Information**
- **EKI-3725**
  - 5-port Gigabit Unmanaged Industrial Ethernet Switch
- **EKI-3728**
  - 8-port Gigabit Unmanaged Industrial Ethernet Switch
5 Port Mounting Dimensions

8 Port Mounting Dimensions
Introduction

The EKI-3525/3528 are a new generation products with green Ethernet design. They feature green solutions that automatically adjust power consumption by detecting the link status and cable length. Designed with 1/2 "VIP" ports to get optimal bandwidth for media traffics through VIP ports users can experience better performance of multimedia streaming preferred through prioritized bandwidth setting. The devices come with compact metal and plastic housing that is IP40 rated to protect against dusty industrial environments. The wide power input power (8.4 to 52.4 VDC) is dedicated to operate in areas of unstable power and rugged environments. It also provides an event alarm and in the event of a power failure and connection loop, the integrated LED will activate the alarm to notify administrators.

Specifications

Communications
- **Standard**: IEEE 802.3, 802.3u, 802.3x, 802.1p, 802.3az
- **LAN**: 10/100Base-T (X)
- **Transmission Distance**: Up to 100 m
- **Transmission Speed**: Up to 100 Mbps

Interface
- **Connectors**: 8 x RJ45 (EKI-3528) or 5 x RJ45 (EKI-3525)
- **LED Indicators**: P1, P2, P-Fail, Loop detection

Switch Properties
- **MAC Table Size**: 2K
- **Packet Buffer Size**: 384K bit (EKI-3525), 768K bit (EKI-3528)
- **Switch Fabric Speed**: 1.0Gbps (EKI-3525), 1.6Gbps (EKI-3528)

Power
- **Power Consumption**: EKI-3525: Max. 2.4 W
- **Fault Output**: 1 Relay Output

Mechanism
- **Dimensions (W x H x D)**: 28.5 x 120 x 85.3 mm (1.02" x 4.73" x 3.35") - EKI-3525
- **Enclosure**: IP40, plastic and metal shell with solid mounting kits
- **Mounting**: DIN-rail, Wall

Protection
- **Reverse Polarity**: Present
- **Overload current**: Present

Environment
- **Operating Temperature**: -10 – 60°C (14 – 140°F)
- **Storage Temperature**: -40 – 85°C (-40 – 185°F)
- **Operating Humidity**: 5 – 95% (non-condensing)
- **Storage Humidity**: 0 – 95% (non-condensing)
- **MTBF**: 1,516,457 hours (EKI-3528), 1,567,102 hours (EKI-3525)

Certification
- **Safety**: UL 60950-1, CAN/CSA-C22.2 No.60950
- **EMI**: FCC Part 15 Subpart B Class A, EN 55011/55022 Class A
- **EMS**: EN 61000-4-2 (Level 3), EN 61000-4-3 (Level 3), EN 61000-4-4 (Level 4), EN 61000-4-5 (Level 3), EN 61000-4-6 (Level 3), EN 61000-4-8 (Level 4)

Ordering Information
- **EKI-3525**: 5-port 10/100Mbps Unmanaged Industrial Ethernet Switch
- **EKI-3528**: 8-port 10/100Mbps Unmanaged Industrial Ethernet Switch

Features
- Supports IEEE 802.3az, Energy Efficient Ethernet standard
  - Automatically powers down ports that have no link
  - Budgets power output for different Ethernet cable length
- Support IEEE 802.1p QoS - VIP port setting
  - Ensures time sensitive data gets delivered efficiently, even during bursts of high data traffic
  - Ensures video streaming through switch with high priority.
- Supports redundant 12 – 48 VDC power input and P-Fail relay
- In Loop detection
**Industrial Ethernet Solutions**

**Features**

- Supports IEEE 802.3az, Energy Efficient Ethernet standard
- Automatically powers down ports that have no link
- Budgets power output for different Ethernet cable length
- Support IEEE 802.1p CoS-VIP port setting
- Ensures time sensitive data gets delivered efficiently, even during bursts of high data traffic
- Ensures video streaming through switch with high priority.
- Supports redundant 12 – 48 VDC power input and P-Fail relay
- In Loop detection
- Provides 1 x 100 Mbps Multi/Single-mode SC type fiber optic port (EKI-3525M/S)
- Provides broadcast storm protection
- Provides flexible mounting: DIN-rail and flat wall mounting

**Introduction**

The EKI-3525M/S are a new generation of products and have four 10/100 Mbps Ethernet ports, and one multi-mode or single-mode fiber-optic port. Using fiber-optics, you can prevent noise from interfering with your system and support high-speed (100 Mbps) and high-distance (up to 30 km) transmissions. A low power Ethernet design automatically adjusts power consumption by detecting the link status and cable length. Designed with one "VIP" port to get optimal bandwidth for media traffic through the VIP port users can experience better multimedia streaming performance through the prioritized bandwidth setting. The devices come with compact metal and plastic housing that is IP40 rated to protect against dusty industrial environments. The wide power input power (8.4 to 52.8 VDC) is dedicated to operating in areas of unstable power and rugged environments. It also provides an event alarm and in the event of a power failure and connection loop, the integrated LED will activate the alarm to notify administrators.

**Specifications**

**Communications**

- **Standard**: IEEE 802.3, 802.3u, 802.3x, 802.1p, 802.3az
- **LAN**: 10/100Base-T(X), 100Base-FX
- **Transmission Distance**
  - Multi-mode Fiber: Up to 2 km (EKI-3525M)
  - Single-mode Fiber: Up to 30 km (EKI-3525S)
- **Transmission Speed**: Up to 100 Mbps
- **Optical Fiber**
  - Multi-Mode (EKI-3525M)
    - Wavelength: 1310 nm
    - Tx Power: -14/-20 dBm
    - Rx Sensitivity: -31 dBm
    - Parameters: 50/125 μm, 62.5/125 μm
  - Single-Mode (EKI-3525S)
    - Wavelength: 1310 nm
    - Tx Power: -8/-15 dBm
    - Rx Sensitivity: -34 dBm
    - Parameters: 9/125 μm

**Interface**

- **Connectors**: 4 x RJ45 ports, 1 x SC type fiber connector
- **LED Indicators**: P1, P2, P-Fail, Loop detection, 10/100T (X): Link/Activity, Speed

**Switch Properties**

- **MAC Table Size**: 2K
- **Packet Buffer Size**: 384K bit
- **Switch Fabric Speed**: 1.0Gbps

**Power**

- **Power Consumption**: Max. 2.1 W
- **Power Input**: 12 – 48 VDC (8.4 – 52.8 VDC) redundant dual inputs
- **Fault Output**: 1 Relay Output

**Mechanism**

- **Dimensions (W x H x D)**: 28.5 x 120 x 85.3 mm (1.02” x 4.73” x 3.35”)
- **Enclosure**: IP40, plastic and metal shell with solid mounting kits
- **Mounting**: DIN-rail, Wall

**Protection**

- **Reverse Polarity**: Present
- **Overload current**: Present

**Environment**

- **Operating Temperature**: -10 ~ 60°C (-14 ~ 140°F)
- **Storage Temperature**: -40 ~ 85°C (-40 ~ 185°F)
- **Operating Humidity**: 5 ~ 95% (non-condensing)
- **Storage Humidity**: 0 ~ 95% (non-condensing)
- **MTBF**: 833,835 hours

**Certification**

- **Safety**: UL 60950-1, CAN/CSA-C22.2 No.60950
- **EMI**: FCC Part 15 Subpart B Class A, EN 55011/55022 Class A
- **EMS**: EN 61000-4-2 (Level 3), EN 61000-4-3 (Level 3), EN 61000-4-4 (Level 3), EN 61000-4-5 (Level 3), EN 61000-4-6 (Level 3), EN 61000-4-8 (Level 4)

**Ordering Information**

- **EKI-3525M**: 4-port 10/100Mbps + 1-port 100FX Multi-mode Unmanaged Industrial Ethernet Switch
- **EKI-3525S**: 4-port 10/100Mbps + 1-port 100FX Single-mode Unmanaged Industrial Ethernet Switch
**Introduction**

EKI-2541M/2541S is designed to convert Ethernet networks to fiber networks by transparently converting Ethernet signals to optic signals. The advantages of fiber optics are wide bandwidth, EMI immunity and long-distance transmissions. Therefore, EKI-2541M/2541S is an ideal solution for “fiber to building” applications at central offices or local sites. EKI-2541M/2541S supports MDI/MDI-X auto detection, so you don’t need to use crossover wires. Furthermore, the EKI-2541M/2541S can work normally from -10 to 60°C and accepts a wide voltage range from 12 ~ 48 VDC. Besides, it also provides 3,000 VDC surge (EFT) protection against over-voltage, so it is suitable for harsh operating environments.

**Specifications**

**Communications**
- **Standard**: IEEE 802.3, 802.3u, 802.3x
- **Transmission Distance**
  - Ethernet: Up to 100 m
  - Fiber: Multi-mode: up to 2 km
  - Fiber: Single-mode: up to 30 km
- **Transmission Speed**
  - **Optical Fiber**
    - Multi-mode (EKI-2541M/MI)
      - Wavelength: 1310 nm
      - Tx Power: -14/-20 dBm
      - Rx Sensitivity: -31 dBm
      - Parameters: 50/125 um, 62.5/125 um
    - Single-mode (EKI-2541S/SI)
      - Wavelength: 1310 nm
      - Tx Power: -8/-15 dBm
      - Rx Sensitivity: -34 dBm
      - Parameters: 9/125 um

**Interface**
- **Connectors**: 1 x RJ45
- **LED Indicators**: P1, P2, P-Fail
- **DIP Switch**: Ethernet: 10/100 m, LNK/ACT

**Power**
- **Power Consumption**: Max. 2.7 W
- **Power Input**: 12 ~ 48 VDC, redundant dual inputs

**Mechanism**
- **Dimensions (W x H x D)**: 37 x 140 x 95 mm (1.46" x 5.51" x 3.74")
- **Mounting**: DIN-rail, Wall
- **Enclosure**: IP30, Metal shell with solid mounting

**Features**
- Provides 1 x 10/100 Mbps Ethernet port with RJ45 connector
- Provides 1 x 100 Mbps Multi-mode/Single-mode SC type fiber port
- Provides internal jumper for Link Fault Pass-through (LFP) setting
- Supports full/half duplex flow control
- Supports store and forward transmission
- Supports Auto-Negotiation
- Supports MDI/MDI-X auto crossover
- Supports redundant 12-48 VDC power input
- Provides flexible mounting: DIN-rail and Panel mount
- Supports wide operating temperatures from -40 to 75°C (EKI-2541M/MI/SI)

**Protection**
- **Power Reverse**: Present
- **Overload current**: Present

**Environment**
- **Operating Temperature**: -10 ~ 60°C (14 ~ 140°F)
- **Wide Temp. model**: -40 ~ 75°C (-40 ~ 167°F)
- **Storage Temperature**: -40 ~ 85°C (-40 ~ 185°F)
- **Operating Humidity**: 5 ~ 95% (non-condensing)
- **Storage Humidity**: 0 ~ 95% (non-condensing)
- **MTBF**: 577,175 hours

**Certification**
- **Safety**: UL 60950-1, CAN/CSA-C22.2 No.60950
- **EMI**: FCC Part 15 Subpart B Class A, EN 55022 Class A
- **EMS**: EN 61000-4-2, 3, 4, 5, 6, 8
- **Shock**: IEC 60608-2-27
- **Freefall**: IEC 60608-2-32
- **Vibration**: IEC 60608-2-6

**Ordering Information**
- **EKI-2541M**: Ethernet to Multi-mode Fiber Converter
- **EKI-2541MI**: Ethernet to Multi-mode Fiber Converter w/ Wide Temp.
- **EKI-2541S**: Ethernet to Single-mode Fiber Converter
- **EKI-2541SI**: Ethernet to Single-mode Fiber Converter w/ Wide Temp.
Introduction

EKI-3541M/3541S is designed to convert Ethernet networks to fiber networks by transparently converting Ethernet signals to optic signals. The advantages of fiber optics are wide bandwidth, EMI immunity and long-distance transmissions. Therefore, EKI-3541M/3541S is an ideal solution for “fiber to building” applications at central offices or local sites. EKI-3541M/3541S supports MDI/MDIX auto detection, so you don’t need to use crossover wires. Furthermore, the EKI-3541M/3541S can work normally from -10 to 60°C and accepts a wide voltage range from 8.4 – 52.4 VDC. Besides, it also provides 4,000 VDC surge (EFT) protection against over-voltage, so it is suitable for harsh operating environments.

Link Fault Pass-Through (LFP)

EKI-3541M/3541S is an enhanced Ethernet to fiber-optic converter. Aside from its standard features, the versatile EKI-3541M/3541S also has the LFP (Link Fault Pass-through) feature. When one side of the link fails, the other side continues transmitting packets, and waiting for a response that never arrives from the disconnected side. Use the internal jumper to enable the LFP function, then EKI-3541M/3541S will force the link to shut down as soon as noticed that the other link has failed, giving the application software a chance to react to the situation.

Specifications

Communications

- Standard
  - IEEE 802.3, 802.3u, 802.3x
- LAN
  - 10/100Base-T (X), 100Base-FX
- Transmission Distance
  - Ethernet: Up to 100 m
  - Fiber: Multi-mode: up to 2 km
  - Fiber: Single-mode: up to 30 km
- Transmission Speed
  - Up to 100 Mbps
- Optical Fiber
  - Multi-mode (EKI-3541M)
    - Wavelength: 1310 nm
    - Tx Power: -14/-20 dBm
    - Rx Sensitivity: -31 dBm
    - Parameters: 50/125 um, 62.5/125 um
  - Single-mode (EKI-3541S)
    - Wavelength: 1310 nm
    - Tx Power: -8/-15 dBm
    - Rx Sensitivity: -34 dBm
    - Parameters: 9/125 um

Interface

- Connectors
  - 1 x RJ45
  - 1 x SC type fiber connector
  - 6-pin removable screw terminal (power)
- LED Indicators
  - P1, P2, P-Fail
  - LFP, LINK/ACT (FX), FDX/COL (FX)
  - TX(X): Speed and HDX/FDX, LFP
- DIP Switch
  - T(X): Auto-Negotiation

Power

- Power Consumption
  - Max. 2.4 W
- Power Input
  - 12 – 48 VDC, redundant dual inputs

Protection

- Power Reverse
  - Present
- Overload current
  - Present

Environment

- Operating Temperature
  - -10 – 60°C (-14 – 140°F)
- Storage Temperature
  - -40 – 85°C (-40 – 185°F)
- Operating Humidity
  - 5 – 95% (non-condensing)
- Storage Humidity
  - 0 – 95% (non-condensing)
- MTBF
  - 597,488 hours (EKI-3541M and EKI-3541S)

Certification

- Safety
  - UL 60950-1, CAN/CSA-C22.2 No.60950
- EMI
  - FCC Part 15 Subpart B Class A, EN 55011/55022 Class A
- EMS
  - EN 61000-4-2 (Level 3)
  - EN 61000-4-3 (Level 3)
  - EN 61000-4-4 (Level 3)
  - EN 61000-4-6 (Level 3)
  - EN 61000-4-8 (Level 4)
  - TÜV, EEC 66068-2-27
  - IEC 66068-2-32

Mechanism

- Dimensions (W x H x D)
  - 28.5 x 120 x 85.3 mm (1.02” x 4.73” x 3.35”)
- Mounting
  - DIN-rail, Wall
- Enclosure
  - IP40, plastic and metal shell with solid mounting kits

Ordering Information

- EKI-3541M
  - 10/100T (X) to Multi-Mode SC Type Fiber Optic Industrial Media Converter
- EKI-3541S
  - 10/100T (X) to Single-Mode SC Type Fiber Optic Industrial Media Converter
Introduction

EKI-2741 is designed to convert Gigabit Ethernet networks to Gigabit fiber networks by transparently converting Ethernet signals to optic signals. Therefore, EKI-2741 is an ideal solution for “fiber to building” applications at central offices or local sites. EKI-2741 supports MDI/MDI-X auto detection, so you don’t need to use crossover wires. Furthermore, the EKI-2741 accepts a wide voltage range from 12 ~ 48 VDC. Besides, it also provides 3,000 VDC surge (EFT) protection against over-voltage, so it is suitable for harsh operating environments.

EKI-2741 is an enhanced gigabit Ethernet to fiber optic converter. Aside from its standard features, the versatile EKI-2741 also has the LFP (Link Fault Pass-through) feature. When one side of the link fails, the other side continues transmitting packets, and waiting for a response that never arrives from the disconnected side. EKI-2741 will force the link to shut down as soon as noticed that the other link has failed, giving the application software a chance to react to the situation.

Specifications

Communications

- **Standard**: IEEE 802.3, 802.3u, 802.3ab, 802.3z
- **LAN**: 10/100/1000Base-T (X), 1000Base-SX or 1000Base-LX
- **Transmission Distance**
  - Fiber: Up to 100 m (Multi-mode: Up to 550 m, Single-mode: Up to 10 km (EKI-2741LX) or up to 110 km (EKI-2741F))
  - SFP: Up to 110 km (EKI-2741F)
- **Transmission Speed**: Up to 1000 Mbps
- **Optical Fiber**
  - Multi-mode (EKI-2741SX)
    - Wavelength: 850 nm
    - Tx Power: -4/-9.5 dBm
    - Rx Sensitivity: -18 dBm
    - Parameters: 50/125 um, 62.5/125 um
  - Single-mode (EKI-2741LX/LXI)
    - Wavelength: 1310 nm
    - Tx Power: -3/-9.5 dBm
    - Rx Sensitivity: -20 dBm
    - Parameters: 9/125 um

Interface

- **Connectors**: 1 x RJ45, 1 x SC type fiber connector (EKI-2741SX/LX) or 1 x SFP type fiber connector (EKI-2741F), 6-pin removable screw terminal (power & relay)
- **LED Indicators**: P1, P2, P-Fail, Fiber: LNK/ACT, Ethernet: 1000ML, LNK/ACT
- **DIP Switch**: Port Alarm, LFP

Power

- **Power Consumption**
  - EKI-2741F: 5.28 W
  - EKI-2741SX: 5.18 W
  - EKI-2741LX: 5.30 W
- **Power Input**: 12 ~ 48 VDC, redundant dual inputs

Features

- Provides 1 x 1000 Mbps Ethernet port with RJ45 connector
- Provides 1 x 1000 Mbps fiber port with SC or SFP (mini-GBIC) type connector for 1000Base-SX/LX device
- Provides DIP switch for full/half duplex setting
- Supports MDI/MDI-X auto crossover
- Supports Auto-Negotiation
- Supports redundant 12 ~ 48 VDC power input
- Provides Link Fault Pass-through (LFP)
- Jumbo Frame: 9K bytes

Mechanism

- Dimensions (W x H x D): 37 x 140 x 95 mm (1.46" x 5.51" x 3.74")
- Enclosure: IP30, Metal shell with solid mounting kits
- Mounting: DIN-rail, Wall

Protection

- Power Reverse: Present
- Overload current: Present

Environment

- Operating Temperature: -10 ~ 70°C (14 ~ 140°F)
- Wide Tem Model: -40 ~ 85°C (-40 ~ 185°F)
- Storage Temperature: -40 ~ 85°C (-40 ~ 185°F)
- Operating Humidity: 5 ~ 95% (non-condensing)
- Storage Humidity: 5 ~ 95% (non-condensing)
- MTBF: 515,600 hours (EKI-2741F), 525,300 hours (EKI-2741SX/LX)
- Present

Certification

- Safety: UL 60950-1, CAN/CSA-C22.2 No.60950
- EMI: FCC Part 15 Subpart B Class A, EN 55022 Class A
- EMS: EN 61000-4-2, EN 61000-4-3, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8
- Shock: IEC 60068-2-37
- Freefall: IEC 60068-2-32
- Vibration: IEC 60068-2-6

Ordering Information

- EKI-2741F: Giga Ethernet to SFP Fiber Converter
- EKI-2741SX: Giga Ethernet to 1000Base-SX Fiber Converter
- EKI-2741LX: Giga Ethernet to 1000Base-LX Fiber Converter
Introduction
Advantech’s Small Form-factor Pluggable (SFP) transceiver family is available with a variety of different types, allowing users to select the appropriate transceiver for each link to provide the required optical reach over the available optical fiber type. Advantech’s SFP transceiver immovable lock design can fix SFP module into the switch firmly. Besides Advantech’s SFP transceiver’s compact design provides high port density and compliant with Fast Ethernet and IEEE 802.3z Gigabit Ethernet Standards. Advantech’s SFP transceivers ensure your networks operate with maximum performance, reliability, and flexibility.

Specifications

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<td>-34dBm (Min)</td>
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<td>LX (20 km)</td>
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<td>0 to 70° C (-40 to 85° F)</td>
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<td>3.3V</td>
<td>0 to 70° C</td>
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Ordering Information

- SFP-FXM/LC 100Base-FX Multi-mode SFP module
- SFP-FXS/LC-30E 100Base-FX Single-mode SFP module
- SFP-GSX/LC 1000Base-SX Multi-mode SFP module
- SFP-GLX/LC-10E 1000Base-LX Single-mode SFP module (10 km)
- SFP-GLX/LC-20E 1000Base-LX Single-mode SFP module (20 km)
- SFP-GLX/LC-40E 1000Base-LX Single-mode SFP module (40 km)
- SFP-GXD/LC-50E 1000Base-XD Single-mode SFP module (50 km)
- SFP-GZX/LC-70E 1000Base-ZX Single-mode SFP module (70 km)
- SFP-GTX/RJ45 1000Base RJ45 SFP module
# Serial Device Servers and IP Gateways

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<td>1-port Modbus Gateway with Integrated Ethernet Cascading</td>
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To view all of Advantech’s Serial Device Servers, please visit www.advantech.com/products.
**Cellular IP Gateways (iGateways)**

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<td>GSM/GPRS</td>
<td>GSM/GPRS</td>
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<td>850/900/1800/1900 MHz</td>
<td>850/900/1800/1900 MHz</td>
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<td>50 bps ~ 921.6 kbps</td>
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<td>Virtual COM, Reverse Virtual COM, TCP Server, TCP Client, UDP, SMS Tunnel Mode</td>
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<td>1-port RS-232/422/485 to 802.11b/g/n WLAN Serial Device Server</td>
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<td>No. of Serial Port</td>
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<td>DB9 Male</td>
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<td>Baud Rate</td>
<td>50 bps ~ 921.6 kbps, any baud rate setting</td>
<td>50 bps ~ 921.6 kbps, any baud rate setting</td>
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<tr>
<td>Operating Mode</td>
<td>Virtual COM, TCP Server, TCP Client, UDP, Peer to Peer, AT Command</td>
<td>Virtual COM, TCP Server, TCP Client, UDP, Peer to Peer, AT Command</td>
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<tr>
<td>Certification</td>
<td>CE, FCC, KCC, TELEC</td>
<td>Class I Division 2 Groups A B C D T4, UL/cUL 60950-1, FCC, CE</td>
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<tr>
<td>Page</td>
<td>11-8</td>
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Dual Ethernet Serial Device Servers

<table>
<thead>
<tr>
<th>Model Name</th>
<th>EKI-1521</th>
<th>EKI-1522</th>
<th>EKI-1524</th>
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<tr>
<td>No. of Ethernet Port</td>
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<td>No. of Serial Port</td>
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<tr>
<td>Ethernet Interface</td>
<td>10/100 Mbps</td>
<td>10/100 Mbps</td>
<td>10/100 Mbps</td>
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<tr>
<td>Connector</td>
<td>RJ45</td>
<td>RJ45</td>
<td>RJ45</td>
<td>RJ45</td>
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<tr>
<td>Baud Rate</td>
<td>50 bps ~ 921.6 kbps, any baud rate setting</td>
<td>50 bps ~ 921.6 kbps, any baud rate setting</td>
<td>50 bps ~ 921.6 kbps, any baud rate setting</td>
<td>50 bps ~ 921.6 kbps, any baud rate setting</td>
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<tr>
<td>Operating Mode</td>
<td>Virtual COM, TCP Server, TCP Client, UDP, Peer to Peer, AT Command, and RFC2217 modes</td>
<td>Virtual COM, TCP Server, TCP Client, UDP, Peer to Peer, AT Command, and RFC2217 modes</td>
<td>Virtual COM, TCP Server, TCP Client, UDP, Peer to Peer, AT Command, and RFC2217 modes</td>
<td>Virtual COM, TCP Server, TCP Client, UDP, Peer to Peer, AT Command, and RFC2217 modes</td>
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<td>Class I Division 2 Groups ABCD T4, UL/cUL 60950-1, FCC, CE</td>
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Single Ethernet Serial Device Server

<table>
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<tr>
<th>Model Name</th>
<th>ADAM-4571</th>
<th>ADAM-4571L</th>
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<td>Connector</td>
<td>RJ45</td>
<td>RJ45</td>
<td>RJ45</td>
<td>RJ45</td>
</tr>
<tr>
<td>Baud Rate</td>
<td>50 bps ~ 921.6 kbps, any baud rate setting</td>
<td>50 bps ~ 921.6 kbps, any baud rate setting</td>
<td>50 bps ~ 921.6 kbps, any baud rate setting</td>
<td>50 bps ~ 921.6 kbps, any baud rate setting</td>
</tr>
<tr>
<td>Operating Mode</td>
<td>Virtual COM, TCP Server, TCP Client, UDP, Peer to Peer, AT Command modes</td>
<td>Virtual COM, TCP Server, TCP Client, UDP, Peer to Peer, AT Command modes</td>
<td>Virtual COM, TCP Server, TCP Client, UDP, Peer to Peer, AT Command modes</td>
<td>Virtual COM, TCP Server, TCP Client, UDP, Peer to Peer, AT Command modes</td>
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Accessories

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<tr>
<th>Model Name</th>
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<th>OPT1J</th>
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<tr>
<td>Length</td>
<td>-</td>
<td>1 m</td>
<td>30 cm</td>
<td>1 m</td>
<td>30 cm</td>
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<td>Communication Interfaces</td>
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<tr>
<td>Connector Type</td>
<td>DB9 Female</td>
<td>RJ48</td>
<td>RJ48</td>
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<td>Qty</td>
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<td>Where Used</td>
<td>EKI-1000 Series, ADAM-4570 Series</td>
<td>ADAM-4570, ADAM-4570L</td>
<td>EKI-1526, EKI-1528</td>
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Selection Guide
## Modbus Gateways

<table>
<thead>
<tr>
<th>Model Name</th>
<th>EKI-1221</th>
<th>EKI-1222</th>
<th>EKI-1224</th>
<th>EKI-1221D</th>
<th>EKI-1222D</th>
<th>ADAM-4572</th>
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<tbody>
<tr>
<td>Product Description</td>
<td>1-port Modbus Gateway</td>
<td>2-port Modbus Gateway</td>
<td>4-port Modbus Gateway</td>
<td>1-port Modbus Gateway with Integrated Cascading Ethernet</td>
<td>2-port Modbus Gateway with Integrated Cascading Ethernet</td>
<td>1-port Modbus Gateway</td>
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<td>No. of Ethernet Ports</td>
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<td>4</td>
<td>1</td>
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<td>1</td>
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<td>2</td>
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<td>2</td>
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<td>Ethernet Interface</td>
<td>10/100 Mbps</td>
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</tr>
<tr>
<td>Serial Type</td>
<td>RS-232/422/485, software selectable</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Connector Type</td>
<td>DB9 Male Screw Terminal</td>
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<td></td>
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<tr>
<td>Ethernet Feature</td>
<td>Dual Ethernet Redundancy</td>
<td>Daisy-Chain Connectivity</td>
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<tr>
<td>Configuration</td>
<td>Windows Configuration Utility, Web-Browser Console</td>
<td>Windows Utility</td>
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<tr>
<td>Operating Mode</td>
<td>Modbus RTU Master, Modbus RTU Slave, Modbus ASCII Master, and Modbus ASCII Slave modes</td>
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<tr>
<td>Baud Rate</td>
<td>50 bps ~ 921.6 kbps</td>
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<td>Page</td>
<td>11-11</td>
<td>11-12</td>
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## Serial to USB Converters

<table>
<thead>
<tr>
<th>Model Name</th>
<th>ADAM-4561</th>
<th>ADAM-4562</th>
<th>USB-4604B</th>
<th>USB-4604BM</th>
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<tbody>
<tr>
<td>Product Description</td>
<td>1-port Isolated USB to RS-232/422/485 Converter</td>
<td>1-port Isolated USB to RS-232 Converter</td>
<td>4-port RS-232 to USB Converter with ESD Surge Protection</td>
<td>4-port RS-232/232/422/485 to USB Converter with ESD Surge Protection</td>
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<td>Interface</td>
<td>USB 1.1</td>
<td>USB 1.1/2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serial Port</td>
<td>1</td>
<td>4</td>
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</tr>
<tr>
<td>Baud Rate</td>
<td>50 ~ 115.2 kbps</td>
<td>75 ~ 115.2 kbps</td>
<td>50 ~ 921.6 kbps</td>
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<tr>
<td>Connector</td>
<td>USB Type B</td>
<td>Screw Terminal</td>
<td></td>
<td>DB9</td>
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<tr>
<td>Protection</td>
<td>Isolation 3,000 Voc (RS-232/422/485)</td>
<td>2,500 Voc</td>
<td></td>
<td>2,500 Voc</td>
</tr>
<tr>
<td></td>
<td>Surge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driver</td>
<td>Windows 2000/XP</td>
<td></td>
<td>Windows 2000/XP/Vista/7, CE5.0/6.0, Linux</td>
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<tr>
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</table>
IoT (Internet of Things) architecture is divided into four layers: sensor, network, service and application. As the internet greatly increased people-to-people interactions, the IoT greatly increases people-to-object and object-to-object interactions. The network layer represents access to all object data via wireless networks and the internet coverage in a real-time data stream. The Intelligent Cellular IP Gateways in the network layer of IoT architecture link all the objects, devices and transmit sensor information through reliable wired and wireless communication (3G, GPRS, Wi-Fi, Zigbee) networks. The goal and objective is to build up “ubiquitous networks connected to all objects”.

**Key Features**
- Compact and simple
- Extremely versatile gateway features
- Dual SIM slots for connection redundancy
- Extra SD slot for data buffering and auto recovery
- Provides NAT with VPN
- Universal quad-band GSM/GPRS 850/900/1800/1900 MHz
Device Server Technologies

RVCOM

iGateway series supports Advantech patented RVCOM function that allows user use the virtual com port as usual, even the device gets a private IP address.

OpenVPN Support

iGateway series supports standard OpenVPN protocol that provides trustworthy data communication. User can set up private OpenVPN server easily without extra software license fee.

DDNS Support

DDNS support helps users to locate the exact current IP address of device easily. Device will automatically update current IP address to DDNS server. When using DDNS with VCOM or RVCOM, users don’t need to do the lookup manually after setup. The connection will handle by VCOM or RVCOM automatically.

IPv6 and IPv4 Dual Stack Support

IPv6 will become more popular eventually. iGateway series supports IPv6 and IPv4 dual protocol stack that helps users to overcome the impact of Ethernet architecture transition smoothly and easily.

iGateway Application for Solar Power

Advantech’s GPRS/3G Serial Device Servers are a perfect fit for wireless data transmission systems due to their great performance, reliability and ruggedness. The GPRS/3G Serial Device Servers collect data from solar panels & inverters, pyranometers, and relative sensors. This information is transmitted through cellular data network to the telecom control center. Service providers and users are able to easily access real-time information anywhere, anytime. The GPRS/3G Serial Device Servers provide dual SIM slots for telecom carrier redundancy and one SD slot for serial data buffering.
**Introduction**

EKI-1321 and EKI-1322 cellular gateways can transparently bring RS-232/422/485 or Ethernet devices to a cellular network. They allow nearly any device with serial or Ethernet ports to connect and share a cellular network with easy and simple configuration. EKI-1321 and EKI-1322 GPRS IP Gateways are compact, and can be DIN-rail or wall mounted and with both front panel and side panel LED displays for easy identification. They come with dual DC power input from 12 to 48 V DC and have 2 KV EFT/Surge protection to prevent damage from various type of power resources. The serial ports are also protected by 15 KV ESD line protection to keep your system safe from unexpected electrical discharges. Both models support dual SIM slots to support GPRS signal redundancy to switch to an available channel automatically while the existing one is disconnected, and SD card slot for data buffering to prevent loss of serial data while the communication is interrupted.

**Specifications**

**LAN Interface**
- **Ethernet**: 10/100 Mbps, auto MDI/MDIX
- **Connector**: RJ45
- **Protection**: 1.5 KV built-in magnetic isolation protection

**Cellular Interface**
- **Standards**: GSM/GPRS
- **Band Option**: Quad-band 850/900 and 1800/1900 MHz
- **GPRS Multi-Slot**: Class 10
- **GPRS Terminal Device**: Class B
- **GPRS Coding Schemes**: CS1 – CS4
- **Tx Power**: 1 W for GSM 1800/1900, 2 W for EGSM 850/900
- **No. of SIM**: 2
- **SIM Control**: 3 V

**Serial Communications**
- **Port Type**: RS-232/422/485, software selectable
- **No. of Ports**: EKI-1321: 1, 2 KV isolation protection
- **Port Connector**: EKI-1322: 2
- **Data Bits**: 5, 6, 7, 8
- **Stop Bits**: 1, 1.5, 2
- **Parity**: None, Odd, Even, Space, Mark
- **Baud Rates**: 75 bps to 960 Kbps, any baud rate setting
- **Protection**: 15 KV ESD for all signals

**Relay Output**
- **Channel**: 1
- **Contact Rating**: 0.5 A @ 120 V AC; 0.25 A @ 240 V Ac; 2 A @ 30 V DC
- **Relay on Time (Typ.)**: 4 ms
- **Relay off Time (Typ.)**: 3 ms

**Digital Input (EKI-1321)**
- **Channel**: 2
- **Input Level**: Logic level 0: 1 V Maximum
- **Logic level 1**: 3 – 30 V

**Features**
- **Universal quad-band GSM/GPRS 850/900/1800/1900 MHz**
- **Dual SIM for telecom redundancy**
- **Support SDHC SD Card for Data Buffering**
- **Connect Ethernet and Serial Devices over VPN**
- **Various operation modes: COM port redirector, RVCOM, TCP, UDP, SMS tunnel, and pair connection**
- **Any baud rate setting for easy configuration**
- **Built-in 15 KV ESD protection for all serial signals**
- **1.5 KV isolation protection (EKI-1321)**
- **2 digital inputs (EKI-1321)**
- **Multiple configuration methods: Windows utility, Telnet, and Web console**

**General**
- **LED Indicators**: Power, System Status
- **Reboot Trigger**: Built-in WDT (watchdog timer)

**Software**
- **Advantech Serial Device Server Configuration Utility**
- **Utility Software**: Virtual COM, Reverse Virtual COM, TCP/UDP server mode, TCP/IP client mode, Pair connection mode
- **Operating Modes**: RFC2217, SMS Tunnel, IP Gateway w/ VPN
- **Protocols**: Windows utility, Telnet console, Web browser
- **Configuration**: ICMP, TCP/IP, UDP, DHCP Client, Telnet, DNS, SNMP, HTTP, HTTPS, SMTP, SNMP, ARP, SSL
- **Router/Firewall**: NAT, port forwarding

**Mechanics**
- **Dimensions (W x H x D)**: 27 x 120 x 85 mm (1.06" x 4.72" x 3.35")
- **Enclosure**: Metal with solid mounting hardware
- **Weight**: 0.49 Kg

**Power Requirements**
- **Power Input**: 12 – 48 VDC, redundant dual inputs
- **Power Connector**: Terminal block
- **Power Consumption**: EKI-1321: 8W, EKI-1322: 8.5W
- **Power EFT/Surge Prot.**: 2 KV

**Environment**
- **Operating Temperature**: -30 – 75°C (-22 – 149°F)
- **Storage Temperature**: -40 – 85°C (-40 – 185°F)
- **Operating Humidity**: 5 – 95% RH

**Regulatory Approvals**
- **EMC**: CE: EN55022/EN55024, Class A
- **FCC**: FCC part 15 subpart B, Class A
- **RF**: FCC Part22/H/Part24E, EN301 489-1, EN301 489-7, EN301 511

**Ordering Information**
- **EKI-1321**: 1-port GPRS IP Gateway
- **EKI-1322**: 2-port GPRS IP Gateway
- **OPT1-D89**: D-Sub 9 to Terminal Converter
Features

- Link any serial device to an IEEE 802.11b/g/n network
- Support 802.11n MIMO 2T2R
- WLAN transmission rate up to 300 Mbps
- Supports secure access with WEP, WPA/WPA2-Personal, WPA/WPA2-Enterprise
- Provides COM port redirection, TCP, UDP, and pair connection modes
- Supports up to 921.6 kbps, and any baud rate setting
- Provides Web-based configuration and Windows utility
- Allows a max. of 5 hosts to access one serial port
- Allows a max. of 4 hosts to be accessed as TCP client mode

Specifications

**Ethernet Communications**
- **Port Type**: RJ45
- **No. of Ports**: 1
- **Speed**: 10/100/1000 Mbps

**Wireless LAN Communications**
- **Compatibility**: IEEE 802.11b/g/n
- **Speed**: Up to 300Mbps
- **Network Mode**: Infrastructure, Ad-hoc
- **Antenna Connector**: Reverse SMA
- **No. of Antenna**: 2 (support 2T2R)
- **Free Space Range**: Open space 100 m
- **Wireless Security**: WEP, WPA/WPA2-Personal, WPA/WPA2-Enterprise

**Serial Communications**
- **Port Type**: RS-232/422/485, software selectable
- **No. of Ports**: EKI-1361: 1, EKI-1362: 2
- **Port Connector**: DB9 male
- **Data Bits**: 5, 6, 7, 8
- **Stop Bits**: 1, 1.5, 2
- **Parity**: None, Odd, Even, Space, Mark
- **Baud Rate**: 50 bps – 921.6 kbps, any baud rate setting
- **Serial Signals**: RS-232: TxD+, TxD-, RxD+, RxD-, GND
- **Protection**: 15 KV ESD for all signals

**Software**
- **Utility Software**: Advantech Serial Device Server Configuration Utility
- **Operation Modes**: COM port redirection mode (Virtual COM), TCP/UDP server (polling) mode, TCP/UDP client (event handling) mode, Pair connection without AP (peer to peer) mode
- **Configuration**: Windows utility, Telnet console, Web Browser
- **Protocols**: ICMP, TCP/IP, UDP, DHCP Client, Telnet, DNS, SNMP, HTTP, SMTP, SNTP, ARP

**Mechanics**
- **Enclosure**: Plastic and metal shell with solid mounting kits
- **Mounting**: DIN-rail, Wall
- **Dimensions (W x H x D)**: 28.5 x 120 x 85.3 mm (1.12” x 4.72” x 3.36”)
- **Weight**: 0.5 Kg

**General**
- **LED Indicators**: System: Power, System Status
- **WLAN: Quality, Link/Active
- **LAN: Link/Active
- **Serial: Tx, Rx
- **Reboot Trigger**: Built-in WDT (watchdog timer)

**Power Requirements**
- **Power Input**: 12 – 48 Vdc, redundant dual inputs
- **Power Connector**: Terminal block
- **Power Consumption**: EKI-1361: 8W, EKI-1362: 9W

**Environment**
- **Operating Temperature**: -30 – 65°C (-22 – 149°F)
- **Storage Temperature**: -40 – 80°C (-40 – 176°F)
- **Operating Humidity**: 5 – 95% RH

**Regulatory Approvals**
- **EMC**: CE, FCC Part 15 Subpart B (Class B)

**Ordering Information**

- **EKI-1361**: 1-port RS-232/422/485 to 802.11b/g/n WLAN Serial Device Server
- **EKI-1362**: 2-port RS-232/422/485 to 802.11b/g/n WLAN Serial Device Server
- **OPT1-DB9**: D-Sub9 to Terminal Converter
Features

- Provides 2 x 10/100 Mbps Ethernet ports for LAN redundancy
- Provides COM port redirection (Virtual COM), TCP and UDP operation modes
- Supports up to 921.6 kbps, and any baud rate setting
- Allows a max. of 5 hosts to access one serial port
- Allows a max. of 16 hosts to be accessed as TCP client mode
- Built-in 15 KV ESD protection for all serial signals
- Provides rich configuration methods including Windows utility, Telnet console, and Web Browser
- Automatic RS-485 data flow control
- Class I, Division 2 certification

Introduction

EKI-1521, EKI-1522 and EKI-1524 feature two independent Ethernet ports and MAC addresses to provide a redundant network mechanism to guarantee Ethernet network reliability. EKI-1521, EKI-1522 and EKI-1524 are serial device servers that connect RS-232/422/485 serial devices, such as PLC, meters, sensors, and barcode reader to an IP-based Ethernet LAN. They allow nearly any device with serial ports to connect and share an Ethernet network. EKI-1521, EKI-1522 and EKI-1524 provide various operations: COM port redirection (Virtual COM), TCP Server, TCP Client and UDP mode. With COM port redirection mode, standard serial operation calls are transparently redirected to the EKI-1521, EKI-1522 and EKI-1524, guaranteeing compatibility with legacy serial devices and enabling backward compatibility with existing software. With TCP server, TCP client, and UDP modes, EKI-1521, EKI-1522 and EKI-1524 ensure the compatibility of network software that uses a standard network API. Moreover, you can make serial devices communicate with other devices peer-to-peer, without any intermediate host PCs and software programming.

Specifications

**Ethernet Communications**
- Compatibility: IEEE 802.3, IEEE 802.3u
- Speed: 10/100 Mbps
- No. of Ports: 2
- Port Connector: 8-pin RJ45
- Protection: Built-in 1.5 KV magnetic isolation

**Serial Communications**
- Port Type: RS-232/422/485, software selectable
- No. of Ports: 2
- Port Connector: DB9 male
- Data Bits: 5, 6, 7, 8
- Stop Bits: 1, 1.5, 2
- Parity: None, Odd, Even, Space, Mark
- Flow Control: XON/XOFF, RTS/CTS, DTR/DSR
- Baud Rate: 50 bps – 921.6 kbps, any baud rate setting
- Serial Signals: RS-232: TxD, RXD, RTS, CTS, DTR, DSR, DCD, RI, GND
  - RS-422: TxD+, TxD-, RXD+, RXD-, GND
  - RS-485: Data+, Data-, GND
- Protection: Built-in 15 KV ESD for all signals

**Software**
- Utility Software: Advantech Serial Device Server Configuration Utility
- Operation Modes: COM port redirection mode (Virtual COM), TCP/UDP server (polling) mode, TCP/UDP client (event handling) mode, Pair connection (peer to peer) mode
- Configuration: Windows utility, Telnet console, Web Browser
- Protocols: ICMP, IP, TCP, UDP, BOOTP, DHCP, Auto IP, Telnet, SNMP, HTTP, DNS, SMTP, ARP, NTP
- Management: SNMP MIB-II

**Mechanics**
- Dimensions (W x H x D): EKI-1521/1522: 57 x 140 x 95 mm (2.24” x 5.51” x 3.74”)
  - EKI-1524: 55 x 140 x 95 mm (2.17” x 5.51” x 3.74”)
- Enclosure: Metal with solid mounting hardware
- Mounting: DIN-rail, Wall
- Weight: EKI-1521: 0.592 Kg
  - EKI-1522: 0.6 Kg
  - EKI-1524: 0.688 Kg

**Power Requirements**
- Power Input: 12 ~ 48 VDC
- Power Consumption: EKI-1521: 2 W
  - EKI-1522: 2.5 W
  - EKI-1524: 4 W
- Power Indicator: System: Power, System Status

**Environment**
- Operating Temperature: -10 ~ 60°C (-4 ~ 140°F)
- Storage Temperature: -20 ~ 80°C (-4 ~ 176°F)
- Operating Humidity: 5 ~ 95% RH

**Regulatory Approvals**
- EMC: CE, FCC Part 15 Subpart B (Class A)
- Safety: UL/cUL 60950-1
- MTBF: EKI-1521: 1,102,913 hours
  - EKI-1522: 1,264,154 hours
  - EKI-1524: 862,230 hours
- Hazardous Location: Class I, Division 2

**Ordering Information**
- EKI-1522: 2-port RS-232/422/485 Serial Device Server
- EKI-1524: 4-port RS-232/422/485 Serial Device Server
- OPT1-D99: D-Sub9 to Terminal Converter
Introduction
EKI-1528 and EKI-1526 industrial-grade network-based serial device servers connect up to 8 or 16 serial RS-232/422/485 devices, such as CNCs, PLCs, scales and scanners, directly to a TCP/IP network. The EKI-1528 and EKI-1526 feature two independent Ethernet ports and MAC addresses to provide a redundant network mechanism to guarantee Ethernet network reliability. The EKI-1528 and EKI-1526 provide a simple and cost-effective way to bring the advantages of remote management and data accessibility to thousands of devices that can’t connect to an Ethernet network. The EKI-1528 and EKI-1526 offer rich ways to configure through Windows utility, Web Browser, serial console or Telnet console, these methods make it easy manage many EKI-1528 and EKI-1526 or serial devices on your network.

Specifications

Ethernet Communications
- **Compatibility**: IEEE 802.3, IEEE 802.3u
- **Speed**: 10/100 Mbps, auto MDI/MDIX
- **No. of Ports**: 2
- **Port Connector**: 8-pin RJ45
- **Protection**: Built-in 1.5 KV magnetic isolation

Serial Communications
- **Port Type**: RS-232/422/485, software selectable
- **No. of Ports**: EKI-1528: 8, EKI-1526: 16
- **Port Connector**: 8-pin RJ45
- **Data Bits**: 5, 6, 7, 8
- **Stop Bits**: 1, 1.5, 2
- **Parity**: None, Odd, Even, Space, Mark
- **Flow Control**: XON/XOFF, RTS/CTS, DTR/DSR
- **Baud Rate**: 50 bps ~ 921.6 kbps, any baud rate setting
- **Serial Signals**: RS-232: TxD, RxD, CTS, RTS, DTR, DSR, DCD, GND
  - RS-422: TxD+, TxD-, RxD+, RxD-, GND
  - RS-485: Data+, Data-, GND
- **Protection**: 15 KV ESD for all signals

Software
- **Utility Software**: Advantech Serial Device Server Configuration Utility
- **Operation Modes**: COM port redirection mode (Virtual COM), TCP/UDP server (polling) mode, TCP/UDP client (event handling) mode, Pair connection (peer to peer) mode, RFC2217 mode
- **Configuration**: Windows utility, Telnet console, Web Browser, serial console
- **Protocols**: ICMP, IP, TCP, UDP, BOOTP, DHCP, Auto IP, Telnet, SNMP, HTTP, DNS, SMTP, ARP, HTTPS, SSL, SSH, NTP
- **Management**: SNMP MIB-II

Mechanics
- **Dimensions (W x H x D)**: 440 x 44 x 220 mm (17.32” x 1.73” x 8.66”)
- **Enclosure**: SECC chassis
- **Mounting**: Rack
- **Weight**: EKI-1528: 2.53 Kg, EKI-1526: 2.58 Kg

General
- **LED Indicators**: System: Power, System Status
- **Alert Tools**: Built-in buzzer and RTC (real time clock)
- **Reboot Trigger**: Built-in WDT and push button for hardware reboot

Power Requirements
- **Power Input**: 100 ~ 240 VAC, 47 ~ 63 Hz
- **Power Consumption**: EKI-1528: 8 W, EKI-1526: 10 W

Environment
- **Operating Temperature**: -10 ~ 60°C (-14 ~ 140°F)
- **Storage Temperature**: -20 ~ 80°C (-4 ~ 176°F)
- **Operating Humidity**: 5 ~ 95% RH

Regulatory Approvals
- **EMC**: CE, FCC Part 15 Subpart B (Class A)
- **MTBF**: EKI-1528: 249,812 hours, EKI-1526: 227,175 hours

Ordering Information
- **EKI-1528**: 8-port RS-232/422/485 Serial Device Server
- **EKI-1526**: 16-port RS-232/422/485 Serial Device Server
*All items include 1pc OPT1J

Accessories
- **OPT1I**: 1 m RJ45 to DB9 Male Cable
- **OPT1J**: 30 cm RJ45 to DB9 Male Cable
- **170202600**: Power Cable US Plug 1.8 m
- **170202605**: Power Cable EU Plug 1.8 m
- **1702031801**: Power Cable UK Plug 1.8 m
- **1702031836**: Power Cable China/Australia Plug 1.8 m
### Features
- Provides 2 x 10/100 Mbps Ethernet ports for LAN redundancy
- Integration of Modbus TCP and Modbus RTU/ASCII networks
- Supports up to 921.6 kbps, and any baud rate setting
- Supports up to 16 connections and 32 requests simultaneously
- Easy-managing Advantech Serial Device Server Configuration Utility for Windows 2000/XP/Vista/7
- Auto searching slave ID over configuration utility
- Software selectable RS-232/422/485 communication
- Mounts on DIN-rail and Wall mount
- Built-in 15 KV ESD protection for all serial signals
- Automatic RS-485 data flow control

### Specifications

#### Ethernet Communications

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<thead>
<tr>
<th>Compatibility</th>
<th>IEEE 802.3, IEEE 802.3u</th>
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<td>Speed</td>
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<tr>
<td>Port Connector</td>
<td>8-pin RJ45</td>
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<tr>
<td>Protection</td>
<td>Built-in 1.5 KV magnetic isolation</td>
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#### Serial Communications

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<tr>
<th>Port Type</th>
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<tr>
<td>No. of Ports</td>
<td>EKI-1221: 1, EKI-1222: 2, EKI-1224: 4</td>
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<td>DB9 male</td>
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<td>Data Bits</td>
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<td>Stop Bits</td>
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<td>Flow Control</td>
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<td>Baud Rate</td>
<td>50 bps – 921.6 kbps, any baud rate setting</td>
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<tr>
<td></td>
<td>RS-422: TxD+, TxD-, RxD+, RxD-, GND</td>
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<td></td>
<td>RS-485: Data+, Data-, GND</td>
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<tr>
<td>Protection</td>
<td>15 KV ESD for all signals</td>
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<td>Advantech Serial Device Server Configuration Utility</td>
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<td>Operation Modes</td>
<td>Modbus RTU Master/Slave mode</td>
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<tr>
<td>Configuration</td>
<td>Windows Utility, Web Browser</td>
</tr>
<tr>
<td>Protocols</td>
<td>Modbus RTU, Modbus TCP, Modbus ASCII</td>
</tr>
</tbody>
</table>

### General
- **LED Indicators**: System: Power, System Status
- **LAN**: Speed, Link/Active
- **Serial**: Tx, Rx
- **Reboot Trigger**: Built-in WDT (watchdog timer)

### Mechanics
- **Dimensions (W x H x D)**
  - EKI-1221: 37 x 140 x 95 mm (1.46” x 5.51” x 3.74”)
  - EKI-1222: 55 x 140 x 95 mm (2.17” x 5.51” x 3.74”)
- **Enclosure**: Metal with solid mounting hardware
- **Mounting**: DIN-rail, Wall
- **Weight**
  - EKI-1221: 0.592 Kg
  - EKI-1222: 0.6 Kg
  - EKI-1224: 0.688 Kg

### Power Requirements
- **Power Input**: 12 – 48 Vdc, redundant dual inputs
- **Power Connector**: Terminal block
- **Power Consumption**
  - EKI-1221: 2 W
  - EKI-1222: 2.5 W
  - EKI-1224: 4 W

### Environment
- **Operating Temperature**: -10 – 60°C (14 – 140°F)
- **Storage Temperature**: -20 – 80°C (4 – 176°F)
- **Operating Humidity**: 5 – 95% RH

### Regulatory Approvals
- **EMC**: CE, FCC Part 15 Subpart B (Class A)
- **Safety**: UL/cUL 60950-1
- **Hazardous Location**: Class I, Division 2

### Ordering Information
- **EKI-1221**: 1-port Modbus Gateway
- **EKI-1222**: 2-port Modbus Gateway
- **EKI-1224**: 4-port Modbus Gateway
- **OPT1-D09**: D-Sub9 to Terminal Converter
Introduction

The EKI-1200 series Modbus gateways are bi-directional gateways for integrating new and existing Modbus/RTU and Modbus/ASCII serial devices to newer TCP/IP networked-based devices. The EKI-1221D/1222D feature two Ethernet ports with one IP address for easier network wiring. One port can be used to connect to the network, and the other port can be used to connect to another Ethernet device or another EKI-1221D/1222D. They provide a simple and cost-effective way to bring the advantage of remote management and data accessibility to thousands of devices that cannot connect to a network. The EKI-1221D/1222D provide a feature that can allow users to select master or slave operation mode for each serial port. They not only allow an Ethernet master to control serial slaves, but also allow serial masters to control Ethernet slaves.

Specifications

**Ethernet Communications**
- **Compatibility**: IEEE 802.3, IEEE 802.3u
- **Speed**: 10/100 Mbps
- **No. of Ports**: 2
- **Port Connector**: 8-pin RJ45
- **Protection**: Built-in 1.5 KV magnetic isolation

**Serial Communications**
- **Port Type**: RS-232/422/485, software selectable
- **No. of Ports**: EKI-1221D: 1, EKI-1222D: 2
- **Port Connector**: DB9 male
- **Data Bits**: 7, 8
- **Stop Bits**: 1, 2
- **Parity**: None, Odd, Even, Space, Mark
- **Flow Control**: XON/XOFF, RTS/CTS, DTR/DSR
- **Baud Rate**: 50 bps - 921.6 kbps, any baud rate setting
- **Serial Signals**:
  - RS-232: TxD, RxD, RTS, CTS, DSR, DCD, RI, GND
  - RS-422: TxD+, TxD-, RxD+, RxD-, GND
  - RS-485: Data+, Data-, GND
- **Protection**: 15 KV ESD for all signals

**Software**
- **OS Support**: 32-bit/64-bit Windows 2000/XP/Vista/7 and Windows Server 2003/2008 (x86 and x64)
- **Utility Software**: Advantech Serial Device Server Configuration Utility
- **Operation Modes**: Modbus RTU Master/Slave mode, Modbus ASCII Master/Slave mode
- **Configuration**: Windows Utility, Web Browser
- **Protocols**: Modbus RTU, Modbus TCP, Modbus ASCII

**General**
- **LED Indicators**: System: Power, System Status, LAN: Speed, Link/Active, Serial: Tx, Rx
- **Reboot Trigger**: Built-in WDT (watchdog timer)

**Mechanics**
- **Dimensions (W x H x D)**: 37 x 140 x 95 mm (1.46” x 5.51” x 3.74”)
- **Enclosure**: Metal with solid mounting hardware
- **Mounting**: DIN-rail, Wall
- **Weight**: EKI-1221D: 0.58 Kg, EKI-1222D: 0.588 Kg

**Power Requirements**
- **Power Input**: 12 – 48 Vdc, redundant dual inputs
- **Power Connector**: Terminal block
- **Power Consumption**: EKI-1221D: 2 W, EKI-1222D: 2.5 W

**Environment**
- **Operating Temperature**: -10 ~ 60°C (-14 ~ 140°F)
- **Storage Temperature**: -20 ~ 80°C (-4 ~ 176°F)
- **Operating Humidity**: 5 ~ 95% RH

**Regulatory Approvals**
- **EMC**: EN 55022, EN 55011, EN 61000-6-4, IEC 61000-4-2/3/4/5/6/8, FCC 47 CFR Part 15 Subpart B (Class A)
- **Hazardous Location**: Class I, Division 2

**Ordering Information**
- **EKI-1221D**: 1-port Modbus Gateway with Ethernet Cascading
- **EKI-1222D**: 2-port Modbus Gateway with Ethernet Cascading
* All items include 1 pc OPT1-DB9 D-Sub9 to Terminal Converter
### Serial Communication Cards Selection Guide

#### PCI & Universal Communication Cards

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<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCI-1602UP</td>
<td>2-port RS-422/485 Low-Profile Universal PCI Communication Card with Isolation Protection</td>
</tr>
<tr>
<td>PCI-1604UP</td>
<td>2-port RS-232 Low-Profile Universal PCI Communication Card with Isolation Protection</td>
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<tr>
<td>PCI-1601</td>
<td>2-port RS-422/485 Universal PCI Communication Card</td>
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<tr>
<td>PCI-1602</td>
<td>2-port RS-422/485 Universal PCI Communication Card with Isolation Protection</td>
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<tr>
<td>PCI-1603</td>
<td>2-port RS-232/Current-loop Universal PCI Communication Card with Isolation Protection</td>
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<tr>
<td>PCI-1610</td>
<td>4-port RS-232 Universal PCI Communication Card</td>
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<tr>
<td>PCI-1612</td>
<td>4-port RS-232/422/485 Universal PCI Communication Card</td>
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<tr>
<td>PCI-1620</td>
<td>8-port RS-232 Universal PCI Communication Card</td>
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<tr>
<td>PCI-1622</td>
<td>8-port RS-422/485 Universal PCI Communication Card</td>
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#### PCI Express Communication Cards

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<tr>
<th>Model</th>
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<tbody>
<tr>
<td>PCIE-1620</td>
<td>8-port RS-232 PCI Express Communication Card</td>
</tr>
<tr>
<td>PCIE-1622</td>
<td>8-port RS-232/422/485 PCI Express Communication Card</td>
</tr>
<tr>
<td>PCIE-1672PC</td>
<td>2-port 10/100/1000 BaseT(X) 802.3af (PoE) Compliant Ethernet ports, PCI Express Communication Card</td>
</tr>
<tr>
<td>PCIE-1674PC</td>
<td>4-port 10/100/1000 BaseT(X) 802.3af (PoE) Compliant Ethernet ports, PCI Express Communication Card</td>
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#### CAN Communication Cards

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<th>Model</th>
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<tr>
<td>PCI-1682U</td>
<td>2-port CAN-bus Universal PCI Communication Card with CANopen Support</td>
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<tr>
<td>PCI-1684I</td>
<td>2-port CAN-bus ISA Card with Isolation Protection</td>
</tr>
<tr>
<td>PCI-1680U</td>
<td>2-port CAN-bus Universal PCI Card with Isolation Protection</td>
</tr>
<tr>
<td>PCM-3680/I</td>
<td>2-port CAN-bus PC/104 / PCI-104 Module with Isolation Protection</td>
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#### PC/104 & PCI-104 Communication Modules

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<th>Description</th>
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<td>PCM-3610</td>
<td>2-port RS-232/422/485 PC/104 Module with Isolation Protection</td>
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<td>PCM-3612</td>
<td>2-port RS-422/485 PC/104 Module</td>
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<td>PCM-3614</td>
<td>4-port RS-422/485 High-speed PC/104 Module</td>
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<td>PCM-3618</td>
<td>8-port RS-422/485 High-speed PC/104 Module</td>
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<td>PCM-3640/3641</td>
<td>4-port RS-232 High-speed PC/104 Module</td>
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<td>PCM-3650</td>
<td>Jumperless Ethernet PC/104 Module</td>
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<td>PCM-3614I/3618I</td>
<td>4/8-port RS-232/422/485 PCI-104 Module</td>
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<td>PCM-3641I</td>
<td>4-port RS-232 PCI-104 Module</td>
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To view all of Advantech's Serial Communication Cards, please visit [www.advantech.com/products](http://www.advantech.com/products).
# Serial Communication Card Selection Guide

## Serial Communication Cards

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<th>Universal Low-Profile PCI</th>
<th>Universal PCI</th>
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<td>Driver</td>
<td>32-bit/64-bit Windows 2000/XP/Vista/7, Windows CE 5.0/6.0, Linux, and QNX</td>
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<tr>
<td>Protection</td>
<td>ESD</td>
<td>8KV (air), 4KV (contact)</td>
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<td>Cable Connector Type</td>
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<thead>
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<th>CAN-bus Universal PCI</th>
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## PC/104 Communication Modules

### Bus: PC/104

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## PCI-104 Communication Modules

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## Accessories

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### Introduction

These RS-232/422/485 PCI communication cards are compatible with the PCI 2.2 bus specification for universal connectivity and low-profile PCI cards. The PCI-1604UP provides two independent RS-232 ports, while the PCI-1602UP has two RS-422/485 ports. To improve system performance, all cards allow transmission rates up to 921.6 kbps. To increase reliability, the cards offer EFT protection, protecting your system from abrupt high voltages up to 2,500 VDC. High-performance OXuPC1952 and OXuPC1954 UARTs with 128-byte FIFO, reduces the CPU load, making the cards especially suitable for multitasking environments.

The cards follow the Low Profile PCI MD1 standard. This standard has the same protocol and electronic definition as standard PCI, but the low-profile PCI standard is smaller. Thus, the cards are suitable for embedded systems, and size-constrained environments. Moreover, all cards are equipped with an universal PCI connector, which allows support for traditional systems with 5 V signaling or newer systems with 3.3 V signaling.

### Specifications

#### General

- **Bus Type**: Universal PCI V 2.2
- **Certification**: CE, FCC class A
- **Connectors**: 1 x Female DB25
- **Dimensions (L x W)**: 119.91 x 64.41 mm (4.7” x 2.5”) (low-profile MD1)
- **Power Consumption**: 5 V @ 400 mA (Max.)

#### Communications

- **Communication Controller**: OXuPC1952
- **Data Bits**: 5, 6, 7, 8
- **Data Signals**: RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND
  - RS-422: Tx+, Tx-, Rx+, Rx-, RTS+, RTS-, CTS+, CTS-, GND
  - RS-485: Data+, Data-, GND
- **FIFO**: 128 bytes
- **Flow Control**: CTS/RTS, Xon/Xoff
- **IRQ**: Assigned by Plug & Play
- **Parity**: None, Even, Odd, Mark and Space
- **Speed**: 50 bps – 921.6 kbps
- **Stop Bits**: 1, 1.5, 2

#### Protection

- **EFT Protection**: 1 KV
- **Isolation Protection**: 2,500 VDC
- **ESD Protection**: 8KV (air), 4KV (contact)

#### Software

- **Bundled Software**: ICOM Tools
- **OS Support**: Windows 2000/XP/Vista/7, Windows CE 5.0/6.0, Linux, and QNX

#### Environment

- **Operating Humidity**: 5 – 95 % RH, non-condensing
- **Operating Temperature**: 0 – 65°C (32 – 149°F)
- **Storage Temperature**: -25 – 85°C (-13 – 185°F)

### Ordering Information

- **PCI-1602UP**: 2-port RS-422/485 Low-Profile Uni PCI Comm Card w/Iso
- **PCI-1604UP**: 2-port RS-232 Low-Profile Uni PCI Comm Card w/Iso

Note: PCI-1602UP and PCI-1604UP include one DB25 to 2 x DB9 cable
Introduction

The PCI-1601 and PCI-1602 are two RS-422/485 PCI communication cards that are compatible with the PCI 2.2 bus specification. Both cards provide EFT protected RS-422/485 ports, and come with features such as: high transmission speed of 921.6 kbps, optional isolation protection, windows utility software and more. The cards also come with high-performance OXuPCI1952 UART with a 128-byte FIFO to reduce CPU load. This makes the PCI-1601 and PCI-1602 especially suitable for multitasking environments.

The PCI-1603 offers a versatile range of high-speed interfacing options. You can switch its ports between the popular RS-232 or noise-resistant current-loop. The card utilizes OXuPCI952 UART with 128-byte FIFO buffer for faster and more reliable communication, especially under multi-tasking environments such as Windows operating systems. The card also supports windows utility software and more. The cards also come with high-performance OXuPCI1952 UART with 128-byte FIFO to reduce CPU load. This makes the PCI-1603 especially suitable for high speed serial I/O under Windows.

Specifications

General
- **Bus Type**: Universal PCI v2.2
- **Certification**: CE, FCC class A
- **Connectors**: 2 x Male DB9
- **Dimensions (L x W x H)**: 123 x 92 mm (4.8” x 3.6”)
- **Power Consumption**: 30 mA @ +5V

Current-loop Interface (PCI-1603)
- **Baud-rate**: 50 ~ 57,600 bps
- **Current Value**: 20 mA (Standard)
- **Mode**: Asynchronous, full duplex
- **Signal Driver/Receiver**: 6N136
- **Signals**: TxD+, TxD-, RxD+, RxD-
- **Transmission Distance**: 1,000 m (RS-422/485 mode only)

Communications
- **Communications Controller**: OXuPCI952
- **Data Bits**: 5, 6, 7, 8
- **Data Signals**: RS-422: Txe, Txe, Rxe, Rxe, RTS+, RTS-, CTS+, CTS-, GND
  RS-485: Data+, Data-, GND
- **FIFO**: 128 bytes
- **Flow Control**: RTS/CTS, Xon/Xoff
- **IRQ**: Assigned by Plug & Play
- **Parity**: None, Even, Odd, Mark and Space
- **Speed**: 50 bps ~ 921.6 kbps, any baud rate setting
- **Stop Bits**: 1, 1.5, 2

Protection
- **ESD Protection**: 8 kV (air), 4 kV (contact)
- **EFT Protection**: 1 kV

Model Name | Surge Protection | Isolation Protection
---|---|---
PCI-1601A | - | -
PCI-1601B | 1000 VDC | -
PCI-1602A | 1000 VDC | 2500 VDC
PCI-1603A | 1000 VDC | 2500 VDC

Features
- **PCI bus 2.2 compliant**
- **Supports serial speed up to 921.6 kbps, and any baud rate setting**
- **2-port RS-422/485 interface (PCI-1601/PCI-1602)**
- **2 independent RS-232 or Current-loop serial ports (PCI-1603)**
- **I/O address automatically assigned by PCI Plug & Play**
- OS supported: Windows 2K/XP/Vista/7, Windows CE 5.0/6.0, Linux, and QNX
- **Interrupt status register for increased performance**

Software
- **Bundled Software**: ICOM Tools
- **OS Support**: 32-bit/64-bit Windows 2000/XP/Vista/7, Windows CE 5.0/6.0, Linux, and QNX

Environment
- **Humidity (Operating)**: 5 ~ 95% RH, non-condensing
- **Operating Temperature**: -10 ~ 60°C (14 ~ 144°F)
- **Storage Temperature**: -25 ~ 85°C (-13 ~ 185°F)

Ordering Information
- **PCI-1601A**: 2-port RS-422/485 PCI Comm. Card
- **PCI-1601B**: 2-port RS-422/485 PCI Comm. Card w/Surge
- **PCI-1602**: 2-port RS-422/485 PCI Comm. Card w/Surge+Iso
- **PCI-1603**: 2-port RS-232/Current Loop PCI Comm. Card w/Surge+Iso
**Serial Communication Cards**

### Features
- PCI bus 2.2 compliant
- Supports serial speed up to 921.6 kbps, and any baud rate setting
- 4-port RS-232 (PCI-1610), 4-port RS-232/422/485 (PCI-1612)
- OXuPCI954 UART with 128-byte FIFO standard
- I/O address automatically assigned by PCI Plug & Play
- OS supported: Windows 2000/XP/Vista/7, Windows CE 5.0/6.0, Linux, and QNX
- Interrupt status register for increased performance
- Powerful and easy to use utility (ICOM Tools)
- Universal PCI, supports 3.3 V or 5 V PCI bus signal
- 1,000 V<sub>oc</sub> surge protection
- 2,500 V<sub>oc</sub> isolation protection (PCI-1610C and PCI-1612C only)

### Introduction
The PCI-1610 is a four port RS-232, and PCI-1612 is a four port RS-232/422/485 PCI communication card that are compatible with the PCI 2.2 bus specification, and offer transmission speeds up to 921.6 kbps. They also support any baud rate setting, for example 500 kbps is acceptable. The PCI-1610 and PCI-1612 also come with high-performance OXuPCI954 UART with 128-byte FIFO to reduce CPU load. These components make your system more stable and reliable. Thus, the PCI-1610 and PCI-1612 are especially suitable for multitasking environments.

Both the PCI-1610 and PCI-1612 have an universal PCI connector that is compatible with both the latest 3.3 V signaling systems and the traditional 5V signaling system. This gives high compatibility and allows usage in diverse systems. To further increase reliability, the cards can protect your system from abrupt high voltages up to 2,000 voltage thanks to EFT protection technology. PCI-1610C and PCI-1612C also provide 2,500 voltage optical isolation to protect your PC and equipment against damages from ground loops in harsh environments.

### Specifications

#### General
- **Bus Type**: Universal PCI v2.2
- **Certification**: CE, FCC class A
- **Connectors**: 1 x Female DB37
- **Dimensions (L x W)**: 185 x 100 mm (7.3” x 3.9”)
- **Power Consumption**: 180 mA @ +5 V

#### Communications
- **Communication Controller**: OXuPCI954
- **Data Bits**: 5, 6, 7, 8
- **Data Signals**: RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI,
  GND (PCI-1610, PCI-1612)
  RS-422: Tx+, Tx-, Rx+, Rx-, RTS+, RTS-, CTS+, CTS-
  (PCI-1612)
  RS-485: Data+, Data- (PCI-1612)
- **FIFO**: 128 bytes
- **Flow Control**: RTS/CTS, Xon/Xoff
- **Parity**: None, Even, Odd, Mark and Space
- **Stop Bits**: 1, 1.5, 2
- **Speed**: 50 bps – 921.6 kbps, any baud rate setting
  230.4 kbps (PCI-1610B/C and PCI-1612B/C only)

#### Protection
- **ESD Protection**: 8KV (air), 4KV (contact)
- **EFT Protection**: 1 KV

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<th>Model Name</th>
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<td>PCI-1612C</td>
<td>1000 V&lt;sub&gt;oc&lt;/sub&gt;</td>
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</table>

### Software
- **Bundled Software**: ICOM Tools
- **OS Support**: 32-bit/64-bit Windows 2000/XP/Vista/7,
  Windows CE 5.0/6.0, Linux, and QNX

### Environment
- **Operating Humidity**: 5 – 95% RH, non-condensing
- **Operating Temperature**: -10 ~ 60°C (14 ~ 144°F)
- **Storage Temperature**: -25 ~ 85°C (-13 ~ 185°F)

### Regulatory Approvals
- **EMC**
  - EN 55011: 2009 + A1:2010, Group 1, Class A
  - EN 55022: 2010, Class A
  - EN 61000-6-4: 2007
  - EN 61000-4: 2010
  - EN 61000-4-2: 2005
  - IEC 61000-4-2: 2010
  - IEC 61000-4-4: 2010
  - IEC 61000-4-6: 2008
  - IEC 61000-4-8: 2009
  - FCC 47 CFR Part 15 Subpart B (Class B)
  - IC ICES-003

### Ordering Information
- **PCI-1610A**: 4-port RS-232 PCI Comm. Card
- **PCI-1610B**: 4-port RS-232 PCI Comm. Card w/Surge
- **PCI-1610C**: 4-port RS-232/422/485 PCI Comm. Card
- **PCI-1612A**: 4-port RS-232/422/485 PCI Comm. Card w/Surge+Iso
- **PCI-1612B**: 4-port RS-232/422/485 PCI Comm. Card w/Surge
- **PCI-1612C**: 4-port RS-232/422/485 PCI Comm. Card w/Surge+Iso

Note: this series includes cable OPT4A.

### Accessories
- **OPT4A**: DB37 x 1 to DB9 x4 Cable, 30cm
- **1700018791**: DB37 x 1 to DB25 x4 Cable, 30cm
**PCI-1620**

**PCI-1622**

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**Introduction**

The PCI-1620 is an eight port RS-232, and PCI-1622 is an eight port RS-422/485 PCI communication card that are compatible with the PCI 2.2 bus specification, and offer transmission speeds up to 921.6 kbps. They also support any baud rate setting, for example 500 kbps is acceptable. PCI-1620 and PCI-1622 also come with high-performance OXPCI1654 UART with 128-byte FIFO to reduce CPU load. These components make your system more stable and reliable. Thus, the PCI-1620 and PCI-1622 are especially suitable for multitasking environments.

The PCI-1620 and PCI-1622 have an universal PCI connector that is compatible with both the latest 3.3 V signaling systems and the traditional 5V signaling system. This gives high compatibility and allows usage in diverse systems. To further increase reliability, the PCI-1620 and PCI-1622 offer EFT protection technology, protecting your system from electrical surges up to 2,500 volts. The PCI-1622 also provides 2,500 voltage optical isolation to protect your PC and equipment against damages from ground loops in harsh environments.

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**Specifications**

**General**
- **Bus Type**: Universal PCI v2.2
- **Certification**: CE, FCC class A
- **Connectors**: PCI-1620: 1 x Female DB62, PCI-1622: 1 x Female DB87
- **Dimensions (L x W)**: 185 x 100 mm (7.3" x 3.9")
- **Power Consumption**: 600 mA @ +5 V

**Communications**
- **Controller**: OXPCIe958
- **Data Bits**: 5, 6, 7, 8
- **Data Signals**: RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND (PCI-1620), RS-422: Tx+, Tx-, Rx+, Rx-, RTS+, RTS-, CTS+, CTS- (PCI-1622), RS-485: Data+, Data- (PCI-1622)
- **FIFO**: 128 bytes
- **Flow Control**: RTS/CTS, Xon/Xoff
- **IRQ**: Assigned by Plug & Play
- **Parity**: None, Even, Odd
- **Speed**: 50 bps – 921.6 kbps, any baud rate setting 230.4 kbps (PCI-1622C only)
- **Stop Bits**: 1, 1.5, 2

**Protection**
- **ESD Protection**: 8KV (air), 4KV (contact)
- **EFT Protection**: 1 K V

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<tr>
<td>PCI-1622C</td>
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<td>2500 VDC</td>
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</table>

**Features**
- **PCI bus 2.2 compliant**
- **Supports serial speed up to 921.6 kbps, and any baud rate setting**
- **8-port RS-232, or 8-port RS-422/485**
- **OXPCIe958 UARTs with 128-byte FIFOs standard**
- **I/O address automatically assigned by PCI Plug & Play**
- **OS supported: Windows 2000/XP/Vista/7, Windows CE 5.0/6.0, Linux, and QNX**
- **Interrupt status register for increased performance**
- **Space reserved for termination resistors**
- **Automatic RS-422 data flow control**
- **Powerful and easy to use utility (ICOM Tools)**
- **Universal PCI, supports 3.3 V or 5 V PCI bus signal**
- **1,000 Vdc surge protection and 2,500 Vdc isolation protection (PCI-1622C only)**

**Software**
- **Bundled Software**: ICOM Tools
- **OS Support**: Windows 2000/XP/Vista/7, Windows CE 5.0/6.0, Linux, and QNX

**Environment**
- **Operating Humidity**: 5 – 95% RH, non-condensing
- **Operating Temperature**: -10 – 60°C (14 – 144°F)
- **Storage Temperature**: -25 – 85°C (-13 – 185°F)

**Regulatory Approvals**
- **EMC**: EN 55022, EN 61000-3-2, EN 61000-3-3, EN 55044 including (IEC 61000-4-2/3/4/5/6/8/11), FCC Part 15 Subpart B

**Ordering Information**
- **PCI-1620A**: 8-port RS-232 PCI Comm. Card w/Surge
- **PCI-1620B**: 8-port RS-232 PCI Comm. Card w/Surge
- **PCI-1622B**: 8-port RS-422/485 PCI Comm. Card w/Surge
- **PCI-1622C**: 8-port RS-422/485 PCI Comm. Card w/Surge+Iso

**Accessories**
- **OPT8C**: DB62 x1 to DB25 x8 Cable, 1m
- **OPT8H**: DB62 x1 to DB9 x8 Cable, 1m
- **OPT8J**: DB78 x1 to DB9 x8 Cable, 1m
Introduction

PCIE-1620 is an 8-port RS-232, and PCIE-1622 is an 8-port RS-232/422/485 PCI Express communication cards that are compatible with the PCI Express x 1 specification. The cards provide eight EFT protected ports up to 2,500 V DC, and have many functions such as high transmission speed of 921.6 kbps; either eight independent RS-232 ports or eight independent RS-232/422/485 ports which comes with high-performance PCIe958 UARTs with 128-byte FIFO to reduce CPU load. Thus, the PCIE-1620/ PCIE-1622 are especially suitable for making your system reliable in multitasking environments.

Specifications

General
- Bus Type: PCI Express bus 1.0 compliant
- Bus Interface: PCI Express x1
- Certification: CE, FCC class A
- Connectors: 1x Female DB62
- Dimensions (L x W): 185 x 100 mm (7.3” x 3.9”)
- Power Consumption: 260 mA @ +3.3 V

Communications
- Comm. Controller: OxPCIe958
- Data Bits: 5, 6, 7, 8
- Data Signals: RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
- FIFO: 128 bytes
- Flow Control: RTS/CTS, Xon/Xoff
- Parity: None, Odd, Even, Mark and Space
- Speed: 50 bps – 921.6 kbps and any other baud rate setting 230.4 kbps (PCIE-1620B and PCIE-1622B only)
- Stop Bits: 1, 1.5, 2

Protection
- ESD Protection: 8KV (air), 4KV (contact)
- FET Protection: 1 KV
- Surge Protection: 1 KV

Software
- Bundled Software: ICOM Tools
- OS Support: Windows 2000/XP/Vista/7 and Linux

Environment
- Operating Humidity: 5 ~ 95 % RH, non-condensing
- Operating Temperature: -10 – 60°C (14 ~ 140°F)
- Storage Temperature: -25 – 85°C (-13 ~ 185°F)

Ordering Information
- PCIE-1620B: 8-port RS-232 PCI Express Comm. Card w/Surge
- PCIE-1622B: 8-port RS-232/422/485 PCI Express Comm. Card w/Surge
PCIE-1672PC
PCIE-1674PC

NEW

2-port 10/100/1000 BaseT(X) 802.3af (PoE) Compliant Ethernet ports, PCI Express Communication Card

4-port 10/100/1000 BaseT(X) 802.3af (PoE) Compliant Ethernet ports, PCI Express Communication Card

Features
- Intel® server-grade GbE Mac Controller
- PCI Express® x4 compliant
- Supports 12 Vdc AT/ATX input power boost up to 15.4 watts at 48 Vdc per PoE port
- Powered Device (PD) auto detection and classification
- Supports IEEE 802.3u Auto-Negotiation
- 2.25 KV isolation protection on LAN ports and power
- Supports Jumbo frame (9,500 byte) and link aggregation
- Supports IEEE-1588 and IEEE-802.1 AS
- PC CPU off-load by onboard DSP processor

Introduction
The PCIE-1672PC/PCIE-1674PC PoE (Power over Ethernet) PCIE series is PCI express communication card which supports 2 or 4 independent 10/100/1000BaseT(X) 802.3af (PoE) compliant Ethernet ports. With 12 Vdc AT/ATX power input, the PCIE-1672PC/PCIE-1674PC can boost then provides up to 15.4 watts at 48 Vdc power to maximum 2 or 4 x PoE ports on each module. It allows power to be supplied to connected devices, such as PoE-based GigE cameras in machine vision inspection systems, without the need to use separate PoE injectors for those applications. With its 2.25 KV isolation protection, and overload current/voltage protection on LAN ports, the PCIE-1672PC/PCIE-1674PC is ideally designed for scientific research instrumentations, Medical Research Instrumentations, Gigabit Ethernet surveillance IP cameras in intelligent transportation systems, which can also benefit from a scalable Gigabit backbone construction with Power-over-Ethernet support.

Specifications

Ethernet Communications
- Compatibility: IEEE 802.3, IEEE 802.3u, IEEE802.3ab, IEEE802.3x, IEEE802.3af
- Speed: 10/100/1000 Mbps
- No. of Ports: 2 or 4 Gigabit Ethernet Media Access Control (MAC) and physical layer (PHY) ports.
- Port Connector: 8-pin RJ45
- Bus Interface: PCI Express® x4 compliant

Protection
- ESD: 8KV (air), 4KV (contact)
- EFT: 1 KV
- Surge Protection: 1 KV
- Isolation Protection: 2.5 KV

Power Requirements
- Input Voltage: 12 Vdc, AT/ATX System power input
- Overload Current Protection: Present
- Connection: AT/ATX Power Jack
- Output PoE Power: 48 Vdc PoE Power output
  - PCIE-1672PC: Supports 2 PoE ports up to 15.4 W at 48 Vdc
  - PCIE-1674PC: Supports 4 PoE ports up to 15.4 W at 48 Vdc
- Power Consumption:  
  - PCIE-1672PC: Typical: 15.4W, Max: 35.4W
  - PCIE-1674PC: Typical: 15.4W, Max: 70.8W

Environment
- Operating Temperature: 0 ~ 50°C (0 ~ 122°F)
- Storage Temperature: -20 ~ 80°C (-4 ~ 176°F)
- Operating Humidity: 5 ~ 95% RH

Mechanics
- Dimensions (W x D): 185 x 110 mm (7.3” x 3.9”)

Ordering Information
- PCIE-1672PC: 2-port PoE ports PCI Express Comm Card
- PCIE-1674PC: 4-port PoE ports PCI Express Comm Card
Introduction

The PCI-1682U is a special purpose communication card that offers the connectivity of the Controller Area Network (CAN) to your PC. With its built-in CAN controllers, the PCI-1682U provides bus arbitration and error detection with an automatic transmission repeat function. This drastically reduces the chance of data loss and ensures system reliability. The onboard CAN controllers are located at different positions in the memory, and you can run both CAN controllers independently at the same time. Besides, the PCI-1682U has a universal PCI connector, which is compatible with both new 3.3 V signaling systems and traditional 5 V signaling systems. With high-compatibility, the PCI-1682U can be used in diverse systems.

Controller Area Network (CAN)

The CAN is a serial bus system especially suitable for networking “intelligent” I/O devices as well as sensors and actuators within a machine or plant. Characterized by its multi-master protocol, real-time capability, error correction, high noise immunity, and the existence of many different silicon components, the CAN serial bus system, originally developed by Bosch™ for use in automobiles, is increasingly being used in industrial automation.

Direct Memory Mapping Enables Direct Access to the CAN Controller

The PCI-1682U is assigned a memory address. This is the simplest method of integrating a board in a PC and provides the quickest access since the board is treated by the PC as being standard RAM.

Advantech CANopen Protocol Library

Advantech CANopen Protocol Library (acopapi) provides a C application programming interface (API) for accessing the CANopen network protocol stack of nodes. It is easy to use, configure, start and monitor the CANopen devices careless CAN bus, developer just focused on CANopen application functionality.

Specifications

General
- Card Interface: Universal PCI V 2.2
- Certification: CE, FCC class A
- Connectors: 2 x DB9-M
- Dimensions: 175 x 105 mm (6.9” x 4.1”)
- Ports: 2
- Power Consumption: 5 V @ 400 mA (Typical)

Communication
- CAN Controller: NXP SJA1000
- CAN Transceiver: PCA82C250
- Protocol: CAN 2.0 A/B
- Signal Support: CAN_H, CAN_L, GND
- Speed: 1 Mbps
- Termination Resistor: 120 ohm (selected by jumper)

Software
- CAN bus Driver: Windows 2000/XP/Vista/7 (x86 and x64), Windows CE 5.0/6.0, Linux, QNX
- CANopen Software: Windows 2000/XP/Vista/7 (x86 and x64), Windows CE 5.0/6.0

Features
- PCI bus 2.2 compliant
- Operates two separate CAN networks at the same time
- High speed transmission up to 1 Mbps
- 16 MHz CAN controller frequency
- Optical isolation protection of 1000 VDC ensures system reliability
- I/O address automatically assigned by PCI PnP
- LED indicated transmit/receive status on each port
- Windows® DLL library and examples included
- Supports Windows 2000/XP/Vista/7, Linux and QNX CAN driver
- Supports CANopen protocol

Environment
- Operating Temperature: 0 – 65°C (32 – 149°F)
- Storage Temperature: -25 – 85°C (-13 – 185°F)
- Operating Humidity: 5 – 95% RH
- Storage Humidity: 0 – 95% RH

Regulatory Approvals
- EMC: EN55011, EN55022, EN61000-6-4, EN55024, EN61000-6-2, IEC 61000-4-2/3/4/6/8, FCC Part 15 Subpart B (Class B)

Protection
- Isolation Protection: 1,000 VDC

Ordering Information
- PCI-1682U: 2-port CAN-bus Uni PCI Comm Card w/CANopen

RoHS COMPLIANT

2002/95/EC
### PCL-841
- **Card Interface**: ISA
- **Certification**: CE, FCC
- **Connectors**: 2 x DB9-M
- **Dimensions**: 185 x 100 mm (7.3" x 3.9")
- **Ports**: 2
- **Power Consumption**: 5 V @ 400 mA typical

### PCM-3680/I
- **Card Interface**: ISA
- **Certification**: CE, FCC
- **Connectors**: 2 x DB9-M with cable
- **Dimensions**: 90 x 96 mm (3.6" x 3.8")
- **Ports**: 2
- **Power Consumption**: 5 V @ 400 mA

### Specifications
#### General
- **Card Interface**: ISA / Universal PCI
- **Certification**: CE, FCC
- **Connectors**: 2 x DB9-M
- **Dimensions**: 185 x 100 mm (7.3" x 3.9")
- **Ports**: 2
- **Power Consumption**: 5 V @ 400 mA typical

#### Communications
- **CAN Controller**: SJA-1000 / SJA-1000
- **CAN Transceiver**: 82C250 / 82C250
- **Protocol**: CAN2.0 A/B / CAN2.0 A/B
- **Speed**: 500 kbps / 1 Mbps
- **IRQ**: 3, 4, 5, 6, 7, 9, 10, 11, 12, 15
- **Memory Segment Base Address**: From C800H to EF00H
- **Signal Support**: CAN_H, CAN_L

#### Protection
- **Isolation Protection**: 1,000 V_oc

#### Environment
- **Operating Temp.**: 0 – 50°C (32 – 122°F)

#### Ordering Information
- **PCL-841**: 2-port CAN-bus ISA Comm. Card w/ Iso
- **PCM-3680/I**: 2-port CAN Uni-PCI COMM Card w/iso

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### Features
- Operates two separate CAN networks simultaneously
- High speed transmission up to 500 kbps
- Optical isolation protection of 1000 V_oc
- Windows DLL library and examples included
- Supports 32-bit/64-bit Windows 2000/XP/Vista/7 and Linux

---

### Features
- Operates two separate CAN networks simultaneously
- High speed transmission up to 1 Mbps
- Optical isolation protection of 1000 V_oc
- Windows DLL library and examples included
- Supports 32-bit/64-bit Windows 2000/XP/Vista/7 and Linux

---

### Features
- Operates two separate CAN networks simultaneously
- High speed transmission up to 1 Mbps
- 16 MHz CAN controller frequency
- Optical isolation protection ensures system reliability
- LEDs indicate Transmit/Receive status on each port
- Supports wide operating temperature
- Supports 32/64-bit WinXP/Vista/Win7 and Linux
- Supports WinCE 5.0/6.0

---

### Environment
- **Operating Temp.**: -40 – 85°C (-40 – 185°F)

### Ordering Information
- **PCM-3680**: Dual-port Iso CAN-bus PC/104 Module
- **PCM-3680I**: Dual-port Iso CAN-bus PCI-104 Module
### PCM-3610
- **Features**
  - High speed transmission rate
  - Automatic RS-485 data flow control
  - Jumper selectable interrupt level
  - Supports Windows 2000/XP/Vista/7
  - Supports WinCE 4.2, 5.0
  - Powerful and easy-to-use utility (ICOM Tools)

### PCM-3612
- **Features**
  - Long distance communication
  - Automatic RS-485 data flow control
  - Jumper selectable interrupt level
  - Supports Windows 2000/XP/Vista/7
  - Supports WinCE 4.2, 5.0
  - Powerful and easy-to-use utility (ICOM Tools)

### PCM-3614
- **Features**
  - Automatic RS-485 data flow control
  - Shared IRQ settings for each ports
  - LED indicators: TX, RX
  - Standard PC ports: COM1, COM2, COM3, COM4 compatible
  - Supports Windows 2000/XP/Vista/7
  - Supports WinCE 4.2, 5.0
  - Powerful and easy-to-use utility (ICOM Tools)

### PCM-3610 Specifications
- **General**
  - Card Interface: PC/104
  - Certification: CE, FCC
  - Connectors: 2 x DB9-M
  - Ports: 2
  - Power Consumption: +5V @ 400mA (Typical)

- **Communications**
  - Channel 1: RS-232, 422, or 485
  - Channel 2: RS-422, or RS-485
  - Character Length: 5, 6, 7, or 8 bits
  - IRQ: 3, 4, 5, 6, 7, 9
  - Parity: Even, Odd, or None
  - Speed: 50 bps – 115.2 kbps
  - Stop Bit: 1, 1.5, or 2

- **Power Consumption**: +5V @ 400mA (Typical)

### PCM-3612 Specifications
- **General**
  - Card Interface: PC/104
  - Certification: CE, FCC
  - Connectors: 2 x DB9-M
  - Indicators: Red LED for TX, Green LED for RX
  - Ports: 2
  - Power Consumption: +5V @ 400mA (Typical)

- **Communications**
  - Channel 1 and 2: RS-422, or RS-485
  - Character Length: 5, 6, 7, 8 bits
  - IRQ: 3, 4, 5, 6, 7, 9, 10, 11, 12, or 15
  - Parity: Even, Odd, or None
  - Speed: 50 bps – 115.2 kbps
  - Stop Bit: 1, 1.5, or 2

### PCM-3614 Specifications
- **General**
  - Card Interface: PC/104
  - Certification: CE, FCC
  - Connectors: 4 x DB9-M
  - Ports: 4
  - Power Consumption: +5V @ 450mA (Typical)

- **Communications**
  - Data Bits: 5, 6, 7, 8
  - I/O Address Range: 0x000 – 0x3F8
  - IRQ: 3, 4, 5, 6, 7, 9, 10, 11, 12, or 15
  - Parity: Even, Odd, or None
  - Data Signals: RS-422: TxD+, TxD-, RxD+, RxD-, CTS+, CTS-, RTS+, and RTS-.
  - RS-485: DATA+, DATA-, CTS+, CTS-
  - Speed: 50 bps – 921.6 kbps
  - Stop Bits: 1, 1.5, 2
  - Termination Resistor: 120 Ω

### Ordering Information
- **PCM-3610**
  - Isolated RS-232/422/485 Module
- **PCM-3612**
  - Dual Port RS-422/485 Module
- **PCM-3614**
  - 4-port RS-422/485 High-speed Module
### PCM-3618

- **Termination Resistor**: 2kΩ ±5%
- **Stop Bits**: 1, 1.5, 2
- **Speed**: 50 bps ~ 460.3 kbps (PCM-3641)
- **Parity**: None, Even and Odd
- **Data Signals**: RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND
- **I/O Address Range**: 0 x 0000 ~ 0 x 03F8
- **Power Consumption**: +5V @ 200 mA (Typical), +5V @ 250 mA (Max)
- **Ports**: 4
- **Connectors**: 8 x DB9-M
- **Certification**: CE, FCC

### PCM-3640/3641

- **Termination Resistor**: 2kΩ ±5%
- **Stop Bits**: 1, 1.5, 2
- **Speed**: 50 bps ~ 115.2 kbps (PCM-3640), 50 bps ~ 460.3 kbps (PCM-3641)
- **Parity**: None, Even and Odd
- **Data Signals**: RS-422: TxD+, TxD-, RxD+, RxD-, RTS+, RTS-, CTS+, CTS-, DTR, DSR, DCD, RI, GND
- **I/O Address Range**: 0 x 0200 ~ 0 x 03F8
- **Power Consumption**: +5V @ 250 mA (Max)
- **Ports**: 4
- **Connectors**: 4 x DB9-M
- **Certification**: CE, FCC

### PCM-3660

- **Termination Resistor**: 2kΩ ±5%
- **Stop Bits**: 1, 1.5, 2
- **Speed**: 50 bps ~ 200 mA (Typical)
- **Parity**: None, Even and Odd
- **Data Signals**: RS-485: DATA+, DATA-, CTS+, CTS-, RTS+, RTS-, RxD-, CTS+, CTS-, RTS+, RTS-
- **I/O Address Range**: 0 x 0200 ~ 0 x 03F8
- **Power Consumption**: +5V @ 250 mA (Max)
- **Ports**: 4
- **Connectors**: 4 x DB9-M
- **Certification**: CE, FCC

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### Ordering Information

- **PCM-3618**: 8-port RS-422/485 High-Speed Module
- **PCM-3640**: 4-port RS-232 Module
- **PCM-3641**: 4-port RS-232 High-speed Module
- **PCM-3660**: Jumperless Ethernet Module

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### Specifications

**General**
- **Card Interface**: PC/104
- **Certification**: CE, FCC
- **Connectors**: 8 x DB9-M
- **Ports**: 8
- **Power Consumption**: +5V @ 650 mA

**Communications**
- **Data Bits**: 5, 6, 7, 8
- **I/O Address Range**: 0 x 0000 ~ 0 x 3F8
- **IRQ**: 3, 4, 5, 6, 7, 9, 10, 11, 12, 15
- **Parity**: None, Even and Odd
- **Data Signals**: RS-422: TxD+, TxD-, RxO+, RxO-, RS-485: DATA+, DATA-, CTS+, CTS-, RTS+, RTS-, GND
- **Speed**: 50 bps ~ 921.6 kbps
- **Stop Bits**: 1, 1.5, 2
- **Termination Resistor**: 120Ω

**Environment**
- **Operating Humidity**: 0 ~ 90 % RH
- **Operating Temperature**: 0 ~ 65°C (32 ~ 149°F)
- **Storage Temperature**: -25 ~ 80°C (-13 ~ 176°F)

**Ordering Information**
- **PCM-3618**: 8-port RS-422/485 High-Speed Module

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### Features

- Automatic RS-485 data flow control
- Standard PC ports: COM1, COM2, COM3, COM4 compatible
- Supports Windows 2000/XP/Vista/7
- Transmission speeds up to 460 kbps (PCM-3641)
- Supports WinCE 5.0/6.0
- Onboard 32 KB buffer for multi-packages
- Supports Windows 2000/XP/Vista/7
- Standard PC ports: COM1, COM2, COM3, COM4 compatible

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### Certification

- CE, FCC
- PC/104
- RoHS COMPLIANT 2002/95/EC

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**General**
- **Boot ROM Address**: C0000, C8000, D0000, or D8000H
- **Card Interface**: PC/104
- **Certification**: CE, FCC
- **Connectors**: 1 x PC/104 stackthrough, 1 x 10Base-T (RJ-45), 1 x 16-pin insulation displacement connector for AU1
- **Power Consumption**: +5V @ 400 mA max

**Communications**
- **Data Bus**: 8-bit, 16-bit, or auto-sending
- **I/O Address**: 200, 220, 240, 260, 280, 2A0, 2C0, 300, 320, 340, 380, 340
- **IRQ**: 3, 4, 5, 9, 10, 11, 12 or 15
- **Standard**: IEEE 802.3 10 Mbps
- **Boot ROM Address**: C0000, C8000, D0000, or D8000H
- **Card Interface**: PC/104
- **Certification**: CE, FCC
- **Connectors**: 1 x PC/104 stackthrough, 1 x 10Base-T (RJ-45), 1 x 16-pin insulation displacement connector for AU1
- **Power Consumption**: +5V @ 400 mA max

**Environment**
- **Operating Humidity**: 0 ~ 90 % RH
- **Operating Temperature**: 0 ~ 65°C (32 ~ 149°F)
- **Storage Temperature**: -25 ~ 80°C (-13 ~ 176°F)

**Ordering Information**
- **PCM-3660**: Jumperless Ethernet Module

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### Environment

- **Operating Humidity**: 10 ~ 90% RH
- **Operating Temperature**: 0 ~ 70°C (32 ~ 158°F)
- **Storage Temperature**: -15 ~ 80°C (5 ~ 176°F)
Serial Communication Cards

PCM-3614I/3618I
PCM-3641I

4/8-port RS-232/422/485 PCI-104 Module
4-port RS-232 PCI-104 Module

Features
- Automatic RS-485 data flow control
- Shared IRQ settings for each port
- LED indicators: TX, RX
- Standard PC ports: COM1, COM2, COM3, COM4 compatible
- Supports Windows 2000/XP/Vista/7 and Linux
- Supports WinCE 5.0/6.0
- Powerful and easy-to-use utility (ICOM Tools)

Specifications

General
- Card Interface: PCI-104
- Connectors:
  - PCM-3614I: 1 x 40-pin box header
  - PCM-3618I: 2 x 40-pin box header
- Ports:
  - PCM-3614I: 4
  - PCM-3618I: 8
- Power Consumption:
  - +5V @ 250 mA (max.)

Communications
- Data Bits: 5, 6, 7, 8
- Data Signals:
  - RS-422: TxD+, TxD-, RxD+, RxD-, RTS+, RTS-, CTS+, CTS-, CTS
  - RS-485: DATA+, DATA-, GND
  - RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND
- IRQ: 3, 4, 5, 6, 7, 9, 10, 11, 12, 15
- Parity: None, Even and Odd
- Speed: 50 bps – 921.6 kbps
- Stop Bits: 1, 1.5, 2
- Termination Resistor: 120 Ω

Environment
- Operating Humidity: 0 – 90 % RH
- Operating Temperature: -40 – 85°C (-40 – 185°F)
- Storage Temperature: -40 – 85°C (-40 – 185°F)

Ordering Information
- PCM-3614I: 4-port RS-232/422/485 PCI-104 Module
- PCM-3618I: 8-port RS-232/422/485 PCI-104 Module

Features
- Transmission speeds up to 460 kbps
- Shared IRQ settings for each port
- Standard PC ports: COM1, COM2, COM3, COM4 compatible
- Supports Windows 2000/XP/Vista/7 and Linux
- Supports WinCE 5.0/6.0
- Powerful and easy-to-use utility (ICOM Tools)

Specifications

General
- Card Interface: PCI-104
- Connectors:
  - 1 x 40-pin box header
- Ports: 4
- Power Consumption: +5V @ 250 mA (max.)

Communications
- Data Bits: 5, 6, 7, 8
- Data Signals:
  - TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI
- IRQ: 3, 4, 5, 6, 7, 9, 10, 11, 12, 15
- Parity: None, Even and Odd
- Speed: 50 bps – 460.3 kbps
- Stop Bits: 1, 1.5, 2
- Termination Resistor: 120 Ω

Environment
- Operating Humidity: 0 – 90 % RH
- Operating Temperature: -40 – 85°C (-40 – 185°F)
- Storage Temperature: -40 – 85°C (-40 – 185°F)

Ordering Information
- PCM-3641I: 4-port RS-232 PCI-104 Module
# Embedded Automation Computers

## Embedded Automation Computer Overview

- **Embedded OS Introduction and Driver Support**
- **Embedded Automation Computer Selection Guide**
- **iDoor Module Selection Guide**

## Din-rail Automation Controller

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNO-1483G</td>
<td>Intel® Core™ i3 Regular-Size DIN-Rail Controller w/ 4 x GbE, 2 x mPCIe, 1 PCIe, DP/VGA</td>
</tr>
<tr>
<td>UNO-1110</td>
<td>TI Cortex AM3505 DIN-rail PC with 2 x LAN, 5 x COM, 4 x USB</td>
</tr>
<tr>
<td>UNO-1172A/AE</td>
<td>Intel® Atom™ D510 DIN-rail PCs with 3 x LAN, 2 x COM, VGA, Mini PCIe, PC/104+</td>
</tr>
<tr>
<td>UNO-1150G/GE</td>
<td>AMD Geode™ LX800 DIN-rail PCs with 2 x LAN, 3 x COM, PCI-104</td>
</tr>
</tbody>
</table>

## Standmount Embedded Automation Controller

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNO-1150GH</td>
<td>Class I, Division 2 Certified AMD Geode™ LX DIN-rail PC with 2 x LAN, 3 x COM, PCI-104</td>
</tr>
<tr>
<td>UNO-1150GHE</td>
<td>Class I, Division 2 Certified AMD Geode™ LX DIN-rail PC with 2 x LAN, 3 x COM, PCI-104</td>
</tr>
</tbody>
</table>

## Wallmount Embedded Automation Box PC

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNO-3072A</td>
<td>Intel® Atom™ D510 Automation Computer with 2 x PCI, 2 x GbE, and FireWire</td>
</tr>
<tr>
<td>UNO-3074A</td>
<td>Intel® Atom™ D510 Automation Computer with 4 x PCI, 2 x GbE, and FireWire</td>
</tr>
<tr>
<td>UNO-3082</td>
<td>Intel® Core™ 2 Duo Automation Computer with Dual DVI, 2 x PCI and FireWire</td>
</tr>
<tr>
<td>UNO-3084</td>
<td>Intel® Core™ 2 Duo Automation Computer with Dual DVI, 1 x PCIe, 3 x PCI and FireWire</td>
</tr>
</tbody>
</table>

## Domain certified UNO

### Class I, Division 2 Certification Overview

- **UNO-1150GH**
- **UNO-1150GHE**
- **UNO-1172AH**

## iDoor Technology for Embedded Automation Computers

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCM-24D2R2</td>
<td>2-Ports Isolated RS-232 Mini PCIe, DB9</td>
</tr>
<tr>
<td>PCM-24D2R4</td>
<td>2-Ports Isolated RS-422/485 Mini PCIe, DB9</td>
</tr>
<tr>
<td>PCM-24D4R2</td>
<td>4-Ports Non-Isolated RS-232 Mini PCIe, DB37</td>
</tr>
<tr>
<td>PCM-24D4R4</td>
<td>4-Ports Non-Isolated RS-422/485 Mini PCIe, DB37</td>
</tr>
<tr>
<td>PCM-2602CA</td>
<td>2-Ports Isolated CANBus mPCIe, CANopen, DB9</td>
</tr>
<tr>
<td>PCM-27D24DI</td>
<td>24-Channels Isolated Digital I/O with counter mPCIe, DB37</td>
</tr>
<tr>
<td>PCM-24R1TP</td>
<td>1-Port Gigabit Ethernet, Intel 82574L, IEEE 1588 PTP, RJ45</td>
</tr>
</tbody>
</table>

## Accessories

<table>
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<tr>
<th>Description</th>
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To view all of Advantech's Programmable Automation Controllers & I/O Modules, please visit www.advantech.com/products.
Introduction

Advantech’s Embedded Automation Computers are designed to fulfill the needs of mission critical automation applications. Their embedded design, industrial automation features and advanced computer technology deliver robustness, reliability and flexibility to satisfy customers who are looking for a rugged & compact computing platform with an industrial design and built-in I/O for diverse automation applications.

Leveraging field-approved and worldwide accepted real-time OS technology, Advantech provides Windows CE, Windows XP/7/8 Embedded and Embedded Linux ready solutions and supports several standard networking interfaces, such as Ethernet, RS-232/422/485, onboard I/O lines, CANBus and more. Because of their open architecture, great expansion capability and reliable fanless, cable-less and diskless design, Advantech’s Embedded Automation Computers are ideal platforms to implement diverse custom applications in power and energy, transportation, machine automation, factory automation, building automation, facility monitoring system, and environment monitoring vertical markets.

Features

Fanless Design

Advantech’s Embedded Automation Computers are robust computers without rotating parts, such as a CPU fan, system fan, power supply fan or HDD. This concept significantly increases reliability, extends MTTR, and extremely reduces maintenance efforts. Therefore, you don’t need to worry about a CPU cooler or HDD failure issue anymore, even in dusty environments.

For applications that require mass storage, we also provide dual HDD with built-in RAID 1 feature that ensures data well kept once one of HDDs is failed during operation.

No Internal Cabling

Unlike general Box PC designs where cables are used for wiring between connectors and CPU boards, connectors on Advantech’s Embedded Automation Computers are soldered directly on the PCB. Therefore, there is no internal cabling inside the chassis. This makes Advantech’s Embedded Automation Computers much more reliable than general Box PCs in harsh environments.

Energy Star

Advantech’s Embedded Automation Computers have been certified by Energy Star, recognizing their extreme low power consumption and high energy utilization. To build a low-carbon society everyone needs to do their best.

Industrial-grade Power Design

Advantech’s Embedded Automation Computers are designed to accept wide DC power input (ex. 9 – 36 VDC) in factory floors. In addition, they also feature power reversal protection that prevents system damage when power inputs are reversed.

Grounding Isolation Between Chassis and System

By adapting the feedback of industrial field site, Advantech’s Embedded Automation Computers provide an isolated ground between the system and field. This feature can increase the stability to the entire system structure and is also important for constructing larger systems.

Industrial-grade RS-232/422/485 Design

Advantech’s Embedded Automation Computers provide professional serial communication ports. They not only have patented RS-485 auto-flow control technology, but also have the enhanced drivers under the embedded Windows system which provides better capabilities than traditional drivers and support any baud-rate function for the Oxford UARTs.

Wide Operating Temperature Range

This series supports wide operating temperature up to 75°C through selecting low-voltage CPU and industrial-grade components as well as associated thermal design that meets critical industrial-grade applications.

Non-volatile Memory

To keep critical data alive when system power is lost, Advantech’s Embedded Automation Computers are equipped with onboard battery-backup memory. Onboard battery supplies power to keep memory operating all the time. In addition, we also provide the new FeRAM technology in a Mini PCIe card form factor. FeRAM have similar behavior of SRAM, but without the need a battery to keep the data, it can support up to 100 trillion read/writes times.

Hardware Switchable AT/ATX Power Mode

AT and ATX are two kinds of power management modes. AT features PC on/off capability, which can be controlled through an external power line. On the other hand, ATX features the capability of turning on/off PCs through Hardware/Software triggering signal, such as Wake on LAN. In Advantech’s Embedded Automation Computers, these modes are hardware-based, which serves as a more reliable method.

Plug-and-Display VGA Port

The VGA port in Advantech’s Embedded Automation Computers is designed to be ready for display anytime, even when the VGA monitor is not attached while booting up.

Wide Form Factor Selections to Fit Application Environments

These Embedded Automation Computers provide different form factors to fulfill the requirements and scenario of different automation applications. Simply classification: UNO-2000 series are for MES (Manufacturing Execution System)/Thin Client Markets; UNO-1000/5000 series are for Machine Automation/Facility Automation.

Advantech iDoor technology

Advantech iDoor technology supports automation feature extensions such as industry FieldBus communication, Wi-Fi/3G, digital I/O, including palm, small, and regular-size form-factors with indicated market segments in terms of entry, value and performance product positioning, which can fulfill a diverse range of requirements.
Embedded OS Introduction and Driver Support

**Supports Many Operating Systems**
Advantech's Embedded Automation Computers not only support the popular Windows operating system, but also provide embedded operating system solutions offering a pre-configured image with optimized onboard device drivers. Advantech’s Embedded Automation Computers provide the following most popular embedded operating systems:
- Windows CE 5.0
- Windows CE 6.0 R3
- Windows Embedded Compact 7 (WEC 7)
- Windows Embedded Standard (WES 2009, WES7)
- Advantech Embedded Linux

These operating systems fulfill the toughest requirements of complete functionality, high reliability, minimized cost and low power consumption. These Embedded Automation Computers quickly prove themselves to be application-ready platforms that save time and energy in launching projects.

**Real-Time Windows CE Meets Time-Critical Demands**
Microsoft Windows CE (now officially known as Windows Embedded Compact and previously also known as Windows Embedded CE, WinCE) is a robust, compact and highly efficient real-time operating system that can quickly satisfy any customized high-performance embedded applications. It also provides enterprise-scale protection with demanding network security mechanisms, including Kerberos Security Protocol, Extensible Authentication Protocol, Secure Sockets Layer (SSL) and so on. Furthermore, Windows CE supports the network standard, IPv6 and IPv4. Windows CE possesses robust core OS services and complete networking services to offer users an ideal embedded development platform.

Windows Embedded Compact (WEC 7) is the seventh major release of Windows Embedded CE operation system. WEC 7 works on dual core CPUs in symmetric multiprocessing mode and the networking now support NDIS 6.1. WEC 7 includes .NET Compact Framework 3.5, Silverlight for Windows Embedded, Internet Explorer with integrated Adobe Flash v10. Advantech CE image is optimized for X86, ARM devices that have small image footprint, boot fast features and robust platforms for industrial application.

**WinCE Powered by Wonderware Offers Flexible HMI**
WinCE 6.0 R3 version for the UNO series meets Wonderware's HMI Software's system requirement. With the HM software support, these computers can work as HMI or control nodes. With the provided VESA mounting kit they can be integrated with panel monitors, such as FPM series. With support for touch screen controllers under WinCE, users can operate the systems through touch. Without the monitor, they can also be a control node for programmed control logic.

**Windows Embedded Standard**
Windows Embedded Standard (WES 2009) is the updated version of Windows XP Embedded (XPe) which is a componentized version, and based on Windows XP Professional binaries and features. It includes the latest multimedia (Windows Media Player 11, DirectX 9.0c), browsing (Internet Explorer 8.0) technologies, security, Remote Desktop Protocol 6.1, Enhanced Write Filter (EWF) and File Based Write Filter (FBWF).

You can seamlessly integrate specific applications into WES with minimum effort. Windows Embedded Standard 7, is based on Windows 7. Includes Windows Media Player 12, DirectX11, Internet Explorer 8.0, Remote Desktop Protocol 7.1, Silverlight 5, and EWF with Hibernate Once Resume Many (HORM), FBWF, etc. It is available in IA-32 and x64 versions

**Open Source Embedded Linux Offers a Cost-effective Alternative**
Embedded Linux is a famous, UNIX compatible, open source embedded operating system which ports the Linux kernel to a specific CPU and board installed into the embedded device. Advantech offers Embedded Linux installation CD for the X86-based UNO series products and the Embedded Linux offer Fedora Core 8, Fedora Core 13 kernels and optimized root file systems. In the Embedded Linux, it features read-only file system, real-time kernel, on-line update, X Windows, PDF viewer (XFDF), FTP (GFTP), IPv6, browser support (Firefox), VNC server, Web server, fast boot and software management (RedHat Package Manager). Advantech also offers Embedded Linux image for RISC-based UNO, series products.

**Driver Packages Provided for QNX and Popular Linux Distributions**
Customers can install QNX and standard Linux distributions on the series Embedded Automation Computers, Advantech provides device drivers for the following self-design hardware and IO:
- Serial COM ports driver
- CANbus driver
- Watchdog Timer, Multi-level Watchdog
- NVRAM (Non-Volatile RAM) driver
- Digital I/O driver

To follow the GNU's open source code policy, Advantech provides Linux driver source codes or binary for compiling and installing popular Linux distributions as well as QNX 6.3.2, 6.4.1 and 6.5. Customers can easily get it in the companion DVD and on the Advantech web site.

**Standard Windows Support up to Windows 8**
Advantech’s Embedded Automation Computers provide necessary drivers on the companion DVD for users to install popular Windows operating systems, such as Windows 2000, Windows XP Pro, Windows 7, even the latest Windows 8. For the self-design hardware or IO, Advantech provides the Windows drivers 32/64 bit which is the standard driver architecture of Windows.

**Software Drivers & Utilities**
Advantech’s Embedded Automation Computers provide more value to automation users. By accumulating years of field-experience and collecting customer’s feedback, we had developed several convenient and high-efficient driver/utility which would highly facilitate users to manage the Embedded Automation Computers.

**DiagAnywhere for Cluster Management**
Users usually need to manage a cluster of the UNO series units on the field site. Advantech DiagAnywhere provides the following functions for users to manage them easily:
- Remote monitoring, control, shutdown and wakeup
- Screen capture and recording
- File transferring

Every Advantech series’ Windows-based embedded system, such as WinCE, WES and XPe comes bundled with DiagAnywhere. Users only need one client-end utility installed on the PC or laptop then they can do the remote monitor and diagnosis easily.

**Non-volatile Memory, Useful Buffer for Controller Application**
In some control applications, users need quick and reliable buffers for data transferring. The UNO series provide the Non-Volatile memory (NVRAM). With the driver support, users can use memory easily just like a local drive. It can also be used as a quick buffer; not only with high read/write efficiency, but it also can reduce the accessing frequency of CompactFlash.

**EWF/FBWF Protects the System**
In the provided WES and XPe image of the Advantech Automation series platforms, we provide a friendly utility which has clear interface to guide users active/inactive the EWF (Enhanced Write Filter) and FBWF (File-Based Write Filter) functions step by step. EWF and FBWF are the features provided by Microsoft. They are used to protect the WES or XPE from damage. While EWF/FBWF is active, it redirects all disk/files writes to a protected drive, to RAM or a separate disk, the protected drive or files would never be written, and everything would be back to the original configuration after booting. Empowered by the provided utility, users can utilize the EWF/FBWF easily.

**System Utilities for Status-Monitoring and Availability**
Users in industrial fields usually need to monitor the system status. Advantech automation series device provide the LMsensor driver/utility for users to monitor the system health, such like the Temperature of CPU/Board and Voltage of system power source. Advantech provide the Watchdog Timer (WDT) driver/utility to increase the availability of the system. WDT would reset the system or send alarm while the system is stuck on some accident events. Advantech also provides Multi-level Watchdog that able to trigger many kinds of events for system monitoring, it will reset the system in last level. Those functions, including brightness control, LMsensor and Watchdog/Multi-level WDT, user can call APIs to integrate into their applications.

**Enhanced COM Port Driver Meets the Industrial Requirements**
In the WinCE of the UNO series, we developed enhanced COM port driver which is more time-efficient than standard driver. It can not only increase the communication efficiency but also reduce the CPU loading. In addition, the WDM driver of COM port with Oxford UART supports the function of any-baud-rate. This function is able to support any baud rate users want for specific applications and prevent data loss.

**Driver/Utility Support for Fieldbus and Domain I/O**
As a domain-focused automation computer provider, Advantech provides a series of value-added software to fulfill the demand of the fieldbus and domain I/O, including EtherCAT Master, CANOpen, Modbus OPC Server and IRIG-B.
## Embedded Automation Computer Selection Guide

<table>
<thead>
<tr>
<th>Model Name</th>
<th>UNO-1483G</th>
<th>UNO-1110</th>
<th>UNO-1172A/1172AE</th>
<th>UNO-1150G/1150GE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU</strong></td>
<td>4th Gen. Intel® Core™ i3-4010U, 1.7GHz</td>
<td>Ti Cortex A8 AM3305, 600 MHz</td>
<td>Intel® Atom™ D510, 1.66 GHz</td>
<td>AMD Geode LX800, 500 Mhz</td>
</tr>
<tr>
<td><strong>Onboard RAM</strong></td>
<td>8GB DDR3L SDRAM</td>
<td>256 MB DDR2 SDRAM</td>
<td>2 GB DDR2 SDRAM</td>
<td>256 MB DDR SDRAM</td>
</tr>
<tr>
<td><strong>Battery-Backup</strong></td>
<td>-</td>
<td>1 MB</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>DP, VGA</td>
<td>VGA</td>
<td>VGA</td>
<td>VGA</td>
</tr>
<tr>
<td><strong>Audio</strong></td>
<td>Line-out</td>
<td>Yes, 5.1 channel HD Audio</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Serial Ports</strong></td>
<td>1 x RS-232, 2 x RS-422/485</td>
<td>4 x RS-232/422/485 (2 x Isolation, optional)</td>
<td>2 x RS-232/422/485 (pin header)</td>
<td>2 x RS-232 (one pin header reserved)</td>
</tr>
<tr>
<td><strong>Ethernet Ports</strong></td>
<td>4 x 10/100/1000 Base-T</td>
<td>2 x 10/100Base-T</td>
<td>3 x 10/100/1000Base-T</td>
<td>2 x 10/100Base-T</td>
</tr>
<tr>
<td><strong>USB Ports</strong></td>
<td>2 x USB 2.0, 2 x USB 3.0</td>
<td>Four</td>
<td>Four</td>
<td>Two</td>
</tr>
<tr>
<td><strong>PC Card Slots</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Printer Ports</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>PC/104 Expansion</strong></td>
<td>-</td>
<td>-</td>
<td>2 x PC/104+ (UNO-1172AE)</td>
<td>2 x PC/104 (UNO-1150GE)</td>
</tr>
<tr>
<td><strong>PCIe/PCI Expansion</strong></td>
<td>1 x PCIe x1, 3 x Mini PCIe (w/ USB signal only)</td>
<td>1 x Mini PCIe (uno-1172A)</td>
<td>1 x Mini PCIe (UNO-1172AE)</td>
<td>1 x Mini PCIe (UNO-1150GE)</td>
</tr>
<tr>
<td><strong>Onboard I/O</strong></td>
<td>4-ch DI, 4-ch DO</td>
<td>4-ch DI, 2-ch DO</td>
<td>2-ch DI, 6-ch DO</td>
<td>-</td>
</tr>
<tr>
<td><strong>Watchdog Timer</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>CompactFlash Slots</strong></td>
<td>-</td>
<td>One internal</td>
<td>One internal</td>
<td>-</td>
</tr>
<tr>
<td><strong>2.5” HDD Expansion</strong></td>
<td>1 x SATA 6Gb/s</td>
<td>1 x SATA</td>
<td>1 x SATA (UNO-1150GE)</td>
<td>-</td>
</tr>
<tr>
<td><strong>Mounting</strong></td>
<td>DIN-rail/Wall</td>
<td>DIN-rail/Wall</td>
<td>DIN-rail/Wall</td>
<td>DIN-rail/Wall</td>
</tr>
<tr>
<td><strong>Anti-Vibration</strong></td>
<td>2 G w/ mSATA, 1 G w/ HDD</td>
<td>-</td>
<td>2 G w/CF, 1 G w/HDD</td>
<td>2 G w/CF, 1 G w/HDD</td>
</tr>
<tr>
<td><strong>Anti-Shock</strong></td>
<td>50 G w/ mSATA, 20 G w/ HDD</td>
<td>-</td>
<td>50 G w/CF, 20 G w/HDD</td>
<td>50 G w/CF, 20 G w/HDD</td>
</tr>
<tr>
<td><strong>Power Input Range</strong></td>
<td>12/24 VDC</td>
<td>10 ~ 36 VDC</td>
<td>10 ~ 36 VDC</td>
<td>10 ~ 36 VDC</td>
</tr>
<tr>
<td><strong>Power Consumption</strong></td>
<td>-20 ~ 60°C (-4 ~ 140°F)</td>
<td>-10 ~ 70°C @ 5 ~ 85% RH</td>
<td>-10 ~ 65°C (14 ~ 149°F)</td>
<td>-10 ~ 60°C (14 ~ 140°F)</td>
</tr>
<tr>
<td><strong>Power Requirements</strong></td>
<td>41W</td>
<td>8.5 W</td>
<td>24 W</td>
<td>15 W</td>
</tr>
<tr>
<td><strong>Dimensions (W x D x H)</strong></td>
<td>110 x 198 x 139 mm (4.3” x 7.8” x 5.8”)</td>
<td>48 x 127 x 122 mm (1.9” x 5” x 6”)</td>
<td>85.5 x 139 x 152 mm (3.4” x 5.5” x 6”)</td>
<td>71 x 139 x 152 mm (2.8” x 5.5” x 6”)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>1.6kg (3.5 lbs)</td>
<td>0.45 kg</td>
<td>1.6 kg / 2.0 kg</td>
<td>1.6 kg / 2.0 kg</td>
</tr>
<tr>
<td><strong>Page</strong></td>
<td>13-8</td>
<td>13-10</td>
<td>13-11</td>
<td>13-12</td>
</tr>
</tbody>
</table>

* All power input ranges represent the minimum and maximum values recommended for these devices.
<table>
<thead>
<tr>
<th>Model Name</th>
<th>UNO-2272G</th>
<th>UNO-2362G</th>
<th>UNO-2483G / UNO-2472G</th>
<th>UNO-2174G/GL</th>
<th>UNO-2174A/2178A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU</strong></td>
<td>Intel® Atom™ Processor E3825 1.33 GHz Dual Core</td>
<td>AMD G-Series APU T40E 1.0GHz Dual Core</td>
<td>Intel® Core™ i7-4650U ULT 1.7GHz Dual Core Intel® Core™ i3-4100U ULT 1.7GHz Dual Core Intel® Core™ i7-3865U ULT 1.6GHz Dual Core Intel® Atom™ E845 1.91GHz Quad Core</td>
<td>Intel® Core™ i7-2655LE, 2.2 GHz</td>
<td>Intel® Atom™ N450, 1.6 GHz Intel® Atom™ D510, 1.66 GHz</td>
</tr>
<tr>
<td><strong>Onboard RAM</strong></td>
<td>2GB DDR3L SDRAM</td>
<td>2GB DDR3 SDRAM</td>
<td>8GB/4GB DDR3L SDRAM 2GB DDR3 SDRAM</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Battery-Backup RAM</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1 x SIM slot</td>
<td>1 x SIM slot</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>HDMI</td>
<td>HDMI/DVI</td>
<td>HDMI/VGA</td>
<td>HDMI/DVI</td>
<td>VGA</td>
</tr>
<tr>
<td><strong>Audio</strong></td>
<td>Yes</td>
<td>-</td>
<td>Yes</td>
<td>Yes, 5.1 channel HD Audio</td>
<td>Yes, 5.1 channel HD Audio</td>
</tr>
<tr>
<td><strong>Serial Ports</strong></td>
<td>1 x RS-232</td>
<td>1 x RS-232, 1 x RS-485</td>
<td>2 x RS-232, 2 x RS-422/485</td>
<td>2 x RS-232</td>
<td>2 x Mini PCIe with 1 x SIM slot</td>
</tr>
<tr>
<td><strong>Ethernet Ports</strong></td>
<td>1 x 10/100 Base-T</td>
<td>2 x 10/100/1000Base-T, (1 x Gigabit Ethernet switch with daisy chain technology)</td>
<td>4 x 10/100/1000Base-T</td>
<td>4 x 10/100/1000Base-T</td>
<td>2 x 10/100/1000Base-T</td>
</tr>
<tr>
<td><strong>USB Ports</strong></td>
<td>2 external</td>
<td>4 external</td>
<td>4 external</td>
<td>2 x USB3.0</td>
<td>4 external</td>
</tr>
<tr>
<td><strong>PC Card Slots</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1 x SIM slot</td>
<td>-</td>
</tr>
<tr>
<td><strong>Printer Ports</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>PCI/104 Expansion</strong></td>
<td>PCI-104 (optional)</td>
<td>-</td>
<td>-</td>
<td>PCI-104 (optional)</td>
<td>PCI-104 (optional)</td>
</tr>
<tr>
<td><strong>PCIe/PCI Expansion</strong></td>
<td>2 x Mini PCIe with 1 x SIM slot</td>
<td>2 x Mini PCIe with 1 x SIM slot</td>
<td>2 x Mini PCIe</td>
<td>2 x Mini PCIe with 1 x SIM slot</td>
<td>2 x Mini PCIe with 1 x SIM slot</td>
</tr>
<tr>
<td><strong>Onboard I/O</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Watchdog Timer</strong></td>
<td>Programmable 256 levels timer interval, from 1 to 255 sec</td>
<td>-</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>CompactFlash Slots</strong></td>
<td>1 x mSATA</td>
<td>1 x mSATA</td>
<td>1 x mSATA</td>
<td>1 x SIM slot</td>
<td>1 x SIM slot</td>
</tr>
<tr>
<td><strong>2.5” HDD Expansion Slots</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Operating Systems</strong></td>
<td>Windows 7/8/10/100/1000Base-T</td>
<td>Windows XP/7/8/100/1000Base-T, (1 x Gigabit Ethernet switch with daisy chain technology)</td>
<td>Windows 7/8/10/100/1000Base-T</td>
<td>Windows 7/8/10/100/1000Base-T</td>
<td>Windows 7/8/10/100/1000Base-T</td>
</tr>
<tr>
<td><strong>Mounting</strong></td>
<td>Stand, Wall, VESA (Optional)</td>
<td>Stand, Wall, VESA (Optional)</td>
<td>Stand, Wall, VESA (Optional)</td>
<td>Stand, Wall, VESA (Optional)</td>
<td>DIN-rail/Wall/VESA</td>
</tr>
<tr>
<td><strong>Anti-Vibration</strong></td>
<td>0.75G w/mSATA, 2G w/HDD</td>
<td>0.75G w/mSATA, 2G w/HDD</td>
<td>0.7G w/mSATA, 2G w/HDD</td>
<td>2G w/CF, 1G w/HDD</td>
<td>2G w/CF, 1G w/HDD</td>
</tr>
<tr>
<td><strong>Anti-Shock</strong></td>
<td>50G w/mSATA, 20G w/HDD</td>
<td>50G w/mSATA, 20G w/HDD</td>
<td>50G w/mSATA, 20G w/HDD</td>
<td>50G w/CF, 20G w/HDD</td>
<td>50G w/CF, 20G w/HDD</td>
</tr>
<tr>
<td><strong>Power Input Range</strong>*</td>
<td>24V ± 20%</td>
<td>24V ± 15%</td>
<td>24V ± 20%</td>
<td>9 – 36 Vdc</td>
<td>9 – 36 Vdc</td>
</tr>
<tr>
<td><strong>Operating Temperature</strong></td>
<td>-20 – 60°C (-4 – 140°F)</td>
<td>-10 – 60°C (14 – 140°F)</td>
<td>-20 – 60°C (-4 – 140°F)</td>
<td>-10 – 60°C (14 – 140°F)</td>
<td>-10 – 70°C (14 – 158°F)</td>
</tr>
<tr>
<td><strong>Power Consumption Typical</strong></td>
<td>8 W</td>
<td>14 W</td>
<td>28 W</td>
<td>UNO-2174G/GL: 30 W</td>
<td>UNO-2178A: 40 W</td>
</tr>
<tr>
<td><strong>Power Requirements</strong></td>
<td>12W, +24 V @ 0.5 A Power input</td>
<td>24W, +24 V @ 1A Power input</td>
<td>72 W, +24 V @ 3A Power input</td>
<td>72 W, +24 V @ 3A Power input</td>
<td>36 W, +24 V @ 1.5 A Power input</td>
</tr>
<tr>
<td><strong>Dimensions (W x D x H)</strong></td>
<td>160 x 88 x 45 mm (6.3” x 3.5” x 2.0”)</td>
<td>190 x 107 x 47 mm (7.5” x 4.2” x 1.8”)</td>
<td>252 x 149 x 62 mm (9.9” x 5.9” x 2.4”)</td>
<td>255 x 152 x 69 mm (10” x 6.0” x 2.7”)</td>
<td>UNO-2174A: 255 x 152 x 50 mm (10” x 6.0” x 2.0”)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>0.8kg</td>
<td>1.0kg</td>
<td>1.6kg</td>
<td>3.0kg</td>
<td>2.5kg</td>
</tr>
<tr>
<td><strong>Page</strong></td>
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<td>13-15</td>
<td>13-17</td>
<td>13-19</td>
<td>13-20</td>
</tr>
</tbody>
</table>

* All power input ranges represent the minimum and maximum values recommended for these devices.

**Selection Guide**

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**Online Download** www.advantech.com/products
## Embedded Automation

### Computer Selection Guide

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<thead>
<tr>
<th>Model Name</th>
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<th>UNO-3073G/3075G</th>
<th>UNO-3072A/3074A</th>
<th>UNO-3082/3084</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU</strong></td>
<td>UNO-3073GL: Intel Celeron 807U 1GHz UNO-3073G: Intel Celeron 847 1.1GHz UNO-3083G/3085G : Intel Core i5 3555 LE 2.5 GHz or -2655LE 2.2 GHz</td>
<td>Intel Atom D510, 1.66 GHz</td>
<td>Intel Core 2 Duo L7500, 1.6 GHz</td>
<td></td>
</tr>
<tr>
<td><strong>Onboard RAM</strong></td>
<td>4GB DDR3 SDRAM built-in</td>
<td>2 GB DDR2 SDRAM</td>
<td>2 GB/4 GB DDR2 SDRAM</td>
<td></td>
</tr>
<tr>
<td><strong>Battery-Backup RAM</strong></td>
<td>512 KB</td>
<td>512 KB</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>1 x DVI-I, 1 x HDMI</td>
<td>1 x DVI-I</td>
<td>1 x DVI-I</td>
<td></td>
</tr>
<tr>
<td><strong>Audio</strong></td>
<td>Mic in, Line Out</td>
<td>Mic in, Line Out</td>
<td>Mic in, Line Out</td>
<td></td>
</tr>
<tr>
<td><strong>Serial Ports</strong></td>
<td>2 x RS-232/422/485 2 x RS-232 (optional)</td>
<td>2 x RS-232/422/485 2 x RS-232 (pin header)</td>
<td>2 x RS-232/422/485 2 x RS-232 (pin header)</td>
<td></td>
</tr>
<tr>
<td><strong>Ethernet Ports</strong></td>
<td>2 x 10/100/1000 Base-T RJ-45 ports</td>
<td>2 x 10/100/1000 Base-T, support teaming function</td>
<td>2 x 10/100/1000 Base-T, support teaming function</td>
<td></td>
</tr>
<tr>
<td><strong>USB Ports</strong></td>
<td>Five (One internal), two extra on pin header</td>
<td>Five (One internal), two extra on pin header</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Printer Ports</strong></td>
<td>(Pin-head reserved for project) (Pin-head reserved for project)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PC/104 Expansion</strong></td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PCle/PCI Expansion</strong></td>
<td>UNO-3073G/UNO-3073GL/3083G: 5 slots 3085G: 3 slots</td>
<td>2 x PCI (UNO-3072A)/ 4 x PCI (UNO-3074A)</td>
<td>2 x PCI (UNO-3082)/ 3 x PCI + 1 x PCle (UNO-3084)</td>
<td></td>
</tr>
<tr>
<td><strong>Onboard I/O</strong></td>
<td>-</td>
<td>4-ch isolated DI 4-ch isolated DO Dual type B IEEE 1394</td>
<td>4-ch isolated DI 4-ch isolated DO Dual type B IEEE 1394</td>
<td></td>
</tr>
<tr>
<td><strong>Watchdog Timer</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td><strong>CompactFlash Slots</strong></td>
<td>Two internal One internal One external</td>
<td>One internal One external One external</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2.5&quot; HDD Expansion</strong></td>
<td>2 x SATA, support RAID 0/1 (except UNO-3073GL) 2 x SATA, support RAID 0/1, 1 x eSATA</td>
<td>2 x SATA, support RAID 0/1, 1 x eSATA</td>
<td>2 x SATA, support RAID 0/1, 1 x eSATA</td>
<td></td>
</tr>
<tr>
<td><strong>Mounting</strong></td>
<td>Wall/Stand/Panel Wall/Stand/Panel Wall/Stand/Panel</td>
<td>Wall/Stand/Panel Wall/Stand/Panel Wall/Stand/Panel</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Anti-Vibration</strong></td>
<td>-</td>
<td>2 G w/CF, 1 G w/HDD</td>
<td>2 G w/CF, 1 G w/HDD</td>
<td></td>
</tr>
<tr>
<td><strong>Anti-Shock</strong></td>
<td>50 G w/CF 20 G w/HDD</td>
<td>50 G w/CF 20 G w/HDD</td>
<td>50 G w/CF 20 G w/HDD</td>
<td></td>
</tr>
<tr>
<td><strong>Power Input Range</strong></td>
<td>9 – 36 Vdc</td>
<td>9 – 36 Vdc</td>
<td>9 – 36 Vdc</td>
<td></td>
</tr>
<tr>
<td><strong>Operating Temperature</strong></td>
<td>-10 – 60°C (14 – 140°F)</td>
<td>-10 – 60°C (14 – 140°F)</td>
<td>-10 – 55°C (14 – 131°F)</td>
<td></td>
</tr>
<tr>
<td><strong>Power Consumption Typical</strong></td>
<td>UNO-3073GL: 25W (Typical) UNO-3073G: 35W (Typical) UNO-3083G/3085G: 45W (Typical)</td>
<td>25 W</td>
<td>40 W</td>
<td></td>
</tr>
<tr>
<td><strong>Power Requirements</strong></td>
<td>12 V ±20%, 24 V±20%</td>
<td>72 W, +24 V @ 3 A power input</td>
<td>96 W, +24 V @ 4 A power input</td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions (W x D x H)</strong></td>
<td>UNO-3083G/3073G/3085G: 148 x 238 x 177 mm (5.8&quot; x 9.3&quot; x 7.0&quot;)</td>
<td>UNO-3073G/3085G: 140 x 238 x 177 mm (5.5&quot; x 9.3&quot; x 7.0&quot;)</td>
<td>UNO-3072A/3074A: 157 x 238 x 177 mm (6.2&quot; x 9.3&quot; x 7.0&quot;)</td>
<td></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>UNO-3083G/3073G/3085G: 4.5 kg UNO-3083G/3085G: 5.0 kg</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*All power input ranges represent the minimum and maximum values recommended for these devices.*
# iDoor Module Selection Guide

## Communication

<table>
<thead>
<tr>
<th>Model Name</th>
<th>PCM-24D2R2</th>
<th>PCM-24D2R4</th>
<th>PCM-24D4R2</th>
<th>PCM-24D4R4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Ports</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Communication Interfaces</td>
<td>RS-232</td>
<td>V</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td>RS-422</td>
<td>-</td>
<td>V</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>RS-485</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Speed</td>
<td>50 bps – 230.4 kbps</td>
<td>50 bps – 921.6 kbps</td>
<td>50 bps – 230.4 kbps</td>
<td>50 bps – 921.6 kbps</td>
</tr>
<tr>
<td>Flow control</td>
<td>Xon/Xoff</td>
<td>V</td>
<td>V</td>
<td>V</td>
</tr>
<tr>
<td>Driver</td>
<td>32-bit/64-bit Windows 2000/XP/Vista/7, and Linux 2.4/2.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection</td>
<td>ESD</td>
<td>15 KV</td>
<td>2,500 VDC</td>
<td>-</td>
</tr>
<tr>
<td>Isolation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable Connector Type</td>
<td>DB9 Male</td>
<td>DB9 Male</td>
<td>DB9 Male</td>
<td>DB9 Male</td>
</tr>
</tbody>
</table>

## Digital/Analog I/O

<table>
<thead>
<tr>
<th>Model Name</th>
<th>PCM-27D24DI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isolated DI/O</td>
<td></td>
</tr>
<tr>
<td>Input</td>
<td>Channels: 16</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage: 2,500 VDC</td>
</tr>
<tr>
<td></td>
<td>Input Range: 10 – 30 VDC</td>
</tr>
<tr>
<td>Output</td>
<td>Channels: 8</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage: 2,500 VDC</td>
</tr>
<tr>
<td></td>
<td>Output Range: 5 – 30 VDC</td>
</tr>
<tr>
<td></td>
<td>Max. Sink Current: 100 mA</td>
</tr>
<tr>
<td>Timer/Counter</td>
<td>Channels: 2</td>
</tr>
<tr>
<td></td>
<td>Resolution: 32 bits</td>
</tr>
<tr>
<td></td>
<td>Max. Input Frequency: 1 kHz</td>
</tr>
<tr>
<td>Advanced Functions</td>
<td>Pattern Match: V</td>
</tr>
<tr>
<td></td>
<td>Change of State: V</td>
</tr>
<tr>
<td></td>
<td>Board ID Switch: V</td>
</tr>
<tr>
<td></td>
<td>Channel-Freeze Function: -</td>
</tr>
<tr>
<td></td>
<td>Output States Read Back: V</td>
</tr>
<tr>
<td></td>
<td>Dry/Wet Contact: -</td>
</tr>
<tr>
<td></td>
<td>Connector: 1 x DB37</td>
</tr>
<tr>
<td></td>
<td>Windows XP Driver and SDK (DAQNavi): V</td>
</tr>
<tr>
<td></td>
<td>Windows 7 Driver and SDK (DAQNavi): V</td>
</tr>
<tr>
<td></td>
<td>Labview I/O Driver: V</td>
</tr>
<tr>
<td>Page</td>
<td>13-29</td>
</tr>
</tbody>
</table>

* Dry/Wet contact can be mixed at the same time within one group.

## Fieldbus Protocol

<table>
<thead>
<tr>
<th>Model Name</th>
<th>PCM-26D2CA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Ports</td>
<td>2</td>
</tr>
<tr>
<td>Communication Interfaces</td>
<td>CAN Bus / CANopen</td>
</tr>
<tr>
<td>Speed</td>
<td>1 Mbps</td>
</tr>
<tr>
<td>Driver</td>
<td>32-bit/64-bit Windows 2000/XP/Vista/7, Windows CE 5.0/6.0, Linux, QNX</td>
</tr>
<tr>
<td>Protection</td>
<td>ESD</td>
</tr>
<tr>
<td>Isolation</td>
<td>2,500 VDC</td>
</tr>
<tr>
<td>Cable Connector Type</td>
<td>DB9 Male</td>
</tr>
<tr>
<td>Page</td>
<td>13-28</td>
</tr>
</tbody>
</table>

## Memory/Storage

<table>
<thead>
<tr>
<th>Model Name</th>
<th>PCM-2300MR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory Type</td>
<td>M-RAM</td>
</tr>
<tr>
<td>Non-volatile</td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>2 MB</td>
</tr>
<tr>
<td>Driver</td>
<td>32-bit/64-bit Windows XP/7, Windows CE 5.0/6.0 and Linux online</td>
</tr>
<tr>
<td>Page</td>
<td>online</td>
</tr>
</tbody>
</table>
UNO-1483G

Features
- 4th Generation Intel® Core™ i3 Processors up to 1.7GHz with 8GB DDR3L Memory
- 4 x GbE, 4 x USB 2.0/3.0, 1 x RS-232, 2 x RS-422/485, 1 x VGA, 1 x DP, Audio
- Compact with Fanless Design
- Diverse system IO and Isolated Digital IO by iDoor Technology
- Supports Fieldbus Protocol by iDoor Technology
- 3G/GPS/GPRS/WiFi Communication by iDoor Technology
- Supports Battery-backup MRAM by iDoor Technology
- Chassis Grounding Protection
- LAN Redundancy (Teaming)
- Fault-Protected RS-485 Transceivers With Extended Common-Mode Range

Introduction
The UNO-1483G is an Intel 4th generation Core i3 DIN-Rail controller. This controller featured with dual power input that shorten the down time to enhance operation excellence. The general purpose input/output ports also help machine builder integrate direct control of start/stop inspection and indicate inspection results. UNO-1483G also equipped with PCIe slot and Advantech iDoor technology that extend this product to motion controller, like motion control card, or isolation control unit from iDoor modules. In companion these features, UNO-1483G featured with 4 gigabyte LAN, 2 USB 3.0, 3 COM, DP, VGA can support essential link for upstream and downstream, for example, PoE connected to IP camera from iDoor.

Specifications

General
- Certification: CE, FCC, UL, CCC, BSMI
- Dimensions ( W x D x H ): 100 x 198 x 139 mm (4.2” x 7.8” x 5.8”)
- Form Factor: Regular Size
- Enclosure: Aluminum Housing
- Weight (Net): 1.65g (3.6 lbs)
- Power Requirement: 12VDC/24V: ±20%
- Power Consumption: 4W (Typical), 60W (Max)
- OS Support: Microsoft® Windows 7/8, WES7/WES8, Linux

System Hardware
- BIOS: AMI UEFI 128Moit Flash BIOS
- Watchdog Timer: Programmable 256 levels timer interval, from 1 to 255 sec
- Processor: Intel® Core™ i3-4010U ULT 1.7GHz Haswell Dual Core, 3MB L2
- Memory: 8GB DDR3L 1333/1600 MHz
- Graphics Engine: Integrated Intel 8 Series Chipset
- Ethernet: Intel® i210-IT GbE, 802.1Qav, IEEE1588/802.1AS, 802.3az
- System Chip: Intel® HD Graphics 4400
- Memory: On-board 8GB DDR3L, 1333/1600 MHz
- Graphics Engine: Intel® HD Graphics 4400
- Ethernet: Intel® i210-IT GbE, 802.1Qav, IEEE1588/802.1AS, 802.3az
- LEDs for Power, battery, LAN, (Active, Status), Tx/Rx and HDD
- One drive bay for SATA 2.5" HDD (Compatible with 9.5mm height HDD)
- CFast drive by iDoor Technology (Optional)
- Expansion: 2 x Full-size mPCIe slot, mPCIe 2.0 (1 supports mSATA / SIM card)
- 1 x Half-size mPCIe slot w/o USB signal
- 1x PCIe slot with x1 signal

I/O Interfaces
- Serial Ports: 1x RS-232, DB9, 50–115.2kpbs
- LAN Ports: 4x RJ45, 10/100/1000 Mbps IEEE 802.3u 1000Base-T Fast Ethernet, support IEEE 1588 and Jumbo Frame
- USB Ports: 4x USB Ports (2 x USB2.0, 2 x USB3.0 compliant)
- Displays: 1x VGA, supports 1920 x 1080@60Hz 24bpp
- Audio: 1x DP, supports 1920 x 1080@60Hz 24bpp
- Power Connector: 1x 7 Pins, Terminal Block to support dual power input and remote power control
- Grounding Protection: Chassis Grounding

Environment
- Operating Temperature: -20 ~ 60°C (-4 ~ 140°F) @ 5 ~ 85% RH with 0.7m/s airflow
- Storage Temperature: -40 ~ 85°C (-60 ~ 185°F)
- Relative Humidity: 10 ~ 95% RH @ 40°C, non-condensing
- Shock Protection: Operating, IEC 60068-2-27, 50G, half sine, 11ms
- Vibration Protection: Operating, IEC 60068-2-64, 1G rms, random, 5 ~ 500Hz, 1 hr/axis
- Ingress Protection: IP40

Application Software

SusAcess
Version : V2.1 or above
An innovative remote device management software, allowing efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.

WebAccess
Version : V7.1 or above
WebAccess, as the core of Advantech’s IoT solution, is full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.

PanelExpress
Version : V2.0.3.8 or above
PanelExpress, a windows based HMI mini SCADA, realizes the cross platform flexibility offered by WebOP Designer to switch hardware for the consideration of cost and performance become an easy job. Panel Express software provides the best economic and express solution for data intensive high-end HMI applications.

WebOP
Version : V2.0.3.8 or above
An easy to use integrated development tool featuring solution-oriented screen objects, high-end graphics, Windows fonts for multi-language applications. WebOP runtime, a part of WebOP Designer, guarantees reliability and performance because of the minimum system overhead, high communication data rates, and sub-second screen switching.
**UNO-1483G**

**Dimensions**

[Diagram of dimensions with measurements in mm]

**Front IO View**

- LED indicators
- iDoor Expansion Slot
- USB3.0/2.0 Port
- Display Port
- VGA
- 4 x RJ45 LAN
- RS-232
- Line-out

**Top IO View**

- Battery Cover
- Digital I/O
- PCIe Slot
- RS-422/485
- Power and Reset Button
- Antenna

**Ordering Information**

- **UNO-1483G-434AE**
  - Intel® Core™ i3-4010U ULT 1.7GHz, 8GB, 4 x LANs, 2 x mPCIe, 1 PCIe Slot

**iDoor Modules**

- **PCM-2300MR-AE**
  - MR4A16B, 2MByte
- **PCM-261P1B-AE**
  - Hillscher netX100 FieldBus, ProfiBus, DB9 x 1
- **PCM-262CA-AE**
  - SJA1000 CANBus, CANOpen, DB9 x 1
- **PCM-24D2R4-AE**
  - OXPCIe-952 UART, Isolated RS-422/485, DB9 x 2
- **PCM-24D2R2-AE**
  - OXPCIe-952 UART, Isolated RS-232, DB9 x 2
- **PCM-24D4R4-AE**
  - OXPCIe-954 UART, Non-Isolated RS-422/485, DB37 x 1
- **PCM-24D4R2-AE**
  - OXPCIe-954, UART, Non-Isolated RS-232, DB37 x 1
- **PCM-27D24DI-AE**
  - Digital I/O, 16DI / 8DO, DB37 x 1

**Accessories**

- **1757002321**
  - 63W, AC-DC, 100-240V, 24Vdc, 2.62A Power Supply
- **1702002500**
  - Power Cable US Plug 1.8 M
- **1702002505**
  - Power Cable EU Plug 1.8 M
- **1702031801**
  - Power Cable UK Plug 1.8 M
- **1700000596**
  - Power Cable China/Australia Plug 1.8 M

**Embedded OS & Automation Software**

- **968WEXP003X**
  - PanelExpress V2.0 300 tags S/W license
- **968WEXP015X**
  - PanelExpress V2.0 1500 tags S/W license
- **968WEXP050X**
  - PanelExpress V2.0 5000 tags S/W license
UNO-1110

NEW

TI Cortex AM3505 DIN-rail PC with 2 x LAN, 5 x COM, 4 x USB

Features

- TI Cortex A8 AM3505 600 MHz processor
- 256 MB DDR2 on board
- 4 x RS-232/422/485, 1 x RS-485 serial ports
- Dual 10/100 Mbps Ethernet
- 2 x SD card slots
- Windows® CE 6.0 Ready Platform and optional uClinux OS support
- Included Advantech DaigAnywhere for easy remote configuration & diagnosis
- DIN-rail and Wallmounting Options
- Onboard system & LED indicators
- Supports Microsoft .NET compact framework 3.5
- Fanless and no internal cabling design
- System/Field ground isolation

Introduction

Advantech’s UNO-1110 series are RISC-grade embedded platforms that offer up to 2 LAN ports, 5 serial ports and 2 SD card slots. The UNO-1110 series also come with Windows CE 6.0/Linux OS, offering an integrated image. Additionally, the UNO-1110 series operate at temperatures between -10 ~ 70°C, and their small size and lightweight design allows it to be installed in tight industrial environments. The UNO-1110 series are excellent communication gateways for converting communication protocols, I/O control, and data storage in the industrial field.

Specifications

General

- Certification: CE, FCC Class A, UL, CCC
- Dimensions (W x H x D): 50 x 154 x 127 mm (1.9” x 6.1” x 5”)
- Enclosure: Aluminium with solid mounting hardware
- Mounting: DIN-rail, Wallmount
- Industrial Grounding: Isolation between chassis and power ground
- Power Consumption: 10 ~ 30 VDC (13 W), AT, ground isolation, dual power inputs.
- Weight: 0.45 kg
- System Design: Fanless design with no internal cabling

System Hardware

- CPU: TI Cortex A8 AM3505 600 MHz
- Memory*: Onboard 256 MB DDR2
- Display: DB15 VGA connector, up to 1024 x 768
- Indicators: Power, Serial (Tx, Rx), SD
- Storage: 2 x SD card slots (one for boot and another for data storage)
- Other: Realtime clock, Watchdog timer
- SIM: 1 x card slot (reserved for project and will only have 1 x SD card slot left)
- Expansion: 1 x Mini PCIe card slot (Signal Protocol: USB Differential)

*Note: up to 512MB DDR2 (reserved for project)

System Software

- Operating System: WinCE 6.0/ Linux
- Remote Management: Built-in Advantech DiagAnywhere agent on Windows

I/O Interface

- Serial Ports: 4 x RS-232/422/485**, 1 x RS-485
- **COM3.4 optional isolation by project
- Serial Port Speed: Automatic RS-485 data flow control, DIP Switch configuration
- Serial Port Speed (RS-232): 300 ~ 115.2 kbps
- Serial Port Speed (RS-422/485): 300 ~ 115.2 kbps (Max)
- LAN: 2 x 10/100Base-T RJ-45 ports
- USB: 4 x USB 2.0
- Digital Input: 4 x Digital Inputs**
- Digital Output: 2 x Digital Outputs**

**Optional isolation by project
- Logic level 0: Open
- Logic level 1: Close
- Digital Output Speed: 200 mA max Load, power dissipation 450mW
- ***Audio Line-out reserved for project

Environment

- Ingress Protection: IP40
- Operating Temperature: -10 ~ 70°C (14 ~ 158°F)
- Storage Temperature: -40 ~ 80°C (4 ~ 176°F)
- Operating Humidity: 20 ~ 95% (non-condensing)
- Storage Humidity: 20 ~ 95% (non-condensing)
- Shock Protection: Half-sine wave, 30G, 11ms
- Vibration Protection: Random 1Gms

Ordering Information

- UNO-1110-R11AE: TI Cortex AM3505 600MHz DIN-rail PC UNO-1110 with WinCE 6.0 (English)
- PCCLS-DIAGAW10: Advantech Remote Monitoring & Diagnosis Utility
- SQF-ISDS1-1G-86E: 1GB SLC SD Card (-40 ~ 85° C)
- 2070012539: UNO-1110 Linux MUL Image
Introduction

The UNO-1172A/AE are Intel Atom DIN-rail PCs with innovative system diagnostic features. The system diagnosis and remote power control through digital input lines enable users to control and monitor system status remotely. They also provide alarm notices including over temperature, over voltage, battery power fail, power status on both system onboard LED and digital output. Three Gigabit Ethernet interfaces with teaming function support allow users to uplink two ports with data transmit fault tolerance and downlink one port to field devices. Their compact size, small foot print, front accessible I/Os allow convenient wiring and easy installation in field cabinets as well.

Specifications

I/O Interface

- **Serial Ports**: 2 x RS-232/422/485 with DB9 connectors, automatic RS-485 data flow control
- **Serial Port Speed**: 2 x RS-232 (Optional, pin header)
  - RS-232: 50 – 115.2 kbps
  - RS-422/485: 50 – 115.2 kbps (Max)
- **LAN**: 3 x 10/100/1000Base-T RJ-45 ports with Wake on LAN, built-in boot ROM
- **USB**: 4 x USB, EHCI, Rev. 2.0 compliant
- **Digital Input**: 2-ch. wet/dry contact, 70 Vdc over-voltage protection, 0 ~ 50 Vdc input range and Interrupt handling
- **Digital Output**: 6-ch DO: 200 mA max/channel sink current
  - Keep output status after system hot reset
  - 5 ~ 40 Vdc output range and 10 kHz speed
- **System Diagnoses**: Remote monitoring: over system temperature, over voltage, battery power fail, power status
  - Remote control: Power On/Off, Reset

Environment

- **Ingress Protection**: IP40
- **Operating Temperature**: -10 ~ 65°C (14 ~ 149°F)
- **Storage Temperature**: -20 ~ 80°C (-4 ~ 176°F)
- **Operating Humidity**: 20 ~ 95% (non-condensing)
- **Storage Humidity**: 0 ~ 95% (non-condensing)
- **Shock Protection**: IEC 60068-2-27 Compatability: 20 G @ wall mount, half sine, 11 ms
  - HOD: 20 G @ wall mount, half sine, 11 ms
  - IEC 60068-2-64 (Random 1 Oct./min, 1hr/axis.)
  - Compatatability: 2 Gms @ 5 ~ 500 Hz
  - HOD: 1 Gms @ 5 ~ 500 Hz

Ordering Information

- **UNO-1172A-A33E**: Intel Atom D510 1.66 GHz, 2 GB RAM DIN-rail PC
- **UNO-1172AE-A33E**: Intel Atom D510 1.66 GHz, 2 GB RAM DIN-rail PC
  - w/ PC/104+

Accessories

- **UNO-FPM11-BE**: UNO-1100 Series VESA Mount Kit
  - Advantech Remote Monitoring & Diagnosis Utility
**Features**

- Onboard AMD Geode LX800 500 MHz processor
- 2 x RS-232 (one pin header reserved) and 2 x RS-232/422/485 ports with automatic flow control
- 2 x 10/100Base-T RJ-45 ports
- 2 x USB, audio and internal CompactFlash®
- Compact size, small footprint, saves space and front accessible for easy wiring
- DIN-rail design for easy installation in field cabinet
- Wide operating temperature range
- Windows® CE 5.0/6.0, Windows XP Embedded, and Linux ready solution
- Onboard system & I/O LED indicators
- Fanless design with no internal cabling
- Isolation between chassis and power ground

**Introduction**

The UNO-1150G/GE are DIN-rail mounted PCs that provide several serial communication ports and Ethernet interfaces. Their compact size, small footprint and front-accessibility allow easy installation in field cabinets and help to save spaces. With rich OS and driver supports, such as Windows XP Embedded, WinCE 6.0 and embedded Linux, users can integrate applications easily with a platform that can provide versatile functions to fulfill diverse requirements.

**Specifications**

**General**

- **Certification**: CE, FCC Class A, UL, CCC
- **Dimensions (W x H x D)**
  - UNO-1150G: 71 x 152 x 139 mm (2.8” x 6.0” x 5.5”)
  - UNO-1150GE: 96.5 x 152 x 139 mm (3.8” x 6.0” x 5.5”)
- **Enclosure**: Aluminum + SECC
- **Mounting**: DIN-rail, Wallmount
- **Power Consumption**: 15 W (Typical)
- **Power Requirement**: 10 ~ 36 VDC (e.g. +24 V @ 1 A) (Min. 24 W), AT
- **Weight**: UNO-1150G: 1.6 kg
  - UNO-1150GE: 2.0 kg
- **OS Support**: WES Windows XP Embedded, Windows 2000 & XP, Windows CE 5.0/6.0, Linux
- **System Design**: Fanless with no internal cabling
- **Remote Management**: Built-in Advantech DiagAnywhere agent on Windows CE / XPe

**System Hardware**

- **CPU**: AMD Geode LX800 500 MHz
- **Memory**: Onboard 256 MB DDR SDRAM
- **Indicators**: LEDs for Power, IDE, LAN (Active, Status) and Serial (Tx, Rx)
- **Keyboard/Mouse**: 1 x PS/2
- **Storage**: SSD: 1 x internal type II CompactFlash® slot
  - HDD: 2.5” SATA HDD bracket (UNO-1150GE)
- **PC/104 Slot**: 2 x PC104 slots, supports 3.3 V & 5 V
  - (Only for UNO-1150GE, one PC104 left while using HDD)
- **Mini PCI**: 1 x Mini PCI (UNO-1150GE)
- **Display**: DB15 VGA connector, supports up to 1024 x 768 @ 60 Hz
- **Audio**: Line in, Line out
- **Watchdog Timer**: Programmable 256 level timer interval, from 1 to 255 sec

**I/O Interface**

- **Serial Ports**: 2 x RS-232 (one pin header reserved), 2 x RS-232/422/485 with DB9 connectors, automatic RS-485 data flow control
- **Serial Port Speed**: RS-232/422/485 ports support hardware 128 byte FIFO
  - RS-232 port: 50 ~ 115.2 kbps
  - RS-232/422/485 port: RS-232, 300 ~ 115.2 kbps
  - RS-232/422/485 port: RS-422/485, 300 ~ 921.6 kbps (Max)
- **LAN**: 2 x 10/100Base-T RJ-45 ports
- **USB**: 2 x USB, OpenHCI, Rev. 2.0 compliant
- **Printer Port**: 1 x Printer Port pin header
  - *(Note: This function is optional for project requirement.)*

**Environment**

- **Ingress Protection**: IP40
- **Operating Temperature**: -10 ~ 60°C (14 ~ 140°F)
- **Storage Temperature**: -20 ~ 80°C (-4 ~ 176°F)
- **Operating Humidity**: 20 ~ 95% (non-condensing)
- **Storage Humidity**: 0 ~ 95% (non-condensing)
- **Shock Protection**: IEC 60068-2-27
  - CompactFlash®: 50 G @ wall mount, half sine, 11 ms
  - HDD: 20 G @ wall mount, half sine, 11 ms
  - (UNO-1150GE)
- **Vibration Protection**: IEC 60068-2-64
  - CompactFlash®: 2 Grms @ 5 – 500 Hz
  - HDD: 1Grms@ 5 – 500 Hz (UNO-1150GE)

**Ordering Information**

- **UNO-1150G-G30E**: AMD Geode LX800 500 MHz, 256 MB DIN-rail PC
- **UNO-1150GE-G30E**: AMD Geode LX800 500 MHz, 256 MB DIN-rail PC with PCI-104

**Accessories**

- **UNO-FPM11-BE**: UNO-1100 Series VESA Mount kit
- **PCLS-DIAGAW10**: Advantech Remote Monitoring & Diagnosis Utility
UNO-2272G

Intel® Atom™ Palm-Size Automation Computer with 1 x GbE, 2 x mPCIe, HDMI

Features

- Latest Intel® Atom™ Processors up to 1.33GHz with 2GB DDR3L Memory
- 1 x GbE, 3 x USB 2.0/3.0, 1 x RS-232, 1 x HDMI, Audio
- Comprehensive Palm, Small, Regular-size form-factor
- Compact with Fanless Design
- Rubber Stopper Design with Captive Screw
- Dual HDD/SSD support with RAID 0/1 in regular-size
- Diverse system IO and Isolated Digital IO by iDoor Technology
- Supports Fieldbus Protocol by iDoor Technology
- 3G/GPS/GPRS/WiFi Communication by iDoor Technology
- Supports Battery-backup MRAM by iDoor Technology
- Chassis Grounding Protection

Introduction

Advantech's UNO-2000 series of Embedded Automation Computers are Fanless with highly ruggedised with an embedded operating system (Windows CE, Windows XPE, Linux Embedded). It also includes iDoor technology which supports automation feature extensions such as industry fieldbus communication, Wi-Fi/3G, Digital I/O, including Palm, Small, and Regular-size Form-Factors with indicated market segments in terms of entry, value and performance product positioning. Both entry and value Embedded Automation Computers feature specific functions and they are suitable for data gateway, concentrator and data server applications. The performance model can shorten your development time and offer multiple networking interfaces to fulfill a diverse range of requirements.

Specifications

General

- Certification: CE, FCC, UL, CCC, BSMI
- Dimensions (W x D x H): 160 x 88 x 45 mm (6.3" x 3.5" x 2.0")
- Form Factor: Palm Size
- Enclosure: Aluminum Housing
- Mounting: Stand, Wall, VESA (Optional)
- Weight (Net): 0.8 kg (1.76lbs)
- Power Requirement: 24Vdc x 20%
- Power Consumption: 8W (Typical), 12W (Max)
- OS Support: Microsoft® Windows 7/8, WES7/WES8, Linux Fedora

System Hardware

- BIOS: AMI EFI64 Mbit
- Watchdog Timer: Programmable 256 levels timer interval, from 1 to 255 sec
- Processor: Intel Atom Dual Core E3825 1.33GHz
- System Chip: Intel Atom SoC integrated
- Memory: On-board 2GB DDR3L 1066 MHz
- Ethernet: Intel® i210-IT GbE, 802.1Qav, IEEE1588/802.1AS, 802.3az
- LED Indicators: LEDs for Power, LAN(Active,Status) and HDD
- Storage: 1 x mSATA
- Expansion: 2 x Full-size mPCIe slot, mPCIe 2.0 (supports SIM card)

I/O Interfaces

- Serial Ports: 1 x RS-232, DB9, 50–115.2kpps
- LAN Ports: 1 x RJ45, 10/100/1000 Mbps IEEE 802.3u 1000Base-T Fast Ethernet
- USB Ports: 3 x USB Ports (2 x USB2.0, 1 x USB3.0 compliant)
- Displays: 1 x HDMI 1.4a, supports 1920x1200@60Hz 24bpp
- Audio: Line-Out
- Power Connector: 1 x 2 Pins, Terminal Block
- Grounding Protection: Chassis Grounding

Environment

- Operating Temperature: -20 – 60°C (-4 – 140°F) @ 5 – 85% RH with 0.7m/s airflow
- Storage Temperature: -40 – 85°C (-40 – 185°F)
- Relative Humidity: 10 – 95% RH @ 40°C, non-condensing
- Shock Protection: Operating, IEC 60068-2-27, 50g, half sine, 11ms
- Vibration Protection: Operating, IEC 60068-2-64, 25gms, random, 5 – 500Hz, 1hr/axis (mSATA)
- Ingress Protection: IP40

Application Software

SusIACCESS

Version : V2.1 or above
An innovative remote device management software, allowing efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.

WebAccess

Version : V7.1 or above
WebAccess, as the core of Advantech's IoT solution, is full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.

PanelExpress

Version : V2.0.3.8 or above
Panel Express, a windows based HMI mini SCADA, realizes the cross platform flexibility offered by WebOP Designer to switch hardware for the consideration of cost and performance, become an easy job. Panel Express software provides the best economic and express solution for data intensive high-end HMI applications.

WebOP

Version : V2.0.3.8 or above
An easy to use integrated development tool featuring solution-oriented screen objects, high-end graphics, Windows fonts for multi-language applications. WebOP runtime, a part of WebOP Designer, guarantees reliability and performance because of the minimum system overhead, high communication data rates, and sub-second screen switching.

Online Download: www.advantech.com/products
### Ordering Information
- **UNO-2272G-E2AE**
  - Intel Atom E3825 1.33GHz, 2GB, 1xLANs, 2xPCIe

### iDoor Modules
- **PCM-2300MR-AE**: MR4A16B, 2MByte
- **PCM-26D1PB-AE**: Hilscher netX100 FieldBus, ProfiBus, DB9 x 1
- **PCM-26D2CA-AE**: OXPCIe-952 UART, Isolated RS-422/485, DB9 x 2
- **PCM-26D2R2-AE**: OXPCIe-954 UART, Non-Isolated RS-232, DB37 x 1
- **PCM-26D2R4-AE**: OXPCIe-954 UART, Non-Isolated RS-422/485, DB37 x 1
- **PCM-24D2R2-AE**: OXPCIe-954 UART, Non-Isolated RS-232, DB37 x 1
- **PCM-24D2R4-AE**: OXPCIe-954 UART, Non-Isolated RS-422/485, DB37 x 1
- **PCM-24D4R2-AE**: OXPCIe-954 UART, Non-Isolated RS-232, DB37 x 1
- **PCM-24D4R4-AE**: OXPCIe-954 UART, Non-Isolated RS-422/485, DB37 x 1
- **PCM-27D24DI-AE**: Digital I/O, 16DI / 8DO, DB37 x 1

### Accessories
- 1757002321: 63W, AC-DC, 100-240V, 24VDC 2.62A Power Supply
- 1702002606: Power Cable US Plug 1.8 M
- 1702002605: Power Cable EU Plug 1.8 M
- 1702031801: Power Cable UK Plug 1.8 M
- 1700000596: Power Cable China/Australia Plug 1.8 M

### Embedded OS & Automation Software
- 968WEXP003X: PanelExpress V2.0 300 tags S/W license
- 968WEXP015X: PanelExpress V2.0 1500 tags S/W license
- 968WEXP050X: PanelExpress V2.0 5000 tags S/W license
- 2070012690: Image WES2009 MUI. V3.34 for UNO-2272G
- 2070012691: Image WESTP MUI. V4.12 for UNO-2272G
- 2070012692: Image WES8P MUI. V5.0 for UNO-2272G
UNO-2362G

AMD® Dual Core T40E Small-Size Automation Computer w/ 1 x GbE, 1 x mPCIe, HDMI/DP

Introduction
Advantech’s UNO-2000 series of Embedded Automation Computers are Fanless with highly ruggedised with an embedded operating system (Windows CE, Windows XPE, Linux-Equipped). It also includes iDoor technology which supports automation feature extensions such as industry fieldbus communication, Wi-Fi/3G, Digital I/O, including Palm, Small, and Regular-size Form-Factors with indicated market segments in terms of entry, value and performance product positioning. Both entry and value Embedded Automation Computers feature specific functions and they are suitable for data gateway, concentrator and data server applications. The performance model can shorten your development time and offer multiple networking interfaces to fulfill a diverse range of requirements.

Specifications

General
- Certification: CE, FCC, UL, CCC, BSMI
- Dimensions (W x D x H): 190 x 107 x 47 mm (7.5” x 4.2” x 1.8”)
- Form Factor: Small Size
- Enclosure: Aluminum Housing
- Mounting: Stand, Wall, VESA (Optional)
- Weight (Net): 1.0kg (2.2lbs)
- Power Requirement: 14W (Typical), 24W (Max)
- Power Consumption: 24V, ±15%
- OS Support: Microsoft® Windows XP/7/8 WES7, WES-2009

System Hardware
- BIOS: AMI UEFI 32bit Flash BIOS
- Watchdog Timer: Programmable 256 levels timer interval, from 1 to 255 sec
- Processor: AMD® G-series T40E 1.0GHz dual core, 512MB
- System Chip: AMD® AG8M FCH
- Memory: On-board 2GB DDR3 833/1066 MHz
- Graphics Engine: AMD Radeon HD 6250 DirectX® 11 graphics with UVD 3.0 2D/3D Accelerator
- Ethernet: Realtek RTL8111E, Marvell 88E8712 Giga Ethernet switch with daisy chain technology
- LED Indicators: LEDs for Power, battery, LAN (Active, Status) and HDD
- Storage: 1 x mSATA
- Expansion: One drive bay for SATA 2.5” HDD (Compatible with 9.5mm height HDD) (Optional)
- Expansion: 1 x Full-size mPCIe slot, mPCIe 2.0 (supports SIM card)
- I/O Interfaces: 1x RS-232, DB9, 50-115.2kbps
- LAN Ports: 1x RS-485, DB9, auto flow control, 50-115.2kbps
- USB Ports: 4x USB 2.0 Compliant
- Displays: 1x DisplayPort 1.1, supports 1920x1200 (HD 6250) @ 30 fps
- Power Connector: 1x 2-Pins, Terminal Block
- Grounding Protection: Chassis Grounding

Features
- Onboard AMD(R) Dual Core T40E 1.0GHz processors with 2GB DDR3 SODIMM Memory
- 1 x GbE, 4 x USB 2.0, 1 x RS-232, 1 x RS-485, 1 x DP, 1 x HDMI
- Comprehensive Palm, Small, Regular-size form-factor
- Compact with Fanless Design
- Rubber Stopper Design with Captive Screw
- Daisy-Chain for Ethernet with auto-bypass protection enabled
- Dual HDD/SSD support with RAID 0/1 in regular-size
- Diverse system I/O and Isolated Digital I/O by iDoor Technology
- Supports Fieldbus Protocol by iDoor Technology
- 3G/GPS/GPRS/WiFi Communication by iDoor Technology
- Supports Battery-backup MRAM by iDoor Technology
- Chassis Grounding Protection

Environment
- Operating Temperature: - 10 ~ 60°C (14 ~ 140°F) @ 5 ~ 85% RH with 0.7m/s airflow
- Storage Temperature: - 40 ~ 85°C (-40 ~ 185°F)
- Relative Humidity: 10 ~ 95% RH @ 40°C, non-condensing
- Shock Protection: Operating, IEC 60068-2-27, 50G, half sine, 11ms
- Vibration Protection: Operating, IEC 60068-2-64, 2Gms, random, 5 ~ 500Hz, 1hr/axis (msATA)
- Ingress Protection: Operating, IEC 60068-2-64, 0.75Gms, random, 5 ~ 500Hz, 1hr/axis (HDD) IP40

Application Software

SUSIACCESS
Version : V2.1 or above
An innovative remote device management software, allowing efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.

WebAccess
Version : V7.1 or above
WebAccess, as the core of Advantech’s IoT solution, is full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.

PanelExpress
Version : V2.0.3.8 or above
Panel Express, a windows based HMI mini SCADA, realizes the cross platform flexibility offered by WebOP Designer to switch hardware for the consideration of cost and performance becomes an easy job. Panel Express software provides the best economic and express solution for data intensive high-end HMI applications.

WebOP
Version : V2.0.3.8 or above
An easy to use integrated development tool featuring solution-oriented screen objects, high-end graphics, Windows fonts for multi-language applications. WebOP runtime, a part of WebOP Designer, guarantees reliability and performance because of the minimum system overhead, high communication data rates, and sub-second screen switching.
UNO-2362G

Dimensions

Ordering Information

- UNO-2362G-T2AE
  - AMD G-series T40E 1.0GHz, 2GB, 1 x GbE, 1 x mPCIe, HDMI/DP

iDoor Modules

- PCM-2300MR-AE
  - MR4A16B, 2MByte
- PCM-26D1PB-AE
  - Hilscher netX100 FieldBus, ProfiBus, DB9 x 1
- PCM-26D2CA-AE
  - SJA1000 CANBus, CANOpen, DB9 x 1
- PCM-24D2R4-AE
  - OXPCle-952 UART, Isolated RS-422/485, DB9 x 2
- PCM-24D4R2-AE
  - OXPCle-954 UART, Isolated RS-422/485, DB37 x 1
- PCM-24D4R4-AE
  - OXPCle-954 UART, Non-Isolated RS-422/485, DB37 x 1
- PCM-24D4R2-AE
  - OXPCle-954, UART, Non-Isolated RS-232, DB37 x 1
- PCM-27D24DI-AE
  - Digital I/O, 16DI / 8DO, DB37 x 1

Accessories

- 1757002321
  - 63W, AC-DC, 100-240V, 24VDC 2.62A Power Supply
- 1702002600
  - Power Cable US Plug 1.8 M
- 1702002605
  - Power Cable EU Plug 1.8 M
- 1702031801
  - Power Cable UK Plug 1.8 M
- 1700000596
  - Power Cable China/Australia Plug 1.8 M

Embedded OS & Automation Software

- 17700012415
  - Image WES2009 MUI. V3.34 for UNO-2362G
- 17700012411
  - Image WES7P MUI. V4.12 for UNO-2362G
- 2070012407
  - Image WES8P MUI. V5.0 for UNO-2362G
- 968WEXP003X
  - PanelExpress V2.0 300 tags S/W license
- 968WEXP015X
  - PanelExpress V2.0 1500 tags S/W license
- 968WEXP050X
  - PanelExpress V2.0 5000 tags S/W license
UNO-2483G

Intel® Core™ i7/i3/Celeron Regular-Size Automation Computer w/ 4 x GbE, 2 x mPCIe, HDMI/VGA

Features
- 4th Generation Intel® Core™ i7/i3/Celeron Processors up to 1.9GHz with 4GB/8GB DDR3L Memory
- 4 x GbE, 4 x USB 2.0/3.0, 2 x RS-232, 2 x RS-422/485, 1 x VGA, 1 x HDMI, Audio
- Comprehensive Palm, Small, Regular-size form-factor
- Compact with Fanless Design
- Rubber Stopper Design with Captive Screw
- Dual HDD/SSD support with RAID 0/1 in regular-size
- Diverse system IO and Isolated Digital IO by iDoor Technology
- Supports Fieldbus Protocol by iDoor Technology
- 3G/GPS/GPRS/WIFI Communication by iDoor Technology
- Supports Battery-backup MRAM by iDoor Technology
- Chassis Grounding Protection
- LAN Redundancy (Teaming)
- Fault-Protected RS-485 Transceivers With Extended Common-Mode Range

Introduction
Advantech’s UNO-2000 series of Embedded Automation Computers are Fanless with highly ruggedised with an embedded operating system (Windows CE, Windows XPE, Linux-Embedded). It also includes iDoor technology which supports automation feature extensions such as industry fieldbus communication, Wi-Fi/3G, Digital I/O, including Palm, Small, and Regular-size Form-Factors with indicated market segments in terms of entry, value and performance product positioning. Both entry and value Embedded Automation Computers feature specific functions and they are suitable for data gateway, concentrator and data server applications. The performance model can shorten your development time and offer multiple networking interfaces to fulfill a diverse range of requirements.

Specifications

General
- Certification: CE, FCC, UL, CCC, BSMI
- Dimensions (W x D x H): 252 x 149 x 62 mm (9.9" x 5.9" x 2.4")
- Form Factor: Regular Size
- Enclosure: Aluminum Housing
- Mounting: Stand, Wall, VESA (Optional)
- Weight (Net): 1.6kg (3.5lbs)
- Power Requirement: 24W (Typical), 72W (Max)
- Power Consumption: 28W (Typical), 72W(Max)
- OS Support: Microsoft® Windows 7/8, WES7/WES8, Linux Fedora

System Hardware
- BIOS: AM UEFI 128Mbit Flash BIOS
- Watchdog Timer: Programmable 256 levels timer interval, from 1 to 255 sec
- Processor: Intel® Core™ i7-4650U ULT 1.7GHz Haswell Dual Core, 4MB L2
- System Chip: Intel® Core™ i3-4010U ULT 1.7GHz Haswell Dual Core, 3MB L2
- Memory: Intel® Celeron 2980U ULT 1.6GHz Haswell Dual Core, 2MB L2
- Graphics Engine: Integrated Intel 8 Series Chipset
- Ethernet: Intel® i210-IT GbE, 802.1Qav, IEEE1588/802.1AS, 802.3az
- LED Indicators: LEDs for Power, battery, LAN (Active, Status), Tx/Rx and HDD
- Storage: One mSATA
- Expansion: Two drive bay for SATA 2.5" HDD (Compatible with 9.5mm height HDD)

I/O Interfaces
- Serial Ports: 2x RS-232, DB9, 50~115.2kbps
- LAN Ports: 4x RJ45, 10/100/1000 Mbps IEEE 802.3u 1000Base-T Fast Ethernet
- USB Ports: 4x USB Ports (2 x USB2.0, 2 x USB3.0 compliant)
- Displays: 1x VGA, supports 1920x1080@60Hz 24bpp
- Audio: Line-In, Line-Out
- Power Connector: 1x 3 Pins, Terminal Block
- Grounding Protection: Chassis Grounding

Environment
- Operating Temperature: -20 ~ 60°C (-4 ~ 140°F) @ 5 ~ 85% RH with 0.7m/s airflow
- Storage Temperature: -40 ~ 85°C (-40 ~ 185°F)
- Relative Humidity: 10 ~ 95% RH @ 40°C, non-condensing
- Shock Protection: Operating, IEC 60068-2-27, 50G, half sine, 11ms
- Vibration Protection: Operating, IEC 60068-2-6, 2g, 50Hz, random, 5 ~ 500Hz, 10Hz/1kHz
- Ingress Protection: IP40

Application Software

susiAccess
Version: V2.1 or above
An innovative remote device management software, allowing efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to create a more intelligent and interconnected embedded computing solution.

WebAccess
Version: V7.1 or above
WebAccess, as the core of Advantech’s IoT solution, is full web browser-based software package for HMI and SCADA software. All HMI and SCADA software features including: Animated Graphics Displays, Real-time Data, Control, Trends, Alarms and Logs, are available in a standard web browser. WebAccess is built around the latest internet technologies. With its open architecture, vertical domain applications can easily be integrated.

PanelExpress
Version: V2.0.3.8 or above
PanelExpress, a windows based HMI mini SCADA, realizes the cross platform flexibility offered by WebOP Designer to switch hardware for the consideration of cost and performance become an easy job. PanelExpress provides the best economic and express solution for data intensive high-end HMI applications.

WebOP
Version: V2.0.3.8 or above
WebOP, a easy to use integrated development tool featuring solution-oriented screen objects, high-end graphics, Windows fonts for multi-language applications. WebOP Designer, guarantees reliability and performance because of the minimum system overhead, high communication data rates, and sub-second screen switching.
### Ordering Information

- **UNO-2483G-4C3AE**
  - Intel® Celeron 2980U ULT 1.6GHz, 4GB, 4 x LANs, 2 x mPCIe
- **UNO-2483G-434AE**
  - Intel® Core™ i3-4010U ULT 1.7GHz, 8GB, 4 x LANs, 2 x mPCIe
- **UNO-2483G-474AE**
  - Intel® Core™ i7-4650U ULT 1.7GHz, 8GB, 4 x LANs, 2 x mPCIe

### iDoor Modules

- **PCM-2300MR-AE**
  - MRA1616, 2MByte
- **PCM-26D1PB-AE**
  - Hilscher netX100 FieldBus, ProfiBus, DB9 x 1
- **PCM-26D2CA-AE**
  - SJA1000 CANBus, CANOpen, DB9 x 1
- **PCM-24D2R4-AE**
  - PXCIe-952 UART, Isolated RS-422/485, DB9 x 2
- **PCM-24D2R2-AE**
  - PXCIe-952 UART, Isolated RS-232, DB9 x 2
- **PCM-24D4R4-AE**
  - PXCIe-954 UART, Non-Isolated RS-422/485, DB37 x 1
- **PCM-24D4R2-AE**
  - PXCIe-954, UART, Non-Isolated RS-232, DB37 x 1
- **PCM-27D24D1-AE**
  - Digital I/O, 16DI / 8DO, DB37 x 1

### Accessories

- **1757002321**
  - 63W, AC-DC, 100-240V, 24VDC 2.62A Power Supply
- **1702002600**
  - Power Cable US Plug 1.8 M
- **1702002605**
  - Power Cable EU Plug 1.8 M
- **1702031801**
  - Power Cable UK Plug 1.8 M
- **1700000596**
  - Power Cable China/Australia Plug 1.8 M

### Embedded OS & Automation Software

- **2070012443**
  - Image WES7P MUI V4.12 for UNO-2483G
- **2070012439**
  - Image WES8P MUI V5.0 for UNO-2483G
- **968WEXP003X**
  - PanelExpress V2.0 300 tags S/W license
- **968WEXP015X**
  - PanelExpress V2.0 1500 tags S/W license
- **968WEXP050X**
  - PanelExpress V2.0 5000 tags S/W license
Introduction

The UNO-2184G & 2174/GL are high-performance Intel 3rd generation Core i7-3555LE/Intel 2nd generation core i7-2655LE/847E/807EU grade controllers that support PCI-104 with daughterboard expansion, 3 x display, 6 x USB, and 2 x Mini PCIe socket. They also feature WLAN, 3G expansion and compatibility with Windows 7. The 4 x Gigabit LANs on the UNO-2184G support teaming function with fault tolerance, link aggregation, and load balance features. The UNO-2184G & 2174/GL are high end computing platforms designed to support applications with tremendous data volume and 3D content.

Specifications

General
- Certification: CE, UL, CCC, FCC, T-Ctick, BSMI
- Dimensions (W x D x H): 255 x 152 x 69 mm (10" x 6.0" x 2.7")
- Enclosure: Aluminum
- Mounting: DIN-rail, Wallmount, VESA
- Power Consumption: UNO-2174G/2184G: 30 W/ 20 W (Typical) UNO-2184G: 40 W (Typical)
- Power Requirements: 9 – 36 Vdc (e.g +24V @ 3A) (Min. 72W), AT/ATX
- Weight: 3.0 kg
- OS Support: Windows® WES 2009, WES 7 ready solution
- Remote Management: Built-in Advantech DiagAnywhere agent on WES2009 / WES7

System Hardware
- CPU: UNO-2174G: Intel Celeron 847E 1.1GHz UNO-2174GL: Intel Celeron 807UE 1.0GHz UNO-2184G: Intel Core i7-3555LE 2.5GHz/i7-2655LE 2.2GHz
- Memory: UNO-2174G/2184G: 4 GB DDR3 SDRAM built-in UNO-2184G: 4 GB DDR3 SDRAM built-in
- Indicators: LEDs for Power, battery, LAN (Active, Status) and Serial (Tx, Rx)
- Keyboard/Mouse: 1 x PS/2
- PC/104 Slot: 1 x PCI-104 slot, supports -5 & 3.3V power
- Storage: CF: 1 x CFast slot HDD: One built-in 2.5" SATA HDD bracket (Optional 2 x HDD Bracket Kit)
- Display: 1 x DVI-I, 1 x HDMI, 1 x DP (2 x independent displays)
- Watchdog Timer: Programmable 256 levels timer interval, from 1 to 255 sec
- Mini PCIe Expansion: 2 x Mini PCIe slots with 1 x SIM card

Daughterboard (Additional purchase required)
- Expansion Slot: PCI-104 support (+5 & 3.3V power)

Features
- Onboard Intel Celeron 847E 1.1GHz/807UE 1.0GHz/Core i7-2655LE 2.2GHz/i7-3555LE 2.5GHz processors
- 2 x RS-232 and 2 x RS-232/422/485 ports with automatic flow control
- 4 x 10/100/1000Base-T Ethernet
- DVI-I, DP, HDMI support 2 x independent displays
- Audio with Mic in, Line in, Line out
- 6 x USB ports
- Supports 2 x PCI-104 plug-in card with daughterboard expansion
- Windows® WES 2009, WES 7 ready solution
- External accessible CFast slot
- Onboard system status LED indicators
- Supports wake on LAN and boot from LAN function
- Supports Power eSATA
- Isolation between chassis and power ground
- IP40 ingress protection

I/O Interfaces
- Serial Ports: 2 x RS-232, 2 x RS-232/422/485 with DB9 connectors; automatic RS-485 data flow control
- Serial Port Speed: RS-232: 50 – 115.2 kbps
- RS-422/485: 50 – 115.2 kbps (Max.)
- LAN: 4 x 10/100/1000Base-T RJ-45 ports
- Supports AMT (UNO-2184G only), wake on LAN and built-in boot ROM in flash BIOS
- USB Ports: 6 x USB (only UNO-2184G-D64E supports 2 x USB3.0)

Environment
- Humidity: 95% @ 40°C (non-condensing)
- Operating Temperature: UNO-2174/2184: -10 ~ 60°C (-14 ~ 140°F) @ 5 ~ 85% RH. (with air flow)
- Storage Temperature: -40 ~ 60°C (-40 ~ 140°F)
- Shock Protection: IEC 60068-2-27 CompactFlash: 50 G @ wall mount, half sine, 11 ms HDD: 20 G @ wall mount, half sine, 11 ms
- Vibration Protection: IEC 60068-2-64 (Random 1 Oct/min, 1hr/axis.) CompactFlash: 2 Gms @ 5 ~ 500 Hz HDD: 1 Gms @ 5 ~ 500 Hz

Ordering Information
- UNO-2184G-D04E: Intel Core i7-3555LE 2.2 GHz, 4 GB RAM Automation Computer
- UNO-2184G-D05E: Intel Core i7-3555LE 2.2 GHz, 8 GB RAM Automation Computer
- UNO-2184G-D06E: Intel Core i7-3555LE 2.5 GHz, 4 GB RAM Automation Computer
- UNO-2174G-C04E: Intel Celeron 807UE 1.0 GHz, 4 GB RAM Automation Computer
- UNO-2174G-L04E: Intel Celeron 807UE 1.0 GHz, 4 GB RAM Automation Computer

Accessories
- UNO-FPM21-AC: UNO-2000 series VESA mount kit
- EWM-W138H01E: Mini PCIe card for WLAN
- 1750006643: Wi-Fi cable 15CM
- 1750002842: Antenna for Wi-Fi
- PC-L3-DIAGAW10: Advantech Remote Monitoring & Diagnosis Utility
- UNO-PCM24-AC: 2 x PCI-104 expansion board
- 9655EWMG00E: Half size to full size Mini PCIe bracket
- UNO-2184HD-AC: 2 x HDI Bracket accessory kit for UNO-2184G/2174G
UNO-2174A/2178A

Introduction

The UNO-2174A and UNO-2178A are Embedded Automation Computers equipped with Intel Atom N450/D510 CPUs, Gigabit Ethernet ports, rich I/O, and 2 x Mini PCIe socket. They also feature WLAN, 3G expansion and compatibility with Windows 7. Both products have Energy Star certification, IP40 anti-dust ingress protection and wide operating temperatures (-10 ~ 70°C), providing high performance and high versatility with low power consumption. The UNO-2174A and UNO-2178A are economic new computing platforms for manufacturing executing systems, facility automation, and industrial thin client applications. With an additional daughterboard, the UNO-2174A and UNO-2178A support 1 x PCI/104+ and 1 x PCI-104 plug-in cards for further expansion.

Specifications

General
- Certification: Energy Star, CE, FCC Class A, UL, CCC, C-Tick Class A, BSMI
- Dimensions (W x D x H): UNO-2174A: 225 x 152 x 50 mm (9" x 6.0" x 2.0")
- Enclosure: Aluminum + SECC
- Mounting: DIN-rail, Wallmount, VESA
- Industrial Grounding: Isolation between chassis and power ground
- Power Consumption: UNO-2174A: 255 x 152 x 59 mm (10" x 6.0" x 2.3")
- Weight: 2.5 kg
- DS Support: Windows XP/7, WES7, WES-2009
- System Design: Fanless design with no internal cabling
- Remote Management: Built-in Advantech DiagAnywhere agent on Windows CE, WES2009, WES7

System Hardware
- CPU: UNO-2174A: Intel Atom N450 1.6 GHz
- Memory: 2 GB DDR2 SDRAM built-in
- Indicators: LEDs for Power, CF, LAN (Active, Status), Serial (Tx, Rx)
- Storage: 1 x PS/2
- Display: 2 x Mini PCIe, 1 x SIM card slot
- Watchdog Timer: Programmable 256 levels timer interval, from 1 to 255 sec
- Expansion: 2 x Mini PCIe card slots and 1 x SIM card slot

I/O Interface
- LAN: 2 x 10/100/1000Base-T RJ-45 ports (Built-in boot ROM in flash BIOS)
- USB Ports: 6 x USB 2.0
- Audio: Line in, Line out, Mic in (5.1 channel HD audio)

Environment
- Humidity: 95% @ 40°C (non-condensing)
- Operating Temperature: -10 ~ 70°C (14 ~ 158°F)
- Ingress Protection: IP40
- Shock Protection: IEC 60068-2-27
- Vibration Protection: IEC 60068-2-64 (Random 1 Oz./in., 10/10/10)

Ordering Information
- UNO-2174A-A33E: Intel Atom N450 1.6 GHz, 2 GB RAM Automation Computer
- UNO-2178A-A33E: Intel Atom D510 1.67GHz, 2 GB RAM Automation Computer
- Accessories: UNO-0000 series VESA mount kit

For more details, please refer to the detailed specifications and ordering information provided in the document.
UNO-3083G/3085G
UNO-3073G/3075G
UNO-3073GL

NEW

Introduction
The UNO-3083G/3085G/3073G/3075G/3073GL are configured with high-performance Intel® Core i7/Celeron 800 series processors and QM77/QM67/HM65 PCH, which supports 2 displays, 8 USB ports, 2 Mini PCIe sockets, 2 CFast sockets and up to 5 expansion slots. They also feature two power inputs for redundancy and relay function for alarm handling, furthermore, two friendly front accessible HDD/SSD bays to support RAID 0/1. Two Gigabit LANs support teaming function with fault tolerance, link aggregation and load balance features. The built-in intelligent BIOS to diagnose system status immediately via relay function or LED indication.

Specifications

General
- Certification: CE, UL, CCC, FCC, BSMI
- Dimensions (W x D x H): UNO-3083G/3085G: 148 x 238 x 177 mm (5.8 x 9.3 x 7.0”) UNO-3073G/3075G: 193 x 238 x 177 mm (7.6 x 9.3 x 7.0”)
- Enclosure: Aluminum
- Mounting: Wallmount, Stand mount, Panel mount
- Power Requirements: 12V ±20%/24V ±20% (e.g. +24 V @ 5 A), ATX power
- Weight: UNO-3083G/3085G, 5.0kg
- System Design: Fanless with no internal cabling (except COM1/COM2)
- Remote Management: Built-in Advantech DiagAnywhere agent on WES2009/WES7

System Hardware
- CPU: UNO-3083G/3085G: Intel Core i7-3555LE 2.5GHz/1.1GHz/1.0GHz UNO-3073G: Intel Celeron 807UE 1.0GHz 4GB DDR3 SDRAM built-in
- Memory: UNO-3085G: Intel Core i7-2655LE 2.2GHz, 4GB RAM, 1 x PCIex16 + 2 x PCI expansion slots
- Indicators: LEDs for Power, Battery, LAN(Active, Status), Serial communication(Tx, Rx) and User Defined
- Storage CF: 2 x CFast slot
- HDD: Two built-in 2.5” SATA HDD brackets with RAID 0/1 (except UNO-3073GL)
- Display: 1 x DVI-I 1 x HDMI (2 x independent displays)
- Audio: Mic in, Line Out
- Watchdog Timer: Programmable 256 levels timer interval, from 1 to 255 sec
- Mini PCIe Expansion: UNO-3083G/3085G: 1x PCIe16 slot and 2x PCI slots UNO-3073G: 2x PCIe16 slots and 3x PCI slots UNO-3073GL: 1x PCIe16 slot and 2x PCI slots
- PCI Slot Power: 12 V @ 5A, > 12V @ 0.8A, > 5V @ 6A, > 3.3 V @ 6A (Total combined power consumption in the PCI slots should be less than 40W)

Functional Features
- Onboard Intel Core i7-3555LE/i7-2655LE/Celeron 847E/807UE, 2.2GHz/1.1GHz/1.0GHz
- 2 x RS-232/422/485 ports with automatic flow control and 2 x RS-232 pin head reserved
- 2 x 10/100/1000Base-T Ethernet
- DVI-I, HDMI support 2 independent displays
- Audio with Mic in, Line out
- 9 x USB ports (4 x USB 3.0, 1 x internal USB for dongle and flash drive)
- Windows® WES 2009, WES 7 solution
- Dual power input for power redundancy
- Onboard system diagnosis LED indicators
- Supports wake on LAN and boot from LAN function
- Isolation between chassis and power ground
- Front accessible dual HDD/SSD with onboard RAID 0/1 support

Intel Core i7/Celeron 800 series
Automation Computers with 3/5 PCIe expansion slots, 2 Mini PCIe slots and 2 CFast sockets

I/O Interface
- Serial Ports: 2 x RS-232/485 with DB9 connectors, automatic RS-485 data flow control, 2 x RS-232 (optional)
- Serial Port Speed: RS-232: 50 – 115.2 Kbps
- LAN: RS-242/485: 50 – 115.2 Kbps (Max.)
- 2 x 10/100/1000Base-T RJ-45 ports
- USB Ports: Supports AMT (UNO-3083G/3085G only), wake on LAN and built-in boot ROM in flash BIOS
- USB 3.0: 2x USB3.0 (one internal, and 4x USB3.0 support on UNO-3083G/3085G)

Environmental
- Humidity: 95% @ 40°C (non-condensing)
- Operating Temperature: From -10 to 60°C (14 ~ 140°F) @ 95% RH (with air flow) IEC60068-2-27
- Shock Protection: CompactFlash: 50 G @ wall mount, half sine, 11 ms HDD: 20 G @ wall mount, half sine, 11 ms IEC60068-2-44 (Random 1 Oct./min, 1hr/axis.)
- Vibration Protection: CompactFlash: 2 Gms @ 5 ~ 500 Hz, HDD: 0.5Gms@6–500Hz
- Dimensions: UNO-3083G-D64E/UNO-3085G-D64E

Ordering Information
- UNO-3083G-D64E: Intel Core i7-3555LE 2.5GHz, 4GB RAM, 1 x PCIex16 + 2 x PCI expansion slots
- UNO-3085G-D64E: Intel Core i7-3555LE 2.5GHz, 4GB RAM, 2 x PCIex8 + 3 x PCI expansion slots
- UNO-3083G-D44E: Intel Core i7-2655LE 2.2GHz, 4GB RAM, 1 x PCIex16 + 2 x PCI expansion slots
- UNO-3085G-D44E: Intel Core i7-2655LE 2.2GHz, 4GB RAM, 2 x PCIex8 + 3 x PCI expansion slots
- UNO-3073G-C54E: Intel Celeron 847E 1.1GHz, 4GB RAM, 1 x PCIex16 + 2 x PCI expansion slots
- UNO-3073G-C44E: Intel Celeron 847E 1.1GHz, 4GB RAM, 1 x PCIex16 + 4 x PCI expansion slots
- UNO-3073GL-C44E: Intel Celeron 867UE 1.0GHz, 4GB RAM, 1 x PCIex1 + 2 x PCI expansion slots

Accessories
- UNO-5M83-AE: Stand mount kit for UNO-3000G series
- UNO-5M83-AE Panel mount/wall mount kit for UNO-3000G series
- UNO-5M83-AE: Extra 2x RS-232 modules for UNO-3000G series

Optional Expansion Type by Project Support

<table>
<thead>
<tr>
<th>Model</th>
<th>Optional Expansion Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNO-3083G</td>
<td>2x PCIe8 slots and 1x PCIe slot</td>
</tr>
<tr>
<td>UNO-3073G</td>
<td>2x PCIe8 slots and 1x PCIe slot</td>
</tr>
<tr>
<td>UNO-3085G</td>
<td>2x PCIe8 slots and 1x PCIe slot</td>
</tr>
<tr>
<td>UNO-3075G</td>
<td>2x PCIe8 slots and 3x PCIe slots</td>
</tr>
<tr>
<td>UNO-3073GL</td>
<td>2x PCIe8 slots and 3x PCIe slots</td>
</tr>
</tbody>
</table>

UNO-3073GL (same dimensions as UNO-3085G)
2x PCIe16 slots and 2x PCI slots
UNO-3072A
UNO-3074A

Embedded Automation Computers

Features
- Intel® Atom™ D510 1.66 GHz processor
- Dual IEEE-1394 for vision inspection devices
- AT/ATX power mode by jumper selection
- Onboard 512KB Battery-backup SRAM
- 2 x RS-232/422/485 ports with automatic flow control
- 2 x 10/100/1000Base-T RJ-45 ports with teaming function support
- Up to four PCI expansions
- 4-ch isolated DI, 4-ch isolated DO
- Dual SSD/HDD with onboard RAID 0/1 support
- Fanless design with no internal cables
- Isolation between chassis and power ground
- Front-accessible I/O design
- 1 x internal USB for dongle and flash drive

Introduction
The UNO-3072A and UNO-3074A are Dual Core Atom-based Embedded Automation Computers with up to four PCI slots that provide an excellent performance to power consumption ratio. They are also equipped with two IEEE 1394b bilingual interfaces which allow users to connect their own devices for machine vision. Critical data can be saved on the battery backup SRAM. They also support two HDD bays with RAID 0/1. The design with an open platform can fulfill demanding requirements from the industrial field, especially for machine vision or motion controllers.

Specifications

General
- **Certification**: CE, FCC class A, UL, CCC
- **Dimensions (W x H x D)**: UNO-3072A: 140 x 238 x 177 mm (5.5" x 9.3" x 7.0")
  UNO-3074A: 191 x 238 x 177 mm (7.5" x 9.3" x 7.0")
- **Enclosure**: Aluminum + SECC
- **Mounting**: Wallmount, Stand, Panel
- **Industrial Grounding**: Isolation between chassis and power ground
- **Power Consumption**: 25 W (typical, no add-on card)
- **Weight**: UNO-3072A: 4.5 kg / UNO-3074A: 5.0 kg
- **OS Support**: Windows Vista/XP, Windows 7, Linux, QNX
- **Remote System Design**: Fanless with no internal cabling

System Hardware
- **CPU**: Intel Atom D510 1.66 GHz
- **Memory**: 2 GB DDR3 SRAM built-in
- **Battery Backup SRAM**: 512 KB
- **Expansion Slots**: UNO-3072A: 2 x PCI V2.2 slots
  UNO-3074A: 4 x PCI V2.2 slots
- **PCI Slot Power**: 12 V @ 3 A, -12 V @ 0.8 A, +5 V @ 6 A, +3.3 V @ 6 A (total combined power consumption on the PCI slots should be less than 40W)
- **Indicators**: LEDs for Power, Standby, HDD, SRAM battery, Rx/Tx for COM ports
- **Audio**: AC 97, Line Out
- **Storage**: CF: 1 x internal type I/II CompactFlash slot
  1 x external type II CF card CompactFlash slot
  HDD: Two built-in 2.5" SATA HDD brackets with support for RAID 0 and RAID 1
- **Display**: DB15 VGA connector, 1600 x 1200 @ 85 Hz
- **Watchdog Timer**: Programmable 256 level timer interval, from 1~255 sec

I/O Interface
- **LAN**: 2 x 10/100/1000Base-T RJ-45 ports (Intel 82574L, supports Wake on LAN, Teaming, built-in boot ROM, and IEEE1394 hardware support)
- **Serial Ports**: 2 x RS-232/422/485 with DB9 connectors, automatic RS-485 data flow control, 2 x RS-232 (optional)

Accessories
- **PCLS-DIAGAW10**: Advantech Remote Monitoring & Diagnosis Utility
- **UNO-3082-A33E**: Intel Atom D510 1.66 GHz, 2 GB RAM Automation Computer w/ 2 x PCI
  Intel Atom D510 1.66 GHz, 2 GB RAM Automation Computer w/ 4 x PCI

Ordering Information
- **UNO-3072A-A33E**: Intel Atom D510 1.66 GHz, 2 GB RAM Automation Computer w/ 2 x PCI
- **UNO-3074A-A33E**: Intel Atom D510 1.66 GHz, 2 GB RAM Automation Computer w/ 4 x PCI

Environment
- **Operating Temperature**: (IEC 60068-2-2, 100% CPU/I/O loading)
  -20 ~ 60°C ( 14 ~ 140°F)
- **Storage Temperature**: -20 ~ 85°C (-4 ~ 176°F)
- **Humidity**: 95% @ 40°C (non-condensing)
- **Shock Protection**: IEC 60068-2-27
  -50 G @ wall mount, half sine, 11 ms
- **Vibration Protection**: IEC 60068-2-64 (Random 1 Oct./min, 1hr/axis.)
  -500 Hz

Timer/Counter
- **Counter Source**: D11 & D13
- **Pulse Output**: D02 & D03
- Can be cascaded as one 32-bit counter/timer
- **Down counting, preset counting value**: 10 kHz, 10 kHz, 1 kHz, 100 Hz
- **Timer Time Base**: 10 kHz, 10 kHz, 1 kHz, 100 Hz

Ordering Information
- **UNO-3072A-A33E**: Intel Atom D510 1.66 GHz, 2 GB RAM Automation Computer w/ 2 x PCI
- **UNO-3074A-A33E**: Intel Atom D510 1.66 GHz, 2 GB RAM Automation Computer w/ 4 x PCI

Accessories
- **PCLS-DIAGAW10**: Advantech Remote Monitoring & Diagnosis Utility
- **UNO-3082-A33E**: Top cover of UNO-3082 with venting hole
- **UNO-3084-A33E**: Top cover of UNO-3084 with venting hole
- **UNO-3082-A33E**: USB 2.0 for UNO 3000 Series
- **UNO-3084-A33E**: LPT 1 x for UNO 3000 Series
- **UNO-3084-A33E**: RS232 COM port x 2 and PS2 x 1 for UNO 3000 Series

Ordering Information
- **UNO-3072A-A33E**: Intel Atom D510 1.66 GHz, 2 GB RAM Automation Computer w/ 2 x PCI
- **UNO-3074A-A33E**: Intel Atom D510 1.66 GHz, 2 GB RAM Automation Computer w/ 4 x PCI

Ordering Information
- **UNO-3072A-A33E**: Intel Atom D510 1.66 GHz, 2 GB RAM Automation Computer w/ 2 x PCI
- **UNO-3074A-A33E**: Intel Atom D510 1.66 GHz, 2 GB RAM Automation Computer w/ 4 x PCI

Ordering Information
- **UNO-3072A-A33E**: Intel Atom D510 1.66 GHz, 2 GB RAM Automation Computer w/ 2 x PCI
- **UNO-3074A-A33E**: Intel Atom D510 1.66 GHz, 2 GB RAM Automation Computer w/ 4 x PCI

Ordering Information
- **UNO-3072A-A33E**: Intel Atom D510 1.66 GHz, 2 GB RAM Automation Computer w/ 2 x PCI
- **UNO-3074A-A33E**: Intel Atom D510 1.66 GHz, 2 GB RAM Automation Computer w/ 4 x PCI
Introduction

The UNO-3082 and UNO-3084 are high performance Core 2 Duo Embedded Automation Computers with up to four expansion slots for PCI express or PCI support. The Gigabit LAN on the UNO-3082/3084 supports teaming function with fault tolerance, link aggregation, and load balance features. They are also equipped with two IEEE 1394b bilingual interfaces which allow users to connect their own devices for machine vision applications. Critical data can be saved on the battery backup SRAM. They also support two HDD bays with RAID 0/1.

Specifications

UNO-3082

- RS-422/485 Speed: 300 bps ~ 921.6 kbps (Max)
- RS-232 Speed: 50 bps ~ 115.2 kbps
- Wake on LAN, Teaming, built-in boot ROM, and IEEE1394 hardware support
- Dual DDS/HDD with onboard RAID 0/1 support
- Fanless design with no internal cables
- Isolation between chassis and power ground
- Front-accessible I/O design
- 1 x internal USB for dongle and flash drive

UNO-3084

- 4-ch isolated DI, 4-ch isolated DO
- Power Consumption: +3.3 V @ 6 A (total combined power consumption on the PCI)
- Dimensions (W x H x D): 157 x 238 x 177 mm (6.2” x 9.3” x 7.0”)
- Certification: CE, FCC class A, UL, CCC

System Hardware

- CPU: Intel Core 2 Duo L7500 1.67GHz
- Memory: 2 GB DDR3 SDRAM built-in
- Battery Backup SRAM: 512 KB
- Expansion Slots: UNO-3082: 2 x PCI V2.2 slots, UNO-3084: 1 x PCIe plus 3 x PCI v2.2 slots
- PCI Slot Power: 12 V @ 3 A, -12 V @ 0.8 A, +5 V @ 6 A
- Indicators: +3.3 V @ 6 A (Total combined power consumption on the PCI slots should be less than 40W)
- Audio: AC 97, Line Out
- Storage: 1 x internal type II CompactFlash slot, 1 x external type II CompactFlash slot
-.numberOfLines.paragraphs=3
- Display: Dual DVI-D independent, or DVI-D+ Dual VGA cloned displays
- Watchdog Timer: Programmable 256 level timer interval, from 1~255 sec

I/O Interface

- LAN: 2 x 10/100/1000Base-T RJ-45 ports (Intel 82574L, supports Wake on LAN, teaming, built-in boot ROM, and IEEE1394 hardware support)
- Serial Ports: 2 x RS-232/422/485 with D9 connectors, automatic RS-485 data flow control, 2 x RS-232 (optional)
- Serial Speed: RS-232 Speed: 50 bps ~ 115.2 kbps, RS-422/485 Speed: 500 bps ~ 9.6K bps (Max)

Features

- Onboard Intel Core 2 Duo L7500 1.67GHz processor
- Dual DVI-I to support up to 3 displays
- Dual IEEE-1394 for vision inspection devices
- AT/ATX power mode by jumper selection
- Onboard 512KB Battery- backup SRAM
- 2 x RS-232/422/485 ports with automatic flow control
- 2 x 10/100/1000Base-T RJ-45 ports with teaming function support
- Up to three PCI and one PCIe expansion
- 4-ch isolated DI, 4-ch isolated DO
- Dual SSD/HDD with onboard RAID 0/1 support
- Fanless design with no internal cables
- Isolation between chassis and power ground
- Front-accessible I/O design
- 1 x internal USB for dongle and flash drive

USB Ports

- 5 x USB 2.0 (one internal), 2 x USB 2.0 pin header

IEEE 1394 (Firewire)

- 2 x type B (Bilingual)

Optional I/O

- PS/2 KB/MS, 2 x COM-232 (with packing), 2 x USB 2.0, LPT
- 4-ch contact DI0 ~ DI3
- Logic 0: ~ 3 Vdc; Logic 1: +10 ~ 50 Vdc
- 25µs - Interrupt capable channel: DI0 ~ DI3
- 1.500 Vdc, 50~70 Vdc over voltage protection

Digital I/O

- Keeps output status after system hot reset
- Open collector to 40V (200mA maximum sink current load) and 3 kHz speed

Environment

- Operating Temperature: (IEC 60668-2-2, 100% CPU/I/O loading)
  - -10 ~ 55°C (14 ~ 131°F)
  - -20 ~ 80°C (~4 ~ 176°F)
- Storage Temperature: -10 ~ 55°C (14 ~ 131°F)
- Humidity: 95% @ 40°C (non-condensing)
- Shock Protection: IEC 60668-2-27
  - CompactFlash: 50 G @ wall mount, half sine, 11 ms
  - HDD: 20 G @ wall mount, half sine, 11 ms
- Vibration Protection: IEC 60668-2-64 (Random 1 Oct/min, Thr/axis.)
  - CompactFlash: 2 Gms @ 5 – 500 Hz
  - HDD: 1 Gms @ 5 – 500 Hz

Ordering Information

- UNO-3082-D23E: Intel Core 2 Duo, 2 G RAM, 2 x PCI Automation Computer
- UNO-3084-D24E: Intel Core 2 Duo, 4 G RAM, 3 x PCIe+ 1 x PCIe Automation Computer
- UNO-3082-D24E: Intel Core 2 Duo, 4 G RAM, 3 x PCIe+ 1 x PCIe Automation Computer
- UNO-3084-D24E: Intel Core 2 Duo, 4 G RAM, 3 x PCIe+ 1 x PCIe Automation Computer

Accessories

- PCLS-DIAGA10: Advantech Remote Monitoring & Diagnosis Utility
- 96633084001 T: Top cover of UNO-3084 with venting hole
- 96633084002: Top cover of UNO-3084 with venting hole
- 9663308403E: RS232 COM port x 2 and PS2 x 1 for UNO-3000 Series
Class I, Division 2 Certification Overview

Introduction
Advantech has designed a series of products which have passed Class I, Division 2 (CID2), Groups A, B, C, D certification. These products include: Human Machine Interface, Industrial Communication, Embedded Automation Computers, and Data Acquisition modules. Furthermore, Advantech’s CID2 certified product solutions have been engineered to meet the demanding requirements of various hazardous applications such as oil field drilling, pump station monitoring, chemical plants, pharmaceutical factories, oil pipeline monitoring, tank storage monitoring, and fuel station management.

Certification Definition - Class I, Division 1 & 2
Hazardous locations are areas where potential hazards (e.g. fires, explosions, etc.) may exist under normal or abnormal conditions because of the presence of flammable gases or vapors, flammable liquids, combustible dusts or ignitable fibers. According to the NEC (National Electrical Code), there are three types of hazardous locations categorized by Class I (gases, vapors, and liquids), Class II (dusts), and Class III (fibers and flyings). Division 1 means normally explosive and hazardous and Division 2 means not normally present in an explosive concentration but may accidentally exist.

Class I is directly related to the oil and gas market applications, such as petroleum refineries, gasoline storage, dispensing areas and utility gas plants. According to the ignition temperature of the substance, its explosion pressure, and other flammable characteristics, the gases and vapors of Class I locations are broken into four groups by the Codes: A, B, C, and D. Temperature classes also exist to designate the permissible surface temperature of electrical equipment which allows them to operate normally in the surrounding atmosphere.

<table>
<thead>
<tr>
<th>Classes</th>
<th>Groups</th>
<th>Divisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I: Gases, vapors, and liquids</td>
<td>A: Acetylene</td>
<td>Normally explosive and hazardous</td>
</tr>
<tr>
<td></td>
<td>B: Hydrogen, gases or vapors of equivalent hazard</td>
<td>Not normally present in an explosive concentration (but may accidentally exist)</td>
</tr>
<tr>
<td></td>
<td>C: Ethyl-ether vapors, ethylene, or cyclo-propane</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D: Gasoline, hexane, naptha, benzene, butane, propane, alcohol, etc.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temperature Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>T6: Under 85°C (Under 185°F)</td>
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<tr>
<td>T5: 05 - 100°C (155 - 212°F)</td>
</tr>
<tr>
<td>T4A: 100 - 120°C (212 - 248°F)</td>
</tr>
<tr>
<td>T4: 120 - 135°C (248 - 275°F)</td>
</tr>
<tr>
<td>T3A: 165 - 180°C (329 - 356°F)</td>
</tr>
<tr>
<td>T3: 160 - 200°C (329 - 392°F)</td>
</tr>
<tr>
<td>T2: 280 - 300°C (538 - 572°F)</td>
</tr>
<tr>
<td>T1: 300 - 450°C (572 - 842°F)</td>
</tr>
</tbody>
</table>

C1D2 Certified Industrial Controller Features

Designed for Control Cabinets
The UNO-1100H series feature a compact size, DIN-rail mounting, and front-accessible I/O that make installation within a control cabinet very easy.

Flexible Expansion
With Mini PCI, PCI-104 and PC/104+, the UNO-1100H series enable users to easily integrate wireless connections and Fieldbus I/O modules in a single package.

Battery-backup SRAM
The onboard battery-backup SRAM saves runtime process data in the even of a power failure. In addition, the SRAM can act as a data buffer that helps to reduce CF access time and extend product lifetime.
Introduction
In hazardous locations, devices are under potential danger from flammable gases, combustible dust, or ignitable fibers, creating the potential for fire and explosions. The UNO-1150GH and UNO-1150GHE are designed to be safely operated in these locations and are UL listed for Hazardous Locations with Class I, Division 2, Groups A, B, C, D & T3A certification.

The UNO-1150GH and UNO-1150GHE are DIN-rail mounted and provide several serial communication ports and Ethernet interfaces with a compact size to save space. They are also front accessible for easy installation in field cabinets.

Specifications

General
- Certification: CE, FCC Class A, UL, CCC
- Dimensions (W x H x D): UNO-1150GH: 71 x 152 x 139 mm (2.8" x 6" x 5.5") UNO-1150GHE: 95.5 x 152 x 139 mm (3.8" x 6" x 5.5")
- Enclosure: Aluminum + SECC
- Mounting: DIN-rail, Wallmount
- Power Consumption: 15 W (Typical)
- Power Requirement: 9 (Min.) – 36 (Max.) VDC (e.g. +24 V @ 1 A) (Min. 24 W), AT
- Weight: UNO-1150GH: 1.6 kg UNO-1150GHE: 2.0 kg
- OS Support: WES Windows XP Embedded, Windows 2000 & XP, Windows CE 5.0/6.0, Linux QNX
- System Design: Fanless with no internal cabling
- Remote Management: Built-in Advantech DiagAnywhere agent on Windows CE / XP

System Hardware
- CPU: AMD Geode LX800 (500MHz)
- Memory Onboard: 256 MB DDR SDRAM
- Indicators: LEDs for Power, IDE, LAN (Active, Status) and Serial (Tx, Rx)
- Keyboard/Mouse: 1 x PS/2
- Storage: SSD: 1 x internal type VII CompactFlash® slot HDD: 2.5" SATA HDD bracket (UNO-1150GHE)
- PC/104 Slot: 2x PCI/104 slot, supports 3.3 V & ±5 V (Only UNO-1150GHE, one PCI-104 while using HDD)
- Mini PCI: 1x MiniPCI (UNO-1150GHE only)
- Display: DB15 VGA connector, supports up to 1024 x 768 @ 60 Hz
- Audio: Line in, Line out
- Watchdog Timer: Programmable 256 level timer interval, 1 to 255 sec

Features
- UL listed for Hazardous Locations: Class 1, Division 2
- Onboard AMD Geode LX800 (500 MHz) CPU
- One RS-232 and two RS-232/422/485 ports with automatic flow control.
- Two 10/100 Base-T RJ-45 ports
- Two USB, audio and internal CompactFlash®
- Compact size, small foot print, saves space and front accessible for easy wiring
- DIN-rail design for easy installation in field cabinet
- Wide operating temperature range
- Windows® CE 5.0/6.0, Windows XP Embedded, and Linux ready solution
- Fanless design with no internal cabling
- Isolation between chassis and power ground

I/O Interface
- Serial Ports: 2 x RS-232 (one pin header reserved), 2 x RS-232/422/485 with DB9 connectors, Automatic RS-485 data flow control RS-232/422/485 ports support hardware 128 byte FIFO
- Serial Port Speed: RS-232 port: 50 – 115.2 kbps
- LAN: 2 x 10/100 Base-T RJ-45 ports
- USB: 2 x USB, OpenHCI, Rev. 1.1 compliant
- Printer Port: 1 x Printer Port pin head
*Note: This function is optional for project request

Environment
- Ingress Protection: IP40
- Operating Temperature: -10°C ≤ 60°C (14°F – 140°F)
- Storage Temperature: -20°C – 80°C (-4°F – 176°F)
- Operating Humidity: 20 – 95% (non-condensing)
- Storage Humidity: 20 – 95% (non-condensing)
- Shock Protection: IEC 60068-2-27 CompactFlash®: 50 G @ wall mount, half sine, 11 ms HDD: 20 G @ wall mount, half sine, 11 ms
- Vibration Protection: (Only for UNO-1150GHE)
  - IEC 60068-2-64 (Random 1 Oct/min, 1 hr/axis.)
  - CompactFlash®: 2 Gms @ 5 – 500 Hz
  - HDD: 1 Gms @ 5 – 500 Hz (UNO-1150GHE)

Ordering Information
- UNO-1150GH-G30E CID2 LX800 500 MHz, 256 MB DIN-rail PC
- UNO-1150GHE-G30E CID2 LX800 500 MHz, 256 MB DIN-rail PC w/PCI-104

Accessories
- UNO-FPM11-BE UNO-1100 Series VESA Mount kit
- UNO-ANT11-AE Advantech Remote Monitoring & Diagnosis Utility
- UNO-ANT11-AE Antenna kit for UNO-1100 Series
UNO-1172AH

Class I, Division 2 Certified Intel® Atom™ D510 DIN-rail PC with 3 x LAN, 2 x COM, VGA, Mini PCIe

Introduction

In hazardous locations, devices are under potential danger from flammable gases, combustible dust, or ignitable fibers, creating the potential for fire and explosions. The UNO-1172AH is designed to be safely operated in these locations and are UL listed for Hazardous Locations with Class I, Division 2, groups A, B, C, D & T5 certification. The UNO-1172AH is an Intel Atom DIN-rail PC which features an innovative system diagnosis feature for automation applications. It provides alarms for over temperature, over voltage, battery power fail, power status on both system onboard LED and Digital output. It also includes remote power control through digital input. These system diagnosis features enable control and monitoring of system status remotely. Three Gigabit Ethernet interfaces with teaming function support allow users to uplink two ports with data transmission fault tolerance and downlink one port to field device.

Specifications

General

- Certification: CE, FCC Class A, UL, CCC
- Dimensions (W x H x D): UNO-1172AH: 85 x 152 x 139 mm (3.4” x 6” x 5.5”)
- Enclosure: Aluminum + SECC
- Mounting: DIN-rail, Wallmount
- Power Consumption: 24 W (Typical)
- Power Requirement: 10 ~ 36 Vdc (e.g. +24 V @ 2 A) (Min. 48 W)
- Temperature: 0 °C ~ 60 °C
- Weight: 1.6 kg
- OS Support: WES Windows XP Embedded, Windows XP & Windows 7, Linux, QNX
- System Design: Fanless design with no internal cabling
- Remote Management: Built-in Advantech DiagAnywhere agent on Windows CE / XP

System Hardware

- CPU: Intel Atom D510 1.66 GHz
- Memory: 2 GB DDR2 SDRAM built-in
- Battery Backup SRAM: 1 MB
- Indicators: System LEDs for Power, CF, LAN (Active, Status), Serial (1x, Rx), Diagnosis (Alarm: over system temperature, over voltage, alarm for battery backup SRAM, alarm for RTC)
- Keyboard/Mouse: 1 x PS/2
- Storage: SSD: 1 x internal type I/II CompactFlash slot
- Display: DB15 VGA connector, 1600 x 1200 @ 85 Hz
- Audio: 5.1 channel HD Audio, Mic In, Line In, Line out
- Watchdog Timer: Programmable 266 levels timer interval, from 1 to 255 sec
- Mini PCIe: 1 x PCI express mini card slot

I/O Interface

- Serial Ports: 2 x RS-232/422/485 with DB9 connectors, automatic RS-485 data flow control
- Serial Port Speed: 2 x RS-232 (Optional, pin header)
- Serial Port Baud Rate: RS-232: 50 – 115.2 kbps
- LAN: 3 x 10/100/1000Base-T RJ-45 ports (supports Wake on LAN and built-in boot ROM)
- USB: 4 x USB, EHCI, Rev. 2.0 compliant
- Digital Input: 2-ch. wet/dry contact, 70 Vdc over-voltage protection, 0 ~ 50 Vdc, input range and Interrupt handling
- Digital Output: 6-ch DO - 200 mA max/channel sink current - Keep output status after system hot reset - 5 ~ 40 Vdc output range and 10 kHz speed
- System Diagnoses: Remote monitoring: over system temperature, over voltage, battery power fail, power status
- Remote control: Power On/Off, Reset

Environment

- Ingress Protection: IP40
- Operating Temperature: -10 ~ 60°C (14 ~ 140°F)
- Storage Temperature: -20 ~ 80°C (-4 ~ 176°F)
- Operating Humidity: 20 ~ 95% (non-condensing)
- Storage Humidity: 0 ~ 95% (non-condensing)
- Shock Protection: IEC 60068-2-27 CompactFlash: 50 G @ wall mount, half sine, 11 ms
- Vibration Protection: HDD: 20 G @ wall mount, half sine, 11 ms

Ordering Information

- UNO-1172AH-A33E: CID2 Intel Atom D510 1.66 GHz, 2 GB RAM DIN-rail PC

Accessories

- UNO-FPM11-BE
- PCLS-DIAGAW10: Advantech Remote Monitoring & Diagnosis Utility
**Introduction**

The PCM-24 series are categorized as communication modules from Advantech iDoor Technology. They are all compatible with the PCI Express® Mini Card Specification Revision 1.2, including isolated/non-isolated RS-232/422/485 communication cards for automation control. Wi-Fi/3G/GPS/GSM/LTE wireless communication models for data exchange during the management and machine level of automation application, Zigbee module as an IoT terminal or controller and PoE function for smart camera in detect inspection application.

**Specifications**

### General
- **Bus Type**: PCI Express® Mini Card Specification Revision 1.2
- **Certification**: CE, FCC class A
- **Connectors**: 2x Male DB9 for PCM-24D2xx, 1x Female DB37 for PCM-24D4xx
- **Dimensions**: Module: 51 x 30 x 12.4 mm (2” x 1.18” x 0.49”), I/O Plate: 81 x 19.4 x 41 mm (3.19” x 0.76” x 1.61”)
- **Power Consumption**: 400 mA @ +3.3 V for PCM-24D2xx, 500 mA @ +3.3 V for PCM-24D4xx

### Communications
- **Comm. Controller**: 0xPCIe952 for PCM-24D2xx, 0xPCIe954 for PCM-24D4xx
- **Data Bits**: 5, 6, 7, 8
- **Data Signals**: RS-232: TX, RX, RTS, CTS, DTR, DSR, DCD, DI, GND, RS-422: TX+, TX-, RX+, RX-, (PCM-24D4R4) TX+, TX-, RX+, RX-, CTS+, CTS-, RTS+, RTS- (PCM-24D2R4)
- **FIFO**: 128 bytes
- **Flow Control**: RTS/CTS (PCM-24D4R4 not supported), Xon/Xoff
- **Parity**: None, Odd, Even, Mark and Space
- **Speed**: 50 bps – 921.6 kbps (PCM-24D2R4 & PCM-24D4R4 only) and any other baud rate setting 230.4 kbps
- **Stop Bits**: 1, 1.5, 2

### Protection
- **Isolation Protection**: 2,000 Vdc for PCM-24D2xx only
- **ESD Protection**: 15 kV
- **EFT Protection**: 2,500 V
- **Surge Protection**: 1,000 V

### Software
- **Bundled Software**: ICOM Tools & Drivers
- **OS Support**: Microsoft® Windows® 2000/XP/Vista/7 and Linux

### Environment
- **Humidity (Operating)**: 5-95% RH, non-condensing
- **Operating Temperature**: -20 – 60°C (-4 – 140°F)
- **Storage Temperature**: -40 – 85°C (-40 – 185°F)

**Dimensions**

- **Module**: 51 x 30 x 12.4 mm (2” x 1.18” x 0.49”)
- **I/O Plate**: 81 x 19.4 x 41 mm (3.19” x 0.76” x 1.61”)

**Ordering Information**

- **PCM-24D2R2-AE**: OxPCIe-952 UART, Isolated RS-232, DB9 x 2
- **PCM-24D2R4-AE**: OxPCIe-952 UART, Isolated RS-422/485, DB9 x 2
- **PCM-24D4R2-AE**: OxPCIe-954 UART, Non-Isolated RS-232, DB37 x 1
- **PCM-24D4R4-AE**: OxPCIe-954 UART, Non-Isolated RS-422/485, DB37 x 1

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**Notes**

- The PCM-24 series are categorized as communication modules from Advantech iDoor Technology. They are all compatible with the PCI Express® Mini Card Specification Revision 1.2, including isolated/non-isolated RS-232/422/485 communication cards for automation control. Wi-Fi/3G/GPS/GSM/LTE wireless communication models for data exchange during the management and machine level of automation application, Zigbee module as an IoT terminal or controller and PoE function for smart camera in detect inspection application.
Introduction

The PCM-26 series is categorized as Industrial Communication with Fieldbus Protocol modules from Advantech iDoor Technology. They are all compatible with the PCI Express® Mini Card Specification Revision 1.2, including Isolated / Non-Isolated RS-232/422/485 communication cards for automation control, Wi-Fi/3G/GPS/GSM/LTE wireless communication models for data exchange during the management and machine level of automation application, Zigbee module as an IoT terminal or controller and PoE function for smart camera in detect inspection application of production. This is a flexible design that enables customers to customize their features which meet iDoor Technology.

Specifications

General
- **Bus Type**: PCI Express Mini Card Revision 1.2
- **Certification**: CE, FCC class A
- **Connectors**: 2x Male DB9
- **Dimensions**: Module: 51 x 30 x 12.4mm (2" x 1.18" x 0.49")
  I/O Plate: 81 x 19.4 x 41mm (3.19" x 0.76" x 1.61")
- **Power Consumption**: Typical: +5V @ 400mA

Communications
- **CAN Controller**: NXP SJA-1000
- **CAN Transceiver**: NXP 82C251
- **Protocol**: CAN 2.0 A/B
- **Signal Support**: CAN_H, CAN_L
- **Speed**: 1Mbps
- **CAN Frequency**: 16MHz
- **Termination Resistor**: 120 ohm (selected by jumper)

Protection
- **Isolation Protection**: 2,500 V
- **ESD Protection**: 15 KV
- **EFT Protection**: 2,500 V
- **Surge Protection**: 1,000 Vdc

Software
- **CAN Bus Driver**: Windows 2000/XP/Vista/7 (x86 and x64), Windows CE 5.0/6.0, Linux, QNX
- **CANopen Software**: Windows 2000/XP/Vista/7 (x86 and x64), Windows CE 5.0/6.0

Environment
- **Humidity (Operating)**: 5-95% RH, non-condensing
- **Operating Temperature**: - 20 ~ 60°C (-4 ~ 140°F)
- **Storage Temperature**: - 40 ~ 85°C (-40 ~ 185°F)

Dimensions

Ordering Information
- **PCM-26D2CA-AE**: SJA1000 CANBus, CANOpen, DB9 x 2
PCM-27D24DI

24-Channels Isolated Digital I/O with counter mPCIe, DB37

Introduction

The PCM-27 series are categorized as digital input/output modules from Advantech iDoor Technology. They are all compatible with the PCI Express® Mini Card Specification Revision 1.2, including Isolated / Non-Isolated RS-232/422/485 communication cards for automation control, Wi-Fi/3G/GPS/GSM/LTE wireless communication models for data exchange during the management and machine level of automation application, Zigbee module as an IoT terminal or controller and PoE function for smart camera in detect inspection application of production. This is a flexible design that enables customers to customize their features which meet iDoor Technology.

Specifications

General

- **Bus Type**: PCI Express Mini Card Revision 1.2
- **Certification**: CE, FCC class A
- **Connectors**: 1 x Female DB37
- **Dimensions**: Module: 51 x 30 x 12.4mm (2" x 1.18" x 0.49")
  I/O Plate: 81 x 19.4 x 41mm (3.19" x 0.76" x 1.61")
- **Power Consumption**: Typical: +3.3 V @ 400 mA
  Max.: +3.3V @ 520mA

Isolated Digital Input

- **Input Channels**: 16
- **Input Voltage (Wet Contact)**: Logic 0: 0~3 VDC
  Logic 1: 10~30 VDC
- **Input Voltage (Dry Contact)**: Logic 0: Open
  Logic 1: Shorted to GND
- **Input Current**: 10 VDC @ 2.97 mA
  20 VDC @ 6.35 mA
  30 VDC @ 9.73 mA
- **Input Resistance**: 5k Ohm
- **Interrupt Capable Channels**: 2 (IDI0, IDI8)
- **Isolation Protection**: 2,500 VDC
- **Overvoltage Protection**: 70 VDC
- **ESD Protection**: 4KV (Contact), 8KV (Air)
- **Opto-isolator Response**: 50 µs

Isolated Digital Output

- **Output Channels**: 8
- **Output Type**: MOSFET
- **Isolation Protection**: 2,500 VDC
- **Output Voltage**: 5 ~ 30 VDC
- **Sink Current**: 100 mA max./channel
- **Opto-isolator Response**: 50 µs

Counter

- **Channels**: 2
- **Resolution**: 32bit
- **Max. Input Frequency**: 1 kHz

Software

- **Tools & Drivers**: Advantech DAQNavi Tools & API Drivers
- **OS Support**: Microsoft® Windows® XP/7, Win 8

Environment

- **Humidity (Operating)**: 5-95% RH, non-condensing
- **Operating Temperature**: - 20 ~ 60°C (-4 ~ 140°F)
- **Storage Temperature**: - 40 ~ 85°C (-40 ~ 185°F)

Dimensions

- Module: 12.4 x 14.2 x 51mm (0.49" x 0.56" x 2"
- I/O Plate: 41 x 19.4 x 81mm (1.61" x 0.76" x 3.19")
- Cable Length: 200mm

Ordering Information

- **PCM-27D24DI-AE**: Digital I/O, 16 DI / 8 DO, Isolation, DB37 x 1

Accessories

- **PCL-10137-1E**: DB-37 Shielded Cable, 1m
- **PCL-10137-2E**: DB-37 Shielded Cable, 2m
- **PCL-10137-3E**: DB-37 Shielded Cable, 3m
- **ADAM-3937-BE**: DB-37 Wiring Terminal, DIN-rail Mount
Introduction
The PCM-24 series are categorized as communication modules from Advantech iDoor Technology. They are all compatible with the PCI Express® Mini Card Specification Revision 1.2, including isolated / non-isolated RS-232/422/485 communication cards for automation control, Wi-Fi/GPS/GSM/LTE wireless communication models for data exchange during the management and machine level of automation application, Zigbee module as an IoT terminal or controller and PoE function for smart camera in detect inspection application of production. This is a flexible design that enables customers to customize their features which meet iDoor Technology.

Specifications

General
- Bus Type: PCI Express Mini Card Revision 1.2
- Certification: CE, FCC class A
- Connectors: 1 x RJ45 GbE Half-/Full-Duplex, IEEE 1588 time stamp
- Dimensions: Module: 51 x 30 x 12.4mm (2" x 1.18" x 0.49")
  I/O Plate: 81 x 19.4 x 41mm (3.19" x 0.76" x 1.61")
- Power Consumption: Typical: +5V @ 400mA

Communications
- LAN Controller: Intel® 82574L Gigabit Ethernet Chip
- Speed: 10/100/1000 Base-TX, Auto-negotiation
- Support: 9K jumbo frames, hardware-based time stamping of IEEE 1588 and 802.1AS packets for precise time synchronization over Ethernet, wake-on-LAN

Protection
- Isolation Protection: 1,500 VDC
- ESD Protection: 4KV (Contact), 8KV (Air)
- EFT Protection: 1,000 V
- Surge Protection: 1,000 VDC

Software
- OS Support: Microsoft® Windows® 2000/XP/Vista/7 and Linux

Environment
- Humidity (Operating): 5-95% RH, non-condensing
- Operating Temperature: -20 – 60°C (-4 – 140°F)
- Storage Temperature: -40 – 85°C (-40 – 185°F)

Dimensions

Ordering Information
- PCM-24R1TP-AE: Intel 82574L, GbE, IEEE 1588 PTP, RJ45 x 1
Accessories

UNO-1000 Series Accessories

UNO-FPM11
UNO-1100 Series VESA Mounting Kit

Features
- Dimensions: 270 x 162 x 11 mm (W x H x D) (Only extension kit)
- Supports VESA 75 and 100 monitor

Supported Models
- UNO: All UNO-1100 series
- FPM: All FPM 12", 15", 17", 19" models

Ordering Information
- UNO-FPM11-BE

UNO-2000/2100 Series Accessories

UNO-FPM21
UNO-2000 Series VESA Mounting Kit

Features
- Dimensions: 270 x 162 x 11 mm (W x H x D)
- Supports VESA 75 and 100 monitor

Supported Models
- UNO: All UNO-2000 and 2100 series
- FPM: All FPM 12", 15", 17", 19" models

Ordering Information
- UNO-FPM21-AE

UNO-DIN21
UNO-2100 Series DIN-rail Kit

Features
- Supports DIN-rail mounting (EN50022, 35 x 7.5 mm)

Supported Models
- All UNO-2100 series

Ordering Information
- UNO-DIN21-BE

UNO-PCM23
1 x PCI-104, 1 x PC/104+ Expansion Kit for UNO-2174A/2178A

Features
- Dimensions: 228 x 32 x 148 mm (W x H x D) (Only extension kit)
- Supports one PC/104+ and one PXI-104 modules

Supported Models
- UNO-2174A, UNO-2178A

Ordering Information
- UNO-PCM23-AE

UNO-PCM24
UNO-2174G/74GL/84G Series 2xPCI-104 Extension Kit

Features
- Dimensions: 228 x 33 x 147 mm (W x H x L) (Extension kit only, not the final dimensions for integration)
- Supports two PCI/104 modules

Supported Models
- UNO-2174G, UNO-74GL, UNO-84G

Ordering Information
- UNO-PCM24-AE
**UNO-3000 Series Accessories**

**UNO-SM80**
Stand Mounting Kit for UNO-3082/3084

**Supported Models**
- UNO-3072LA, UNO-3072A, UNO-3074A, UNO-3082, UNO-3084

**Ordering Information**
- UNO-SM80-AE

**UNO-WM80**
Wall Mounting Kit for UNO-3082/3084/3072LA

**Supported Models**
- UNO-3072LA, UNO-3072A, UNO-3074A, UNO-3082, UNO-3084

**Ordering Information**
- UNO-WM80-AE

**Expansion Kit USB x 2 for UNO-3000 Series**

**Supported Models**
- UNO-3072LA, UNO-3072A, UNO-3074A, UNO-3082, UNO-3084

**Ordering Information**
- 9663308401E

**Expansion Kit LPT x 1 for UNO-3000 Series**

**Supported Models**
- UNO-3072LA, UNO-3072A, UNO-3074A, UNO-3082, UNO-3084

**Ordering Information**
- 9663308402E

**Expansion Kit RS232 COM port x 2 and PS2 x 1 for UNO-3000 Series**

**Supported Models**
- UNO-3072LA, UNO-3072A, UNO-3074A, UNO-3082, UNO-3084

**Ordering Information**
- 9663308403E

**Power Adapter and Power Cord Solutions**

**Industrial Grade Power Adapter**
(Note: do not support on UNO-2184G/2174G/2174GL and UNO-3000 series)

**Features**
- Input voltage: 90 – 264 VAC, 47 – 63 Hz
- Output Voltage: 24 VDC
- Operating Temperature: -20 – 70°C

**Ordering Information**
- 1702002600
- 1702031801
- 1702026065
- 1700000596
- 1757002321
- Power cable US Plug 1.8 M
- Power cable UK Plug 1.8 M
- Power cable EU Plug 1.8 M
- Power cable China/Australia Plug 1.8 M
- 63W AC to DC UNO series power adapter

**Commercial Grade Power Adapter**

**Features**
- Input voltage: 100 – 240 VAC, 50 – 60 Hz
- Output Voltage: 19 VDC
- Operating Temperature: 0 – 40°C

**Ordering Information**
- 17000001524
- 170203180A
- 170203183C
- 1757002682
- 1757002161
- 1757002682
- 1757002682
- 1757002682
- 1757002682
- PWR-244-AE
- Power cable 3-pin US type 1.8 M
- Power cable 3-pin UK type 1.8 M
- Power cable 3-pin EU type 1.8 M
- 65W AC to DC power adapter
- 150W AC to DC power adapter
- 96W AC to DC power adapter
### Programmable Automation Controllers

**APAX-5000 Series**
- **PAC Overview**
- **SoftLogic Control Software**
- **PC-based Programming Software**
- **Batch Control Solution**
- **APAX Series Overview**
- **APAX System Architecture**
- **APAX Controller Selection Guide**
- **APAX I/O Module Selection Guide**
- **APAX Communication Module Selection Guide**
- **APAX-6572**:
  - Intel® Atom™ D510 1.66 GHz, 2 GB RAM Controller with 3 x LAN, 2 x COM, VGA
- **APAX-5090P**
- **APAX-5095P**
- **APAX-5520CE/KW**
- **APAX-5620CE/KW**
- **APAX-5522PE**:
  - IEC 61850-3 Certified PAC with Marvel XScale® CPU
- **APAX-5343/E**
- **APAX-5001/5002/5004L**
- **APAX-5070**
- **APAX-5072**
- **APAX-5071**
- **APAX-5017H**
- **APAX-5028**
- **APAX-5046**
- **APAX-5046SO**
- **APAX-5060**
- **APAX-5080**
- **ADAM-5000 Series**
- **ADAM-5000 Controller Selection Guide**
- **ADAM-5000 I/O Module Selection Guide**
- **ADAM-5000 Controller Selection Guide**
- **ADAM-5000 Controller Support Table**
- **ADAM-5000 Remote I/O System Support Table**
- **ADAM-5560CE**
- **ADAM-5560KW**
- **ADAM-5510 Series**
- **ADAM-5000/485**
- **ADAM-5000E**
- **ADAM-5000L/TCP**
- **ADAM-5000/TCP**

To view all of Advantech's Programmable Automation Controllers & I/O Modules, please visit www.advantech.com/products.
PAC Overview

Introduction
Advantech offers PAC solutions designed for industrial automation applications which combine the openness and flexibility of PCs with the reliability of traditional automation controllers, such as PLCs. Advantech’s offerings include the APAX series, ADAM-5000 series, and Embedded Automation Computers, utilizing sophisticated thermal designs to ensure the system stability. APAX controllers support Windows CE, Windows XP Embedded and Windows 7 operating systems. Advantech’s PACs are ideal platforms to implement in diverse applications, such as power/energy, transportation, machine automation, factory automation, building automation, facility management system, environment monitoring, and more.

Real-time PACs: APAX Series
APAX series are Ethernet-enabled controllers allowing users to deploy I/O modules in flexible expansion combinations, like direct stack or daisy-chain. The control performance and functionality are not only better than PLCs, but also better than most PC-based controllers. Features including versatile CPU modules, I/O modules designed as reliable as PLC I/Os, high density I/Os with LEDs, hot swap and stackable functionality are delivered. Both C/C++ and .NET library, and IEC 61131-3 languages are provided as programming tools.

Data Acquisition PACs: ADAM-5000 Series
ADAM-5000 series are modularized I/Os to be inserted on backplanes with fixed slot numbers. Leveraging Advantech’s rich experience in industrial data acquisition applications, ADAM-5000 offers a compact control system. Inheriting the reliability and robustness of a PLC system, ADAM-5000 offers the openness and flexibility of a PC, including computing power, networking and storage capability. Both C/C++ and .NET libraries and IEC 61131-3 languages are provided as programming tools.

Automation Controllers
Advantech’s Embedded Automation Computers are designed to fulfill the needs of mission critical automation applications. Their embedded design, industrial automation features and advanced computer technology deliver robustness, reliability and flexibility to satisfy customers who are looking for a rugged and compact computing platform. They support various interfaces to integrate with other devices, such as Ethernet, RS-232/422/485, onboard I/O, extension PC card slots, CAN-bus and more. Through standard Ethernet networking, these computers can link to Advantech remote I/O solutions, such as APAX-5000 high density I/O (through APAX-5070 Modbus/TCP coupler module) or ADAM-6000 series compact modules, to get data and perform control tasks.

Control System Architecture

[Diagram of control system architecture showing different components and their connections, including SCADA software, SCADA controllers, managed Ethernet switch, and various control rooms.]
Real-time I/O Control Suitable for Multiple Domain Applications
Currently most PC-based controllers face one major challenge, especially DIN-rail PAC systems, which is real-time I/O control. Performance is severely hampered when I/O points increase because the access time also increases, which impacts control precision as well. Food and beverage companies face shorter production runs on a wide range of products for different vendors, while automotive companies are dealing with changes in customer preference, aggressive competition and rising fuel costs. These industries require a mix of discrete, batch, process and motion control solution. In the past, these applications forced engineers to use multiple controllers: a PLC for discrete control, a motion controller for multi-axis control, and a distributed control system or loop controller for process applications, which has proven time consuming and costly. Advantech PACs feature the ability to handle all these tasks with a single control system.

The result is shortened development time through reusable programming tools, lower maintenance costs through reduced parts, better information sharing among applications, and fewer personnel support throughout the plant.

Information Processing and Networking Capabilities
Advantech PACs not only provide excellent real-time I/O control, but also another key benefit for automation applications, information processing. With the ability to perform field operations, data exchanges and valuable information collection, this series is able to execute efficient decision-making. Information processing includes data logging and analysis with storage devices like SD or CF cards, recipe management for batch control, and database exchanges through SQL and OPC. Furthermore, implementing HMI software enables local operation.

This improves control system networking tremendously, allowing the network to share a common protocol at the device level, control level, and information level. It provides the ability to move information from the device level to executives at the enterprise resource planning (ERP) level without new protocols or drivers.

Advantech PACs feature a PC-based architecture, delivering significant networking benefits for manufacturers by USB, RS-232, RS-422/485 and Ethernet interfaces. Users can connect to field devices through serial or USB interface to satisfy any kind of application. The Ethernet interface allows users to effectively manage I/O control and information flow throughout the manufacturing and IT enterprise. Leveraging the high computing power of Advantech PACs also allows networks to communicate seamlessly on the factory floor with other common sets of IT capabilities like video, data and telephones. Easy access to such information is critical to making decisions about the capacity of an enterprise.

Scalability
In the past, many PLCs required users to learn different programming software and specify networks depending on the size and complexity of the application. Advantech PACs allow users to more closely match the controller to application needs without compromising functionality or learning a new control system. Such scalability reduces the headaches and high costs associated with system redesign, lack of program re-use, and re-training.

Software
Advantech PACs support software to satisfy both PC-based and PLC-based programmers. Leveraging IEC 61131-3 SoftLogic programming environment, PLC programmers can take PLC operations to the next level in many areas, such as communication, information processing, enterprise level database integration, and user interface development.

For PC-based programmers, Advantech offers an open platform solution, with C/C++ and .NET libraries for I/O control and communication functionality. They can satisfy programmers familiar with high level programming languages like Microsoft Visual Studio .NET. In addition, several convenient utilities are offered to save development time.
SoftLogic Control Software

SoftLogic Software

For traditional PLC platforms, the development environment will vary depending on the PLC supplier and they are not compatible with each other. PAC platforms adapt the international standard IEC 61131-3, established to standardize multiple languages, sets of instructions and different concepts existing in the field of automation systems. Therefore, these programming languages which comply with the IEC 61131-3 standard, usually called SoftLogic software, enable users to leverage PLC-world typical programming interface. But they can also benefit from a portability of all platforms and reduce costs of building automation systems.

Advantech SoftLogic Software: KW MultiProg and ProConOS

Advantech delivers KW-Software’s MultiProg development environment and ProConOS runtime kernel for various control platforms, including ADAM-5510 series, ADAM-5550 series and APAX series controllers. KW MultiProg supports all IEC-61131-3 programming language as following:

- **Instruction List (IL)**
- **Structured Text (ST)**
- **Sequential Function Chart (SFC)**
- **Function Block Diagram (FBD)**
- **Ladder Diagram (LD)**

**Graphic Editor**
Programmers can work with SFC, FBD, and LD programming languages. The editor supports mixing of SFC, FBD, and LD in a single worksheet. The fully graphical editor allows completely free placements of objects. The Edit Wizard helps you when inserting and replacing code elements in worksheets. You can insert keywords and statements, operators, functions and function blocks with the help of the Edit Wizard. In addition, the Wizard simplifies the declaration of own data types.

**Text Editor**
With the text editor, you edit and debug the code in IL and ST programming and define user-defined data types. IntelliSense function automatically completes your variable names, structure elements and function block parameters.

**Variable Grid Editor**
In the variables grid, each line represents the declaration of a variable or FB instance. For an optimal overview, variables can be divided into different groups. The attributes of each variable/instance are defined in the respective table columns either by entering or selecting a combo box entry. The variables editor prevents a number of syntactical declaration errors and makes declaration easy and clear.

KW MultiProg has several features which can save your development time and will manage your complicated project:

- **Project Template**
  A new project can not only be created with the Project Wizard in MultiProg, but also based on a project template. Owing to the practice-orientated template management, you can not only access supplied default templates, but save each own project as template.

- **Cross-Compiling**
  The basic languages of the IEC 61131-3 standard, i.e. FBD, LD and IL, can be cross-compiled to each other including their comments. Program code which has been written in ST can be compiled to any of the three basic languages.

- **Password Protection**
  You can protect complete subtrees or individual project nodes in the project tree with a password. Access rights can be restricted for editing the project structure, opening and writing worksheets, downloading to individual configurations or resources and debugging. Each user has to log in using the valid password in order to get full access to a protected project.

**Multi-User Feature**
The Multi-User feature provides safe access to project source files while several users are working on the same project at the same time. In order to provide a safe and fast development environment for multiple users, the project is saved as server project on a server PC in the network. Each user can create a client project on his local PC for editing. The respective nodes in the project tree of the client project must be checked out, which means that no other user has write access for these data any longer.

**Online Assistance in Multiple Languages**
The software includes online help systems and documentation, available in English, German, French, Spanish, Japanese and Chinese.

**Offline Simulation Tools**
Program simulation is the best debug function for software developers. Before the program is downloaded into the controller, programmers can use this function to simulate programs. The easy-to-use 32 bit simulation offers fast and real-time multitasking test environment. The image below is of the simulation tool function and program with I/O status monitoring. Programmers can set the simulation value to AI or DI channels for checking the program before downloading. By simply clicking on a green input point (LED) you activate a simulator input. The output LEDs represent the actuated signal outputs in the same way.
• **Logic Analyzer**
  The Logic Analyzer is a powerful tool for recording variable values in online mode and representing them in a graph. Using the results delivered by the analyzer, you can evaluate if the program runs as expected.

• **Advantech Advanced Function Blocks**
  To satisfy automation applications, Advantech also add some add-on features for various dedicated control and automation applications:
  - I/O Function Blocks: Used to control I/O with Advantech PAC controller. Including AI/O read FB, AI/O write FB, DI/O read FB, DI/O write FB, I/O error FB.
  - SQL Database Function Blocks: Used for data log and analysis.
  - Scheduling Function Blocks: Used for time scheduling control in building automation and devices schedule control applications.
  - Email Function Blocks: Used for event notification and remote service applications.
  - Modbus Communication Driver:

  Advantech has provided an interface to monitor and control tags. This interface is accessible via Modbus/TCP as well as Modbus/RTU. The APAX controller can be treated as a Modbus Slave. The APAX Controller reserves approximately 128K Bytes memory space for Modbus use. This shared memory block can store user's data and exchange the data through Modbus/TCP and Modbus/RTU protocol with a HMI/SCADA software.

• **Online Change**
  It is not acceptable to stop a machine and shut down processes in order to carry out maintenance work. Not to mention the difficulties that occurs during the debug phase, when constant switching between development and online mode is necessary. Changes of current program can be downloaded to the targeted Advantech PAC controller after compilation and commissioned without having to stop the controller and program execution. This feature enables controller to switch between two process cycles from the “old” to the “new” code after downloading the modified program.

• **Backup Function Blocks**
  APAX-5000 series delivers system backup functionality. To leverage this functionality, two controllers with the same control program, are installed in one system. After both controllers’ backup function is enabled, the APAX-5000 system will automatically delegate one of the two controllers as the master controller. The control program should use the function block “AdvRdSysActiveState” to know if its controller is the master controller currently, by the parameter Value. If the Value responses “True”, it means the controller is master controller, then the program should execute the control algorithm. If the Value responses “False”, it means the controller is backup controller, then its program should do nothing, and simply checking if the master controller is still alive periodically. When it detect the master controller lost, it should executing the control algorithm, making it become the master controller.

---

**Ordering Information**

- **MPROG-PRO535E** KW Multiprog Pro v5.35 (128k bytes I/O, Win7 support)
PC-based Programming Software

Advantech PAC offers the seamless software integration for automation application. Regarded as SoftPLC, Advantech PACs not only leverage KW-Software including LD/FBD/IL/ST and SFC, but also empower many application-oriented & practice-oriented function blocks to different domain fields, such as batch control for food/beverage, auto-tuning PID for temperature control in EFMS, PLCOpen-compliant motion control blocks for a variety of trajectory control and positioning purposes in machine automation. Multi-tasking, runtime error reports and operating mode changes are also possible for PAC applications.

For PC-based users, Advantech also offers the .NET function library. System integrators can benefit from flexibility to integrate I/O control, motion control, industrial communication protocols and data process/exchange, database access, HMI interface and SCADA. Plenty of C/C++ and .NET examples save programmer learning time, helping save programmers’ development effort and shortening time to market.

.NET and C/C++ Library

Advantech’s PAC series solution offers a complete PC-based platform with Application Programming Interface (API). With C/C++ libraries and .NET class libraries provided by Advantech, PC-based programmers can develop their own programs for industrial control and automation tasks, involving I/O control, system backup function, communication, SQL and scheduling, even integrated with HMI/SCADA interface.

Modbus Server

Advantech’s PAC series offers Modbus/RTU and Modbus/TCP for data exchange purposes. Advantech offers a series of API, including Modbus server/client configuration, easy data access function and callback function for multithread event handling. Plenty of samples programs can help you to easily set up the Modbus communication. Besides, APAX-5570 series and APAX-5520 controller has built-in Modbus server, so any Modbus client (such as HMI) can access to APAX I/O without writing programming.

DiagAnywhere – Remote Maintenance Software

DiagAnywhere, an abbreviation of “Diagnostic Anywhere”, is a networking solution for remotely monitoring and controlling APAX controllers through Windows-based operating systems. It includes the utility on the client side and the server on APAX controllers. Any computer installed with the utility can connect to APAX controllers, seeing what’s happens on the controller and performing remote control. It is very convenient that the engineer doesn’t need use a screen to operate the controller in the field, and allows them to maintain the system on the remote site. One DiagAnywhere client can monitor and control up to 16 target controllers simultaneously. This useful software tool also supports remote screen snapshots, remote screen recording, file upload and download between utility (on the client computer) and server (APAX controller), favorite devices grouping to manage system more easily, and authentication functionality. All these features help users save maintenance cost and effort.
**Batch Control Solution**

**Introduction**

The batch control process involves a sequence of metal treatment, semiconductor crystal silicon growing, chemical or biological processes for the conversion and transport of material. The manufacturing processes can be classified as continuous and discrete control manufacturing and be processed step by step in each processes equipment. For example, a typical application is a metal heating treatment furnace: in order to convert metal ingredients for an industrial application, the metal heating process is actioned by different temperature control Set Points (SP) by a time-based, ramp/soak pattern of a PID control loop SP and in each heating period, the metal ingredients will be changed by different temperatures and other conditions.

To classify these industry applications, we call them Batch Control Industries. The control application of the manufacturing process is a combination of continuous and discrete controls. All of these manufacturing processes are time-based flow processes. The control functions are included in a PID closed-loop control that is a continuous process control function. The PID SP pattern generation function is a typical batch control function. The other is a discrete control for logic and sequence control function. Some of the applications need recipe controls and report management.

**Batch Control Solution**

**Batch Control Function Highlight**

**Typical Process/Production Line Diagram**

Advantech’s batch control system focuses on a single path batch manufacturing process equipment, e.g. a heating treatment furnace for the metal used in semiconductors. Plastic and rubber manufacturing equipment, printed circuit board (PCB) manufacturing equipment or reactors for food & beverage applications. Main application functions focus on:

- **Process Control Functions**
  - Auto-tuning PID Function
  - Temperature Control
  - Air/Fluid Ratio Function
  - Ramp/Soak Control

- **Motion Control**
  - Position & Speed
  - Recipe Management
  - Process Parameter Configuration

- **Batch Report**
  - Daily, Weekly, Monthly, Yearly

**Key Features**

- **Guaranteed Real-time Performance**
  APAX I/O local bus ensures deterministic control. Contributed by the dedicated Digital Signal Processor (DSP) which handles I/O data process without controller’s CPU resource, the I/O scan rate can be maintained within 1ms, regardless of the number of I/O points. Programmers can concentrate on their application program development, and the APAX system can perform real-time I/O access automatically.

- **Flexible Expansion Architecture**
  Through expansion ports on backplanes and standard Ethernet cables, a remote expansion with localbus speed can be built, and the distance can be up to 100m. A standard ethernet switch can be used between two backplanes, so line, tree or star topologies can be built for I/O expansion - all with fast local-bus speed. When fiber optic ports are available, the distance can be longer.

- **Hot-Swappable I/O**
  APAX backplanes carry communication and power to I/O modules. With a special design, the I/O modules can be hot-swapped when the system is powered-on and running. Engineers can easily change modules without shutting down the system thereby saving system management costs.

- **Fail Safe Value**
  System reliability is critical for batch control applications. APAX output modules feature fail safe value settings, meaning when modules lose communication to the controller, all output channel values will be set as the pre-defined value. This can eliminate risks owing to system communication issues.
APAX Series Overview

Advantech’s New Generation PAC - APAX Series

APAX series, the new PAC solution from Advantech, integrates control, information processing and networking in a single platform. By leveraging the latest automation technology, APAX series offers a unique system architecture, providing dual controllers for different tasks, same I/O with changeable controllers, and flexible I/O expansion with deterministic performance. All these features make Advantech’s PAC system more reliable, scalable and flexible, satisfying various complicated control and automation applications.
Dual Controllers for Different Tasks

One controller focuses on I/O processing, while another controller can execute other tasks such as HMI/SCADA, database, recipe, image processing, etc. This architecture ensures system reliability since I/O processing won’t be affected by other tasks.

Changeable Controllers and Couplers

APAX I/O modules can combine different controllers or couplers to satisfy different applications. Using different couplers, I/O modules can link to various real-time Ethernet and fieldbus systems. It saves investment in I/O and offers scalability for future needs.

Flexible Expansion Topology

All APAX I/O modules are inserted on the backplane. Through the expansion port and Ethernet cable, different backplanes can be connected. This decentralized architecture retains high-speed data transfers, so the distributed I/O modules provide real-time performance. Almost any topology, such as line, tree or star, can be easily established. The hot swap capability is also available for remote expansion I/O modules.
Programmable Automation Controllers

APAX System Architecture

Introduction

To simplify the system configuration, Advantech’s new APAX-6000 and APAX-5000 series provide easy and flexible way to setup different functions and configurations. There are multiple APAX series system combinations that can be selected to develop reliable control systems as detailed below.

Application Ready High Performance PACs

Advantech’s APAX-5580 and 6572 series offers several high performance controllers with Atom and Celeron M grade CPUs. These controllers benefit from the high throughput, openness, flexibility and connectivity brought by PC-based architectures. Contributed by excellent heat dissipation technology with no hard disks, they deliver great system reliability. Various peripheral interfaces such as LAN, USB, DVI, audio, RS-232, RS-422/485, etc, are provided. These high performance PAC controllers are suitable for many complex control applications. Besides, its powerful integration ability makes it an ideal platform to integrate video, audio, HMI/SCADA software, database, data processing into one single solution.

Robust, Compact PACs

APAX-5620 series controllers offer a compact size without fans. These controllers have no rotating parts, helping further increase system reliability. APAX-5520/5620 features a VGA interface, enabling local displays, and its RS-485 and LAN ports offer communication ability with Modbus protocol. CF slot and battery backup RAM can be used for data storage. These features make APAX-5520/5620 as compact and robust as a PLC, but with enhanced displays, connectivity, and storage.

Scalable Systems with Remote I/O

For different fieldbus or real-time Ethernet networks, such as Modbus/TCP, Ethernet/IP, PROFINET, etc, APAX series offers different kinds of couplers for communication. Controllers, HMI, and computers in the same network can access APAX I/O modules through the coupler. Not having to change I/O modules for different fieldbus or real-time Ethernet networks helps ensuring current I/O modules’ investment for future demands. These couplers feature daisy-chain design, making installation easier.

Reliable Backup System

APAX-5000 series delivers system backup functionality to significantly decrease the risk that the system will fail when the controller crashes. To leverage this, two controllers with the same control program are installed in one system. After both controllers’ backup functions are enabled, APAX-5000 will automatically delegate one controller as the master controller. The master controller will run the control program to execute the control process, while another controller (the backup controller) is put on standby. The master controller periodically sends live messages to the backup controller. If the backup controller does not receive a message from the master controller, it will automatically become the master controller and restart the control process.

If the master controller is switched, it means there was an error happening on the previous master controller. Therefore, engineers can repair or change the previous master controller and re-enable it as the backup controller. Then if the new master controller fails, the new backup controller will automatically take over the control once again. This mechanism ensures the control system will continuously run the control process.

Redundant System

With the data synchronization, the secondary controller can take over the control tasks at the same position which primary fails within a very short time. Depending on customers request, the power supply can be separated to increase the availability.
# APAX Controller Selection Guide

<table>
<thead>
<tr>
<th>System</th>
<th>APAX-5520</th>
<th>APAX-5620</th>
<th>APAX-6572</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>XScale PXA270 520 MHz</td>
<td>Intel Atom D510 1.66 GHz</td>
<td></td>
</tr>
<tr>
<td>Memory</td>
<td>Flash 32 MB, SDRAM 64 MB</td>
<td></td>
<td>2 GB DDR2 DRAM</td>
</tr>
<tr>
<td>Storage</td>
<td>1 x CF slot</td>
<td>1 x CF slot (internal)</td>
<td></td>
</tr>
<tr>
<td>Local Display</td>
<td>VGA</td>
<td>VGA</td>
<td></td>
</tr>
<tr>
<td>USB Ports</td>
<td>1 x USB 1.1</td>
<td></td>
<td>4 x USB 2.0</td>
</tr>
<tr>
<td>Audio</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling System</td>
<td>Fanless</td>
<td>Fanless</td>
<td></td>
</tr>
<tr>
<td>Power Input</td>
<td>18 ~ 30 Vdc</td>
<td>9 ~ 36 Vdc</td>
<td></td>
</tr>
<tr>
<td>Diagnostics LED</td>
<td>Power, Battery, Run, Error</td>
<td>Power, IDE, LAN, Serial</td>
<td></td>
</tr>
<tr>
<td>Real-time Clock</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Software</td>
<td>C/C++ library and .NET class library for C and .NET programming environment</td>
<td>KW IEC 61131-3 SoftLogic programming tool</td>
<td></td>
</tr>
<tr>
<td>Local Real-time I/O Modules</td>
<td>32 (max.)*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digital I/O Points</td>
<td>2048 (max.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog I/O points</td>
<td>512 (max.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication (Ethernet)</td>
<td>LAN Ports</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Speed</td>
<td>10/100 Mbps</td>
<td>10/100/1000 Mbps</td>
</tr>
<tr>
<td></td>
<td>Protocol</td>
<td>Modbus/TCP</td>
<td></td>
</tr>
<tr>
<td>Communication (Serial)</td>
<td>COM 1</td>
<td>RS-485</td>
<td></td>
</tr>
<tr>
<td></td>
<td>COM 2</td>
<td>RS-485</td>
<td></td>
</tr>
<tr>
<td></td>
<td>COM 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CAN Bus</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Protocol</td>
<td>Modbus/RTU, CANopen (APAX-5620 only)</td>
<td></td>
</tr>
<tr>
<td>Isolation</td>
<td>Communication</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2500 Vdc (RS-485)</td>
<td>2500 Vdc (CAN &amp; RS-485)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Protocol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment</td>
<td>Operating Temperature (when mounted vertically)</td>
<td>-10 ~ 55°C</td>
<td>-10 ~ 50°C</td>
</tr>
<tr>
<td></td>
<td>Storage Temperature</td>
<td>-40 ~ 70°C</td>
<td></td>
</tr>
<tr>
<td>Relative Humidity</td>
<td></td>
<td>0 ~ 95 % (non-condensing)</td>
<td></td>
</tr>
<tr>
<td>Vibration Protection</td>
<td>IEC 60688-2-64/60688-2-6: 1 Gms @ 5 ~ 500 Hz (Random, operating)</td>
<td>IEC 60688-2-64: 2 Gms @ 5 ~ 500 Hz (Random, operating)</td>
<td></td>
</tr>
<tr>
<td>Shock Protection</td>
<td>IEC 60688-2-27: 20 G @ wall mount</td>
<td>IEC 60688-2-27: 50 G @ wall mount</td>
<td></td>
</tr>
<tr>
<td>Power Supply Module (Optional)</td>
<td>APAX-5343E</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*APAX DI/O modules can use ID numbers 0 ~ 31, while AI/O modules and counter modules can only use ID numbers 0 ~ 15
# APAX I/O Module
## Selection Guide

<table>
<thead>
<tr>
<th>Module Name</th>
<th>APAX-5013</th>
<th>APAX-5017</th>
<th>APAX-5017H</th>
<th>APAX-5018</th>
<th>APAX-5028</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>8-ch RTD Module</td>
<td>12-ch AI Module</td>
<td>12-ch High Speed AI Module</td>
<td>12-ch Thermocouple Module</td>
<td>8-ch AO Module</td>
</tr>
<tr>
<td><strong>Analog Input</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AI Channels</td>
<td>8</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>-</td>
</tr>
<tr>
<td>Input Type*</td>
<td>RTD (2-wire or 3-wire)</td>
<td>V, mV, mA</td>
<td>V, mV, mA</td>
<td>V, mV, mA, Thermocouple</td>
<td>-</td>
</tr>
<tr>
<td>Sampling Rate</td>
<td>50 Hz filter: 8 (Total**)</td>
<td>12/120 selectable (Total**)</td>
<td>1000 (per channel)</td>
<td>12 (Total**)</td>
<td>-</td>
</tr>
<tr>
<td>(Samples/second)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input Resolution</td>
<td>16-bit</td>
<td>16-bit (voltage)</td>
<td>14 ~ 15-bit (current)</td>
<td>12-bit</td>
<td>16-bit (voltage)</td>
</tr>
<tr>
<td>Input Accuracy</td>
<td>±0.1 % of FSR</td>
<td>±0.1 % of FSR (Voltage)</td>
<td>±0.2 % of FSR (Current)</td>
<td>±0.1 % of FSR (Voltage)</td>
<td>±0.1 % of FSR (Voltage)</td>
</tr>
<tr>
<td>Voltage Input</td>
<td>±150 mV, ±500 mV, ±1 V, ±5, ±10 V</td>
<td>0 ~ 500 mV, ±10 V, 0 ~ 10 V</td>
<td>±50 mV, ±100 mV, ±500 mV, ±1 V, ±2.5 V</td>
<td>±20 mA, 0 ~ 20 mA, 4 ~ 20 mA</td>
<td>±20 mA, 0 ~ 20 mA, 4 ~ 20 mA</td>
</tr>
<tr>
<td>Current Input</td>
<td>±20 mA, 0 ~ 20 mA, 4 ~ 20 mA</td>
<td>0 ~ 20 mA, 4 ~ 20 mA</td>
<td>±20 mA, 0 ~ 20 mA, 4 ~ 20 mA</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Direct Sensor Input</td>
<td>RTD (Pt-100, Pt-200, Pt-500, Pt-1000, Balco, Ni 518)</td>
<td>-</td>
<td>-</td>
<td>Thermocouple (Type J, K, T, E, R, S, B)</td>
<td>-</td>
</tr>
<tr>
<td>Wire Burnout Detection</td>
<td>All RTD range</td>
<td>4 ~ 20 mA</td>
<td>4 ~ 20 mA</td>
<td>4 ~ 20 mA and all Thermocouple range</td>
<td>-</td>
</tr>
<tr>
<td><strong>Analog Output</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AO Channels</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>Output Type*</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>V, mA</td>
</tr>
<tr>
<td>Output Resolution</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>14-bit</td>
</tr>
<tr>
<td>Output Accuracy</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>±0.1 % of FSR</td>
</tr>
<tr>
<td>Output Slew Rate</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.7 V/μs (per channel)</td>
</tr>
<tr>
<td>Voltage Output</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>±2.5 V, ±5 V, ±10 V, 0 ~ 2.5 V, 0 ~ 5 V, 0 ~ 10 V</td>
</tr>
<tr>
<td>Current Output</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0 ~ 20 mA, 4 ~ 20 mA</td>
</tr>
<tr>
<td>Short Circuit Protection</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>Fail Safe Value</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>General</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>170 g</td>
<td>170 g</td>
<td>175 g</td>
<td>170 g</td>
<td>175 g</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-10 ~ 60°C (when mounted vertically)</td>
<td>-40 ~ 85°C</td>
<td>-40 ~ 85°C</td>
<td>-40 ~ 85°C</td>
<td>-40 ~ 85°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td></td>
<td>5 ~ 95%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative Humidity (non-condensing)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Consumption (typical)</td>
<td>2.5 W @ 24 Vdc</td>
<td>4 W @ 24 Vdc</td>
<td>3.5 W @ 24 Vdc</td>
<td>3.5 W @ 24 Vdc</td>
<td>3.5 W @ 24 Vdc</td>
</tr>
<tr>
<td>Isolation between channels and backplane</td>
<td>2500 Vdc</td>
<td>-40 ~ 85°C</td>
<td>-40 ~ 85°C</td>
<td>-40 ~ 85°C</td>
<td>-40 ~ 85°C</td>
</tr>
<tr>
<td>Power Supply Module (optional)</td>
<td>APAX-5343E</td>
<td>APAX-5343E</td>
<td>APAX-5343E</td>
<td>APAX-5343E</td>
<td>APAX-5343E</td>
</tr>
<tr>
<td><strong>Page</strong></td>
<td>online</td>
<td>online</td>
<td>14-21</td>
<td>online</td>
<td>14-21</td>
</tr>
</tbody>
</table>

*Each channel can be configured with different type and range
**Sampling rate value depends on used channel number.
Example: Using 6 channels on APAX-5017, sampling rate for each used channel will be 12/6 = 2 samples/second.
## Selection Guide

<table>
<thead>
<tr>
<th>Module Name</th>
<th>APAX-5040</th>
<th>APAX-5045</th>
<th>APAX-5046/SO</th>
<th>APAX-5060</th>
<th>APAX-5080</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>24-ch DI Module</td>
<td>24-ch DI/O Module</td>
<td>24/20-ch DO Module</td>
<td>12-ch Relay Module</td>
<td>4/8-ch Counter Module</td>
</tr>
<tr>
<td><strong>Digital Input</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DI Channels</td>
<td>24</td>
<td>-</td>
<td>-</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>Input Type</td>
<td>Sink or Source Load</td>
<td>Sink or Source Load</td>
<td>-</td>
<td>-</td>
<td>Source Load</td>
</tr>
<tr>
<td>Rated Input Voltage</td>
<td>24 VDC</td>
<td>24 VDC</td>
<td>-</td>
<td>-</td>
<td>24 VDC</td>
</tr>
<tr>
<td>Input Voltage Range (signal &quot;0&quot;)</td>
<td>-5 ~ 5 VDC</td>
<td>-5 ~ 5 VDC</td>
<td>-</td>
<td>-</td>
<td>0 ~ 3 VDC</td>
</tr>
<tr>
<td>Input Voltage Range (signal &quot;1&quot;)</td>
<td>15 ~ 30 VDC</td>
<td>15 ~ 30 VDC</td>
<td>-</td>
<td>-</td>
<td>10 ~ 30 VDC</td>
</tr>
<tr>
<td>Rated Input Current</td>
<td>4.4 mA (typical)</td>
<td>4.4 mA (typical)</td>
<td>-</td>
<td>-</td>
<td>10 mA (typical)</td>
</tr>
<tr>
<td>Input Filter</td>
<td>3 ms</td>
<td>3 ms</td>
<td>-</td>
<td>-</td>
<td>3 ms</td>
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<tr>
<td>Over Voltage Protection</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Counter Input</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counter Channels</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>8 (Up and Frequency mode)</td>
</tr>
<tr>
<td>Rated Input Voltage</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>24 VDC</td>
</tr>
<tr>
<td>Input Voltage Range (signal &quot;0&quot;)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0 ~ 3 VDC</td>
</tr>
<tr>
<td>Input Voltage Range (signal &quot;1&quot;)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10 ~ 30 VDC</td>
</tr>
<tr>
<td>Rated Input Current</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5 ~ 15 mA (typical)</td>
</tr>
<tr>
<td>Counting Range</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>32-bit + 1-bit overflow/underflow</td>
</tr>
<tr>
<td>Counter Frequency</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1 MHz (max.)</td>
</tr>
<tr>
<td>Counter Gate and Alarm Function</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Digital Output</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO Channels</td>
<td>-</td>
<td>12</td>
<td>24/20</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>Output Type</td>
<td>Sink</td>
<td>Sink/Source</td>
<td>Relay (Form A, SPST)</td>
<td>Sink</td>
<td></td>
</tr>
<tr>
<td>Rated Output Voltage</td>
<td>-</td>
<td>24 VDC</td>
<td>24 VDC</td>
<td>250 VDC, 30 VDC</td>
<td>24 VDC</td>
</tr>
<tr>
<td>Rated Output Current</td>
<td>-</td>
<td>0.5 A</td>
<td>0.5A/1A</td>
<td>5 A</td>
<td>0.5 A</td>
</tr>
<tr>
<td>Short Circuit Protection</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
<td>Yes</td>
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<tr>
<td>Thermal Shutdown Protection</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>General</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>160 g</td>
<td>165 g</td>
<td>165 g</td>
<td>195 g</td>
<td>170 g</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-10 ~ 60°C (when mounted vertically)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40 ~ 85°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>5 ~ 95%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Consumption</td>
<td>2 W @ 24 VDC</td>
<td>2.5 W @ 24 VDC</td>
<td>2.5 W @ 24 VDC</td>
<td>2 W @ 24 VDC</td>
<td>2.5 W @ 24 VDC</td>
</tr>
<tr>
<td>Isolation between channels and backplane</td>
<td>2500 VDC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channel Status LED</td>
<td>Yes (per channel)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes (DO channel)</td>
<td></td>
</tr>
<tr>
<td>Fail Safe Value</td>
<td>-</td>
<td>Yes (DO channel)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes (DO channel)</td>
</tr>
<tr>
<td>Power Supply Module (optional)</td>
<td>APA5-5043E</td>
<td></td>
<td></td>
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<td></td>
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</tbody>
</table>

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## Coupler Modules

<table>
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<tr>
<th>Module Name</th>
<th>APAX-5070</th>
<th>APAX-5071</th>
<th>APAX-5072</th>
<th>APAX-5073</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Modbus/TCP Communication Coupler</td>
<td>PROFINET Communication Coupler</td>
<td>EtherNet/IP Communication Coupler</td>
<td>PROFINIBUS Communication Coupler</td>
</tr>
<tr>
<td>Protocol</td>
<td>Modbus/TCP</td>
<td>PROFINET RT</td>
<td>EtherNet/IP</td>
<td>PROFINIBUS</td>
</tr>
<tr>
<td>Data Transfer Rates</td>
<td>10/100 Mbps</td>
<td>100 Mbps</td>
<td>10/100 Mbps</td>
<td>12 Mbits/s</td>
</tr>
<tr>
<td>Connected I/O Modules</td>
<td>-</td>
<td>32 (max.)*</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Digital Signals</td>
<td>-</td>
<td>768 (max.)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Analog Signals</td>
<td>-</td>
<td>192 (max.)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Connector</td>
<td>2 x RJ-45 (2-channel switch, share same IP address)</td>
<td>1 x DB-9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Topology</td>
<td>Line or star wiring</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-10 ~ 60°C (when mounted vertically)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40 ~ 85°C</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>5 ~ 95% (non-condensing)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*APAX DI/O modules can use ID number 0 ~ 31, while AI/O modules and counter modules can only use ID numbers 0 ~ 15

## Communication Modules

<table>
<thead>
<tr>
<th>Module Name</th>
<th>APAX-5090P</th>
<th>APAX-5095P</th>
<th>APAX-5202P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>4-port RS-232/422/485 Communication Module</td>
<td>2-port CANopen Master Module</td>
<td>2-port AMONet Master Module</td>
</tr>
<tr>
<td>Serial Communication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baud Rate</td>
<td>50 bps ~ 230.4 kbps</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Data Bits</td>
<td>5, 6, 7, 8</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Stop Bits</td>
<td>1, 1.5, 2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Parity</td>
<td>None, even, odd</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CANopen Communication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Transfer Rates</td>
<td>-</td>
<td>Max. 1 Mbits/s</td>
<td>-</td>
</tr>
<tr>
<td>Motion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transmission Speed</td>
<td>-</td>
<td>-</td>
<td>2.5, 5, 10 or 20 Mbps</td>
</tr>
<tr>
<td>Slaves Number</td>
<td>-</td>
<td>-</td>
<td>1 Ring: 64 (max.) 2 Rings: 128 (max.)</td>
</tr>
<tr>
<td>General</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interface</td>
<td>2 x RS-422/485</td>
<td>2 x CAN Bus</td>
<td>2 x AMONet</td>
</tr>
<tr>
<td>Connector</td>
<td>26-pin clamp-type terminal DB9</td>
<td>RJ-45</td>
<td>-</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0 ~ 60°C (when mounted vertically)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40 ~ 70°C</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>5 ~ 95% (non-condensing)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: APAX-5090P, APAX-5095P and APAX-5202P can only be used by controller with a PCI interface
APAX-6572

Intel® Atom™ D510 1.66 GHz, 2 GB RAM Controller with 3 x LAN, 2 x COM, VGA

Features
- Intel Atom D510 1.66 GHz CPU
- Onboard 2 GB DDR2 DRAM
- Backup system with two controllers (master and slave) to ensure continuous I/O control
- Expands I/O by connecting with APAX-5000 I/O modules
- Supports Windows WES2009 and Windows CE
- Provides C/C++ and .NET library for I/O control and communication
- Supports real-time control tasks under Windows CE through ProConOS
- 2 x RS-232/422/485 (automatic flow control)
- 3 x 10/100/1000 Mbps LAN, 4 x USB 2.0

Introduction
The APAX-6572 is a high performance controller with an Intel Atom D510 CPU. By installing Windows WES2009 or Windows CE operating system, it becomes an application ready platform. It is an ideal open control platform which can be combined with APAX I/O modules, and features flexible I/O expansion, real-time I/O control, and powerful computing and networking capability through various interfaces.

Specifications

General
- Certification: CE, FCC Class A
- Cooling System: Fanless
- Mounting: DIN-rail, Wall mount (panel mount)
- Dimensions (W x H x D): 222 x 155 x 140 mm
- Enclosure: Aluminum + SECC, ABS + PC (I/O)
- Weight: 2.6 kg (APAX-6572)
- Power Consumption: 35 W @ 24 VDC (Typical, Without I/O modules)
- Power Requirement: 10 – 36 Vdc (e.g. +24 V @ 1 A) (Min. 24 W), AT
- Power, CF , LAN (Active, Status), Serial (Tx, Rx)

System Hardware
- CPU: Intel Atom D510 1.66 GHz
- Memory: 2 GB DDR2 DRAM (onboard)
- Battery Backup SRAM: 1 MB
- Watchdog Timer: Programmable 7-tier event handler, from 1 – 255 seconds for each tier
- LED Indicators: Power, CF, LAN (Active, Status), Serial (Tx, Rx)
- Display: VGA (DB15 connector), up to 1600 x 1200 @ 85Hz
- Audio: Line in, Line out, Mic in
- Storage: 1 x internal Type I/II CompactFlash card slot

Software
- Control Software: C/C++ and .NET library with utility
- Remote Management: KW MultiProg (development), ProConOS (kernel)

I/O Expansion
- Accompanied I/O slots: 4 x APAX/PCI combo slots
- Connected I/O Modules: 32 (max.)
- Digital Signals: 768 (max.)
- Analog Signals: 192 (max.)

Communication
- Serial Ports: 2 x RS-232/422/485 (supports automatic RS-485 data flow control)
- Serial Baud Rate: 50 – 115.2 kbps
- LAN Ports: 3 x RJ-45 Ports, 10/100/1000 Mbps
- USB Ports: 4 x USB 2.0

Environment
- Operating Temperature: -10 – 50°C (when mounted vertically)
- Storage Temperature: -40 – 70°C
- Operating Humidity: 20 – 95% (non-condensing)
- Storage Humidity: 0 – 95% (non-condensing)
- Vibration Protection: 2 Gms @ 5 ~ 500 Hz

Ordering Information
- APAX-6572: Intel Atom D510 1.66 GHz, 2 GB RAM Controller
- PWDR-244: Panel Mount Power Supply
- PAC softlogic option (for CTOS only)
  - SF-G-ETE: Suggested CF 8G CF NR, DMA (-40 – 85°C)
  - 2070012262: WinCE image with KW support for APAX-6572
- License Agreement for KW ProConOS Embedded

*APAX DI/O modules can use ID number 0 ~ 31, while AI/O modules and counter modules can only use ID numbers 0 ~ 15

Online Download www.advantech.com/products
APAX-5090P
APAX-5095P

Specifications

General
- Certification: CE, FCC class A
- Interface: COM 1, COM 2: RS-422/485
  COM 3, COM 4: RS-232/422/485
- Connectors: 1 x 26-pin clamp-type terminal
- Dimensions (W x H x D): 30 x 139 x 100 mm
- Enclosure: ABS+PC
- Weight: 180 g
- Power Consumption: 2 W @ 5 VDC (typical)

Communications
- Data Bits: 5, 6, 7, 8
- Stop Bits: 1, 1.5, 2
- Parity: None, even, odd
- Baud Rate: 50 bps – 230.4 kbps
- Data Signals: RS-232: TxD, RxD, RTS, CTS, GND
  RS-422: Tx+, Tx-, Rx+, RX-
  RS-485: Data+, Data-
- FIFO: 128 bytes
- Flow Control: RTS/CTS, Xon/Xoff

Protection
- ESD Protection: 15 kV
- EFT Protection: 2,500 V
- Isolation Protection: 2,500 V (between COM port and backplane)

Environment
- Operating Temperature: 0 – 60°C (mounted vertically)
- Storage Temperature: -40 – 70°C
- Relative Humidity: 5 – 95% (non-condensing)

Ordering Information
- APAX-5090P: 4-port RS-232/422/485 Comm. Module

Note: APAX-5090P can only be used by controllers with a PCI interface (ex. APAX-6572)

Specifications

General
- Certification: CE, FCC class A
- Interface: 2 x CAN Bus
- Connectors: DB9
- Dimensions (W x H x D): 30 x 139 x 100 mm
- Enclosure: ABS+PC
- Weight: 180 g
- Power Consumption: 2 W @ 5 VDC (typical)

Communications
- Protocol: CANopen
- Speed: Max. 1 Mbits/s
- Supports PDO transmission mode
- Supports NMT and SDO communication object
- Supports Heartbeat producer and consumer
- Supports Emergency objects

Protection
- Isolation Protection: 2,500 V

Environment
- Operating Temperature: 0 – 60°C (mounted vertically)
- Storage Temperature: -40 – 70°C
- Relative Humidity: 5 – 95% (non-condensing)

Ordering Information
- APAX-5095P: 2-port CANopen Module

Note: APAX-5095P can only be used by controllers with a PCI interface (ex. APAX-6572)
**APAX-5520CE/KW**

### Specifications

**General**
- **Certification**: CE, FCC class A
- **Dimensions (W x H x D)**: 30 x 139 x 100 mm
- **Enclosure**: ABS+PC
- **Weight**: 210 g
- **Power Consumption**: 4.5 W @ 24 VDC (typical)

**System Hardware**
- **CPU**: Intel XScale PXA270 520 MHz
- **Memory Flash**: 32MB, SDRAM 64MB bytes
- **Battery Backup Memory**: 256 KB file system, 256 KB direct access
- **Real-time Clock**: Yes
- **Watchdog Timer**: Yes
- **VGA**: DB15 connector
- **SB Ports**: 1 x USB 1.1
- **Storage**: 1 x Type II CompactFlash card slot

**Software**
- **OS Support**: Windows CE
- **Control Software**: C/C++ and .NET library
  - KW Multiprog (development tool)
  - KW ProConOS (runtime kernel)

**I/O Expansion**
- **Connected I/O Modules**: 32 (max.)
- **Digital Signals**: 768 (max.)
- **Analog Signals**: 192 (max.)

**Communication (Ethernet)**
- **LAN Ports**: 1 x RJ-45 Port, 10/100 Mbps
- **Offers Modbus/TCP Server and Client APIs**: Yes

**Communication (Serial)**
- **Medium**: 1 x Isolated RS-485 (2-wire, isolated)
- **Offers Modbus/RTU Master and Slave APIs**: Yes

**Environment**
- **Operating Temperature**: -10 ~ 55°C (when mounted vertically)
- **Storage Temperature**: -40 ~ 70°C
- **Relative Humidity**: 5 ~ 95% (non-condensing)

**Ordering Information**
- **APAX-5520CE**: PAC with Marvel XScale CPU, WinCE
- **APAX-5520KW**: PAC with Marvel XScale CPU, KW

**Accessories**
- **APAX-5002**: 2-slot Backplane Module
- **APAX-S343E**: Power Supply for APAX Expansion Module

*APAX DI/O modules can use ID number 0 ~ 31, while AI/O modules and counter modules can only use ID numbers 0 ~ 15

---

**APAX-5620CE/KW**

### Specifications

**General**
- **Certification**: CE, FCC class A
- **Dimensions (W x H x D)**: 60 x 139 x 100 mm
- **Enclosure**: ABS+PC
- **Weight**: 310 g
- **Power Consumption**: 5 W @ 24 VDC (typical) (25ms data sync, 20ms changeover time and 1kbytes for data sync)

**System Hardware**
- **CPU**: Intel XScale PXA270 520 MHz
- **Memory Flash**: 32MB, SDRAM 64MB bytes
- **Battery Backup Memory**: 256 KB file system, 256 KB direct access
- **Real-time Clock**: Yes
- **Watchdog Timer**: Yes
- **VGA**: DB15 connector
- **USB Ports**: 1 x USB 1.1
- **Storage**: 1 x Type II CompactFlash card slot

**Software**
- **OS Support**: Windows CE
- **Control Software**: C/C++ and .NET library
  - KW Multiprog (development tool)
  - KW ProConOS (runtime kernel)

**I/O Expansion**
- **Connected I/O Modules**: 32 (max.)
- **Digital Signals**: 768 (max.)
- **Analog Signals**: 192 (max.)

**Communication (Ethernet)**
- **LAN**: 2 x RJ-45 Port, 10/100 Mbps
- **Offers Modbus/TCP Server and Client APIs**: Yes

**Communication (Serial)**
- **Medium**: 2 x Isolated RS-485 (2-wire, isolated)
- **Offers Modbus/RTU Master and Slave APIs**: Yes

**Communication (CAN)**
- **Medium**: 2 x Isolated CAN
- **Protocol**: CANopen (DS301/302)
- **Speed**: maximum 1 Mbit/s

**Environment**
- **Operating Temperature**: -10 ~ 55°C (when mounted vertically)
- **Storage Temperature**: -40 ~ 70°C
- **Relative Humidity**: 5 ~ 95% (non-condensing)

**Ordering Information**
- **APAX-5620CE**: PAC with Marvel XScale CPU, CAN, WinCE
- **APAX-5620KW**: PAC with Marvel XScale CPU, CAN, KW

**Accessories**
- **APAX-5002**: 2-slot Backplane Module
- **APAX-S343E**: Power Supply for APAX Expansion Module
**Introduction**

IEC 61850-3 standards specify a number of “hardened” characteristics that network products should meet to withstand the potentially electromagnetically harsh substation environment: such as immunity to electrical surge, electrostatic discharges and other phenomena that would cause non-hardened devices to fail. The APAX-5000PE series modules are IEC 61850-3 compliant and can be used in power & energy applications e.g. smart substation for good protection features.

**Specifications**

<table>
<thead>
<tr>
<th><strong>General</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Certification</strong></td>
</tr>
<tr>
<td>Dielectric Strength and Impulse Tests: IEC60255-5-2000</td>
</tr>
<tr>
<td>Radiated RF Immunity: IEC 61000-4-3:2002, 10 V/m</td>
</tr>
<tr>
<td>IEEE C37.90.2-1995, 35 V/m</td>
</tr>
<tr>
<td>Fast Transient, Burst Immunity: IEC 61000-4-4:1995 + A1:2001, 4kV @ 2.5KHz</td>
</tr>
<tr>
<td>Surge Immunity: IEC 61000-4-5:2001, 2kV line to line, 4kV line to earth</td>
</tr>
<tr>
<td>Conducted RF Immunity: IEC 61000-4-6:2004, 10 Vrms</td>
</tr>
<tr>
<td>Magnetic Field Immunity: IEC 61000-4-8:2001, 1000 A/m for 3 seconds, 100 A/m for 1 minute</td>
</tr>
<tr>
<td>DOMF: IEC 61000-4-10:2001, 30 A/m @ 100KHz and 1 MHz</td>
</tr>
<tr>
<td>EMC Emissions</td>
</tr>
<tr>
<td>Conducted Emissions: EN 55011: 2002, Class A</td>
</tr>
<tr>
<td>Radiated Emissions: EN 55011: 2002, Class A</td>
</tr>
<tr>
<td><strong>Dimensions (W x H x D)</strong></td>
</tr>
<tr>
<td><strong>Enclosure</strong></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
</tr>
<tr>
<td><strong>Connectors</strong></td>
</tr>
<tr>
<td><strong>Power Consumption</strong></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th><strong>System Hardware</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU</strong></td>
</tr>
<tr>
<td><strong>Memory Flash</strong></td>
</tr>
<tr>
<td><strong>Battery Backup Memory</strong></td>
</tr>
<tr>
<td><strong>Real-time Clock</strong></td>
</tr>
<tr>
<td><strong>Watchdog Timer</strong></td>
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<tr>
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**I/O Expansion**

- **Connected I/O Modules** 32 (max.)*
- **Digital Signals** 768 (max.)
- **Analog Signals** 192 (max.)

**Communication (Ethernet)**

- **LAN** 2 x RJ-45 Port, 10/100 Mbps

**Communication (Serial)**

- **Medium** 2 x Isolated RS-232 (GND, TxD, RxD, RTS, DCD)

**Environment**

- **Operating Temperature** -20 – 70°C (mounted vertically)
- **Storage Temperature** -40 – 85°C
- **Relative Humidity** 5 – 95% (non-condensing)

**Ordering Information**

- **APAX-5522PELX** IEC 61850-3 Compliant PAC
- **APAX-5522PEKW** IEC 61850-3 Compliant PAC, KW softlogic on WinCE

**Accessories**

- **APAX-5002L** 2-slot Backplane Module
- **APAX-5350** APAX Power Filter for APAX PE modules

---

*APAX DI/O modules can use ID number 0 – 31, while AI/O modules and counter modules can only use ID numbers 0 – 15*
Specifications

Input
- Rated Voltage 115/230 VAC
- Voltage Range 90 – 264 VAC
- Rated Input Current 1.5 A (at rated load)
- Rated Input Frequency 50/60 Hz
- Input Frequency Range 47 – 63 Hz
- Inrush Current Limit < 50 A

Output
- Output Power 72 W
- Power Loss about 8–9 W (at rated load)
- Efficiency > 88% (at rated load)
- Rated Voltage 24 VDC
- Rated Output Current 3 A
- Output Current Limit 3.5 – 4.3 A
- Residual Ripple < 240 mVpp
- Startup Delay < 3 second
- Voltage Rise 60 ms (typical)

Protection
- Isolation Protection (in/Out) 42/42 VDC
- Output Over Voltage Protection shutdown as approximate 25 – 27 VDC, latch off mode
- Over Load Protection auto-recovery mode
- Short Circuit Protection auto-recovery mode

General
- Certification CE, FCC class A, UL 508, Energy Star
- Dimensions (W x H x D) 75 x 151 x 115 mm
- Enclosure PC
- Operating Temperature 0 – 50°C (mounted vertically)
- Storage Temperature -20 – 75°C
- Relative Humidity 5 – 95% (non-condensing)
- Mounting DIN-rail, wall mount (panel mount)

Ordering Information
- APAX-5343 Power Supply for APAX-5570 Series
- APAX-5343E Power Supply for APAX Expansion Module

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<tr>
<th>Slot Number</th>
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<th>Power Input Terminal</th>
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<td>APAX-5002</td>
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</table>

Power Supply for APAX-5570 Series/ APAX Expansion Modules
1/2/4-slot Backplane Modules

1. WebAccess+ Solutions
2. Motion Control
3. Power & Energy Automation
4. Automation Software
5. Operator Panels
6. Automation Panel PCs
7. Industrial Computer & Panel PC
8. Industrial Monitors
9. Industrial Ethernet Solutions
10. Serial Device Servers and IP Gateways
11. Serial Communication Cards
12. Embedded Automation Computers
13. PACs
14. Compact PCI Systems
15. NIM I/O Modules
16. RS-485 I/O Modules
17. Ethernet I/O Modules
18. Power & Energy Automation

www.advantech.com/products

Online Download www.advantech.com/products
## Specifications

### General
- **Certification**: CE, FCC class A
- **Dimensions**: 30 x 139 x 100 mm (W x H x D)
- **Enclosure**: ABS+PC
- **Weight**: 190 g
- **Connector**: 2 x RJ-45 (2-channel switch, share same IP address)
- **Power Consumption**: 2 W @ 5 VDC (typical)

### Communication
- **Protocol**: Modbus/TCP
- **Connected I/O Modules**: 32 (max.)*
- **Digital Signals**: 768 (max.)
- **Analog Signals**: 192 (max.)
- **Data Transfer Rates**: 10/100 Mbps
- **Topology**: Line or star
- **Isolation Protection**: 1,500 VAC

### Environment
- **Operating Temperature**: -10 ~ 60°C (mounted vertically)
- **Storage Temperature**: -40 ~ 85°C
- **Relative Humidity**: 5 ~ 95% (non-condensing)
- **Shock Protection**: 2 G @ 5 ~ 500 Hz (Sine, non-operating, 1 hr/axis) (Confirms to IEC 60068-2-6 and IEC 60068-2-6)

### Ordering Information
- **APAX-5070**: Modbus/TCP Communication Coupler

## Specifications

### General
- **Certification**: CE, FCC class A
- **Dimensions**: 30 x 139 x 100 mm (W x H x D)
- **Enclosure**: ABS+PC
- **Weight**: 190 g
- **Connector**: 2 x RJ-45 (2-channel switch, share same IP address)
- **Power Consumption**: 2 W @ 5 VDC (typical)

### Communication
- **Protocol**: EtherNet/IP
- **Connected I/O Modules**: 32 (max.)*
- **Digital Signals**: 768 (max.)
- **Analog Signals**: 192 (max.)
- **Data Transfer Rates**: 10/100 Mbps
- **Topology**: Line or star
- **Isolation Protection**: 1,500 VAC

### Environment
- **Operating Temperature**: -10 ~ 60°C (mounted vertically)
- **Storage Temperature**: -40 ~ 85°C
- **Relative Humidity**: 5 ~ 95% (non-condensing)
- **Shock Protection**: 2 G @ 5 ~ 500 Hz (Sine, non-operating, 1 hr/axis) (Confirms to IEC 60068-2-6 and IEC 60068-2-6)

### Ordering Information
- **APAX-5071**: PROFINET Communication Coupler

## Specifications

### General
- **Certification**: CE, FCC class A
- **Dimensions**: 30 x 139 x 100 mm (W x H x D)
- **Enclosure**: ABS+PC
- **Weight**: 180 g
- **Connector**: 2 x RJ-45 (2-channel switch, share same IP address)
- **Power Consumption**: 2 W @ 5 VDC (typical)

### Communication
- **Protocol**: PROFINET RT V2.2
- **Connected I/O Modules**: 32 (max.)*
- **Digital Signals**: 768 (max.)
- **Analog Signals**: 192 (max.)
- **Data Transfer Rates**: 10/100 Mbps
- **APAX IO Topology**: Line or Star
- **APAX IO Configuration**: PROFINET Communication Coupler

### Environment
- **Operating Temperature**: -10 ~ 60°C (mounted vertically)
- **Storage Temperature**: -40 ~ 85°C
- **Relative Humidity**: 5 ~ 95% (non-condensing)
- **Shock Protection**: 2 G @ 5 ~ 500 Hz (Sine, non-operating, 1 hr/axis) (Confirms to IEC 60068-2-6 and IEC 60068-2-6)

### Ordering Information
- **APAX-5072**: PROFINET Communication Coupler

## Accessories
- **APAX-5002**: 2-slot Backplane Module
- **APAX-5343E**: Power Supply for APAX Expansion Module
- **APAX-5071**: 2-slot Backplane Module
- **APAX-5343E**: Power Supply for APAX Expansion Module

---

*APAX DI/O modules can use ID number 0 ~ 31, while AI/O modules and counter modules can only use ID numbers 0 ~ 15*
APAX-5017H
APAX-5028

12-ch High Speed Analog Input Module
8-ch Analog Output Module

Specifications

General
- Certification: CE, FCC class A
- Dimensions (W x H x D): 30 x 139 x 100 mm
- Enclosure: ABS+PC
- Weight: 175 g
- Power Consumption: 3.5 W @ 24 VDC (typical)

Analog Input
- Channels: 12
- Input Impedance: 2 MΩ (Voltage), 120 Ω (Current)
- Input Type: V, mV, mA
- Input Range: 0 – 500 mV, ±10 V, 0 – 10 V, 0 – 20 mA, 4 – 20 mA
- Configure Different Range for Each Channel
- Resolution: 12-bit with accuracy ±0.1% or better of Full Scale Range (Voltage), ±0.2% or better of Full Scale Range (Current)
- Sampling Rate: 1,000 sample/second (per channel)
- Support: Integration function to eliminate field site noise at sample rate: 100 sample/second
- Span Drift: ±25 ppm/°C
- Zero Drift: ±6 μV/°C
- Wire Burn-out Detection: Yes (4–20 mA only)

Protection
- Over Voltage Protection
- 2,500 VDC Isolation Between Channels and Backplane

Note: The voltage between any two pins must not exceed 15 V

Environment
- Operating Temperature: -10 – 60°C (when mounted vertically)
- Storage Temperature: -40 – 70°C
- Relative Humidity: 5 – 95% (non-condensing)

Ordering Information
- APAX-5017H: 12-ch High Speed Analog Input Module

Specifications

General
- Certification: CE, FCC class A
- Dimensions (W x H x D): 30 x 139 x 100 mm
- Enclosure: ABS+PC
- Weight: 175 g
- Power Consumption: 3.5 W @ 24 VDC (typical)

Analog Output
- Channels: 8
- Output Type: V, mA
- Output Range: ±2.5 V, ±5 V, ±10 V, 0 – 2.5 V, 0 – 5 V, 0 – 10 V, 0 – 20 mA, 4 – 20 mA
- Configure Different Range for Each Channel
- Resolution: 14-bit with accuracy ±0.1% or better of Full Scale Range
- Settling time: about 500 μs
- Slew Rate: 0.7 VDC/μs (per channel)
- Span Drift: ±60 ppm/°C
- Zero Drift: ±275 mV/°C (Voltage), ±250 mV/°C (Current)
- Drive Voltage (Current Mode): 15 VDC
- Load (Current Mode): 0 – 500 Ω

Protection
- Short Circuit Protection
- 2,500 VDC Isolation Between Channels and Backplane

Environment
- Operating Temperature: -10 – 60°C (when mounted vertically)
- Storage Temperature: -40 – 70°C
- Relative Humidity: 5 – 95% (non-condensing)

Ordering Information
- APAX-5028: 8-ch Analog Output Module
APAX-5046
APAX-5046SO

Specifications

General
- Certification: CE, FCC class A
- Dimensions: 30 x 139 x 100 mm (W x H x D)
- Enclosure: ABS+PC
- Weight: 165 g
- Power Consumption: 2.5 W @ 24 VDC (typical)
- Status Display: LED per channel
  On: Logic level 1
  Off: Logic level 0

Digital Output
- Channels: 24 (Sink Type)
- Voltage Range: 8 – 35 VDC
- Rated Current Output: 0.5 A (per channel, at signal "1")
- Leakage Current: 0.1 mA (at signal "0")
- Switch Rate:
  - Resistive load: 300 Hz (max.)
  - Inductive load: 20 Hz (max.)
  - Lamp load: 200 Hz (max., at 5W lamp and under 50Ω, 24V)

Protection
- 2,500 VDC Isolation Between Channels and Backplane
- Short Circuit Protection
- Thermal Shutdown Protection

Environment
- Operating Temperature: -10 – 60°C (when mounted vertically)
- Storage Temperature: -40 – 70°C
- Relative Humidity: 5 – 95% (non-condensing)

Ordering Information
- APAX-5046: 24-ch Digital Output Module
- APAX-5001: 1-slot Backplane Module
- APAX-5002: 2-slot Backplane Module
- APAX-5343E: Power Supply for APAX Expansion Module

---

Specifications

General
- Certification: CE, FCC class A
- Dimensions: 30 x 139 x 100 mm (W x H x D)
- Enclosure: ABS+PC
- Weight: 165 g
- Power Consumption: 2.5 W @ 24 VDC (typical)
- Status Display: LED per channel
  On: Logic level 1
  Off: Logic level 0

Relay Output
- Channels: 20 (Source Type)
- Voltage Range: 10–35VDC
- Rated Current Output: 1A (per channel, at signal "1")
- Leakage Current: 0.1 mA (at signal "0")
- Switch Rate:
  - Resistive load: 300 Hz (max.)
  - Inductive load: 20 Hz (max.)
  - Lamp load: 200 Hz (max., at 5W lamp and under 50Ω, 24V)

Protection
- 2,500 VDC Isolation Between Channels and Backplane
- Short Circuit Protection
- Thermal Shutdown Protection

Environment
- Operating Temperature: -10 – 60°C (when mounted vertically)
- Storage Temperature: -40 – 70°C
- Relative Humidity: 5 – 95% (non-condensing)

Ordering Information
- APAX-5046SO: 20-ch Source Type DO Module
- APAX-5001: 1-slot Backplane Module
- APAX-5002: 2-slot Backplane Module
- APAX-5343E: Power Supply for APAX Expansion Module

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Programmable Automation Controllers
### Specifications

#### General
- **Dimensions (W x H x D)**: 30 x 139 x 100 mm
- **Weight**: 195 g
- **Power Consumption**: 2 W @ 24 VDC (typical)
- **Status Display**: LED per channel
  - On: Logic level 1
  - Off: Logic level 0

#### Relay Output
- **Channels**: 12
- **Relay Type**: Form A (SPST)
- **Switching Capacity and Lifetime of the Contact (For Resistive Load)**
  - VDE: 30,000 operations (5 A @ 250 VAC, 10 operations/minute at 8°C)
  - 70,000 operations (5 A @ 30 VAC, 10 operations/minute at 85°C)
  - UL: 60,000 operations (5 A @ 250 VAC), 100,000 operations (5 A @ 30 VAC)
- **Mechanism**: 20,000,000 operations (no load, 300 operations/min)
- **Breakdown Voltage**: 500 VAC (50/60 Hz)
- **Contact Resistance**: 30 mΩ (maximum)
- **Insulation Resistance**: 1 GΩ (minimum) at 500 VAC

#### Protection
- **Isolation Between Channels and Backplane**: 2,500 VAC

#### Environment
- **Operating Temperature**: -10 ~ 60°C (when mounted vertically)
  - -20 ~ 70°C (for PE version)
- **Storage Temperature**: -40 ~ 70°C
- **Relative Humidity**: 5 ~ 95% (non-condensing)

#### Ordering Information
- **APAX-5060**: 12-ch Relay Output Module
- **APAX-5060PE**: 12-ch Relay Output Module with Wide Temperature

---

### Specifications

#### General
- **Dimensions (W x H x D)**: 30 x 139 x 100 mm
- **Weight**: 170 g
- **Power Consumption**: 2.5 W @ 24 VDC (typical)
- **Status Display**: LED per channel (for DI/O only)
  - On: Logic level 1
  - Off: Logic level 0

#### Counter/Frequency Input
- **Channels & Mode**: 8 (Up Counter, High/Low Freq. and Wave Width mode)
  - 4 (Pulse and Direction, Up/Down Pulse, A/B Phase)
- **Counting Range**: 32-bit + 1-bit overflow
- **Minimum Pulse Width**: 1 μs for High Freq. mode; 1 ms for Low Freq. mode
- **Counter Frequency**: 0.1 Hz ~ 10 Hz for Low Freq. mode and Wave Width mode
  - 10 Hz ~ 1 MHz for High Freq. mode and other modes
- **Input Voltage**: For “0” signal: 0 ~ 3 VDC; For “1” signal: 10 ~ 30 VDC
- **Accuracy**: 0.1% for Low Freq. mode
- **Input Filter**: 0.1 μs ~ 40 ms

#### Digital Input
- **Channels**: 4
- **Type**: Sink (Wet contact)
- **Input Voltage**: For “0” signal: 0 ~ 3 VDC; For “1” signal: 10 ~ 30 VDC

#### Digital Output
- **Channels**: 4 (Sink Type)
- **Output Voltage Range**: 8 ~ 35 VDC
- **Normal Output Current**: 0.5 A (per channel)

#### Protection
- **Isolation Between Channels and Backplane**: 2,500 VAC
- **Short Circuit Protection (For DO channel)**
- **Thermal Shutdown Protection (For DO channel)**

#### Environment
- **Operating Temperature**: -10 ~ 60°C (when mounted vertically)
- **Storage Temperature**: -40 ~ 70°C
- **Relative Humidity**: 5 ~ 95% (non-condensing)

#### Ordering Information
- **APAX-5080**: 4/8-ch High Speed Counter Module
# APAX Controller Support table

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<th>Compact PAC</th>
<th>Coupler</th>
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14-24 Programmable Automation Controllers
ADAM-5000 Series

Open Network and Fieldbus Solutions for Device Networking

Introduction
The Fieldbus concept will change the control environment and device characteristics of future control systems in both processing and manufacturing. Compared with traditional systems, the Fieldbus system reduces cost of cabling, commissioning, and installation. In addition, the Fieldbus system has greater reliability.

The ADAM-5000 series, a compact distributed data acquisition and control system, supports the shift toward Fieldbus-based systems. Based on popular Fieldbus data communication structures such as RS-485 and Modbus, the ADAM-5000 series now offers two different DA&C systems that allow field I/O devices to easily connect to PC network applications: the ADAM-5000 DA&C systems and the ADAM-5510 series of PC-based controllers.

Distributed I/O Systems

Ethernet-based Data Acquisition and Control System
With the ADAM-5000/TCP as your Ethernet I/O data processing center, you can monitor and control field signals at a speed of 10/100 Mbps. The best field-proven communication performance that can be reached in industrial network environments. Additionally, the popular Modbus/TCP protocol is supported as well.

RS-485 based Data Acquisition and Control System
The ADAM-5000/485 system is a data acquisition and control system that can acquire, monitor and control data through multi-channel I/O modules. It communicates with a network master over a twisted-pair, multi-drop RS-485 network. Both ADAM ASCII and Modbus/RTU protocols are supported.

PC-based Controllers

Ethernet-enabled PC-based Controllers
The ADAM-5510 series of PC-based programmable controllers includes ADAM-5510M, ADAM-5510E, ADAM-5510/TCP and ADAM-5510E/TCP. They feature Intel x86-based CPUs running Datalight ROM-DOS.

Users can use Borland C 3.0 to develop the application program and then download it by Windows-based ADAM-5510 series utility. The Ethernet-enabled feature of ADAM-5510/TCP and ADAM-5510E/TCP enables features like: FTP server, web server, TCP/UDP connections and email alarm. The ADAM-5510 controllers also have high expansion capability by supporting Modbus/RTU master/slave and Modbus/TCP client/server functions.

ADAM-5550CE features AMD GX2 CPU running Windows CE operating system. Users can use Microsoft Visual Studio .NET to develop the application program. ADAM-5550KW and ADAM-5510KW series allow users leverage IEC 61131-3 SoftLogic programming environment to complete their automation task.
Maximum System Design Flexibility
The ADAM-5000’s modular design allows users to tailor solutions based on their own requirements. Built-in programmable I/O ranges and alarm outputs enhance flexibility in system design. A variety of communication media such as twisted-pair wiring, radio modems and fiber optics are supported.

System Maintenance and Troubleshooting
The ADAM-5000 series uses hardware self-test and software diagnosis to monitor system problems. Also included is a watchdog timer that monitors the microprocessor. If the system crashes, the watchdog automatically resets the system. Node ID setting is easily accomplished by setting a DIP switch on the front of the system.

Easy Installation and Networking
The ADAM-5000 series can be easily mounted on a DIN-rail or on a panel. Signal connections, network modifications and maintenance are simple and quick. Building a multi-drop network only requires a single twisted pair of wires.

Proven for Industrial Environments
The ADAM-5000 series can operate in industrial environments at temperatures between -10 and 70°C, and can use unregulated power sources between 10 and 30 VDC. These units are protected against accidental power supply reversals. A 3-way isolation design (I/O, power & communication) prevents ground loops and reduces the effect of electrical noise in the system.

Extensive Software Support
The ADAM-5000 series is supported by most standard process controls and HMI software. .NET Class LIB is provided for use with Windows applications. OPC drivers provide links to a wide range of HMI/SCADA software packages such as InTouch, FIX and ICONICS. Advantech data acquisition software and Advantech Studio SCADA/HMI software are both tightly integrated with the ADAM-5000 systems.

Simple & Low Cost Network
DIN-rail Mounting
Installed on industrial standard DIN-rails
Panel/Wall Mounting
Flat surface system mounting
Node ID Setting
8-pin dip switch configuration
Connection
Pre-wired plug-in terminals with I/O modules
# ADAM-5000 Controller Selection Guide

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<th>System</th>
<th>ADAM-5510M</th>
<th>ADAM-5510KW</th>
<th>ADAM-5510E</th>
<th>ADAM-5510/TCP</th>
<th>ADAM-5510KWE/TCP</th>
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<td>-25 ~ 85°C (-13 ~ 185°F)</td>
<td>-25 ~ 85°C (-13 ~ 185°F)</td>
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<td>5 ~ 95%</td>
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## ADAM-5000 I/O Module Selection Guide

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<td>RS-485: 1,500 V&lt;sub&gt;ac&lt;/sub&gt;</td>
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<td>I/O Module</td>
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<td>Power, CPU, Error Diagnostic, Communication</td>
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<td>-10 ~ 70°C (14 ~ 158°F)</td>
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<td>Storage Temperature</td>
<td>-25 ~ 85°C (-13 ~ 185°F)</td>
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<td>Humidity</td>
<td>5 ~ 95%</td>
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<td>Dimensions (mm)</td>
<td>231 x 110 x 75</td>
<td>355 x 110 x 75</td>
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<td>Page</td>
<td>14-35</td>
<td>14-35</td>
<td>14-36</td>
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</table>
# Controller Selection Guide

## Analog Input/Output Modules

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<thead>
<tr>
<th>Module</th>
<th>ADAM-5013</th>
<th>ADAM-5017</th>
<th>ADAM-5017P</th>
<th>ADAM-5017UH</th>
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<td>16 bit</td>
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<td>10 (total*)</td>
<td>10 (total*)</td>
<td>200K**</td>
<td>10 (total*)</td>
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<td>±150 mV, ±500 mV</td>
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<td>±10 V, ±20 mA</td>
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<td>±20 mA, ±20 mA</td>
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<td>Pt or Ni RTD</td>
<td>Pt or Ni RTD</td>
<td>Pt or Ni RTD</td>
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<td>3,000 Vdc</td>
<td>3,000 Vdc</td>
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<td>online</td>
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*Sampling rate value depends on used channel number.
Example: Using 5 channels on ADAM-5017, sampling rate for each used channel will be 10/5 = 2 samples/second.

**Sampling rate value depends on used channel number.
Example: Using 6 channels on ADAM-5017, sampling rate for each used channel will be 12/6 = 2 samples/second.
**ADAM-5000 I/O Module Selection Guide**

### Digital Input/Output Modules

<table>
<thead>
<tr>
<th>Module</th>
<th>ADAM-5055S</th>
<th>ADAM-5056/ADAM-5056D</th>
<th>ADAM-5056S/ADAM-5056SO</th>
<th>ADAM-5057S</th>
<th>ADAM-5060</th>
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<td><strong>Digital Input Channels</strong></td>
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<td><strong>Digital Output Channels</strong></td>
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<td>16 w/LED (ADAM-5056D)</td>
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<th>ADAM-5080</th>
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<td><strong>Digital Input Channels</strong></td>
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<tr>
<td><strong>Digital Output Channels</strong></td>
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<td><strong>Counter (32-bit)</strong></td>
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<td>4/8</td>
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<td>Frequency, Counter (Up/Down, Bi-direction, Up, A/B Phase)</td>
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# ADAM-5000 Controller Support Table

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<td>4/8-slot Softlogic Controller w/ RS-485</td>
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<td>ADAM-5017</td>
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ADAM-5560CE  
ADAM-5560KW

7-slot PC-based Controller with Intel® Atom™ CPU
7-slot Micro PAC with Intel® Atom™ CPU

Introduction
ADAM-5560 is a Programmable Automation Controller designed for control tasks which require Industrial PC computing performance with a PLC's robustness. The ADAM-5560 offers an Intel Atom CPU along with control specific features such as watchdog timer, battery backup RAM and deterministic I/O. The ADAM-5560KW features 5 standard IEC 61131-3 programming languages in Windows CE, so PLC users can develop control strategies with their own familiar programming languages. The powerful Multiprog KW Software and stable ProConOS have caused the ADAM-5560KW to become the best choice for a Programmable Automation Controller on the market today. Besides, the ADAM-5560CE offers an open platform that helps users to develop their own program using the common eVC and .NET programming environments to build compact and reliable control solutions. With the optional HMI Software and built-in VGA port, users no longer need to build additional SCADA PC's into their applications. This compact and powerful PAC is ideal for a variety of applications ranging from machine automation to SCADA applications.

Specifications

Control System
- CPU: Intel Atom Z510P
- I/O Capacity: 7 slots
- LED Indicators: Power, User defined
- Memory: 1 GB DDR2 SDRAM
- Battery Backup: 1 MB
- Operating System: Windows® CE5.0
- Real-time Clock: Yes
- Watchdog Timer: Yes
- Control Software: ADAM-5560CE: eVC and .NET library
  ADAM-5560KW: KW Multiprog (development tool)
  ProConOS (runtime Kernel)

Communications
- Comm. Protocol: Modbus/RTU and Modbus/TCP
- Medium: 2 x 10/100 Base-T w/ RJ-45
  4 x RS-485 w/ DB9

Protection
- Communication: RS-485 Isolation 1.5kV for COM1,COM3 and COM4
  RS-485 Isolation 2.9kV for COM2
- Power Reversal: Yes

Power
- Power Consumption: 17w @ 24 VDC (Not include I/O modules)
- Power Input: 12 – 24 VDC, ±20%

General
- Certification: CE, FCC Class A
- Connectors: 1 x RS-232/485 (COM1)
  1 x RS-485(COM2)
  1 x RS-232/485(COM3)
  1 x RS-232/485(COM4)
  2 x USB 2.0 ports (KB/Mouse via USB Ports)
  1 x VGA (1024 x 768 Resolution)
- Dimensions: 355 x 110 x 75 mm
- Enclosure: ABS+PC
- Mounting: DIN-rail, wall mount (panel mount)
- Plug-in Screw Terminal: Accepts 0.5 mm² to 2.5 mm², 1 – #12 or 2 - #14 to #22 AWG

Environment
- Humidity: 5% to 95%, non-condensing
- Operating Temperature: 0 – 55°C (32 – 131°F)
- Storage Temperature: -25 – 85°C (-13 – 185°F)

Ordering Information
- ADAM-5560CE: 7-slot PC-based Controller with Intel Atom CPU
- ADAM-5560KW: 7-slot Micro PAC with Intel Atom CPU
- ADAM-5030: 2 x SD slots and 2 x USB 2.0
- 2070012606: WebAccess WinCE Option for CTOS

NEW  
RoHS COMPLIANT  
2002/95/EC
ADAM-5510 Series

Features
- Supports Modbus/RTU, Modbus/TCP Master and Slave function libraries
- Windows-based utility
- Optional support C Programming and IEC-61131-3 standard
- Complete set of I/O modules
- Built-in real-time clock and watchdog timer
- ROM-DOS operating system
- 4 serial communication ports
- Optional support Ethernet Interface with network function, such as Web Server, FTP Server and Email Alarm.
- 4 or 8 I/O slot expansion

Introduction
The ADAM-5510 Series are ideal for PC-based data acquisition and control applications. They are compact, controllers with an Intel x86-based CPU running Datalight ROM-DOS. Built-in battery backup SRAM is the best choice for complex logic or data storage applications. For professional C/C++ programmers, the ADAM-5510 Series application programs may be written and compiled in Borland C++ 3.0, and downloaded to the controller.

For user who familiar with PLC programing environment, we provide the option for customer to use the KW softlogic which supports 5 standard IEC 61131-3 programming languages, including LD/FB/SFC/IL/ST.

Specifications

Control System
- CPU: 80188, 16-bit microprocessor
- I/O Slots: Optional 8 or 4 slots
- LED Indicators: Power, CPU, communications and battery
- Memory:
  - Flash disk: 1 MB (960 KB for user applications)
  - Flash memory: 768KB
  - RAM: 256KB SRAM, 32KB with battery backup (ADAM-5510KW)
  - RAM: 768KB SRAM, 17KB with battery backup (ADAM-5510KW/TCP, ADAM-5510EKW/TP)
- Operating System: ROM-DOS (MS-DOS 6.22 Compatible)
- Real-time Clock: Yes
- Watchdog Timer: Yes

Serial Communication
- Max. Nodes: 256 (in RS-485 daisy-chain network)
- Distance: 1.2 km (4,000 feet)
- Speed: 1,200 bps – 115.2 kbps (9600, 19200, 38400 bps for Softlogic version)
- Isolation: 2500 VDC (COM2 only)

Ethernet Communication
- Medium: Cat.5 cable with RJ-45 connector
- Distance: 100 m
- Speed: 10/100Base-T

Power
- Power Consumption: 4 W @ 24 VDC (not including I/O modules)
- Power Input: Unregulated 10 – 30 VDC
- Isolation: 3000 VDC
- Reverse Protection: Yes

Software
- ROM DOS version: C library for Borland C++ 3.0
- Softlogic version: Development tool: KW Multiprog
  Runtime kernel : ProConOS

General
- Certification: CE, FCC Class A
- Connectors:
  - COM1 : DB9-M
  - COM2 : Screw terminal (RS-485)
  - COM3 : DB9-F (RS-232/Programming)
  - COM4 : DB9-M (RS-232/485)
  - Power : Screw terminal
  - LAN : RJ-45 (option)
- Dimensions:
  - 4-slot: 231 x 110 x 75 mm
  - 8-slot: 355 x 110 x 75 mm
- Enclosure: ABS-PC
- Mounting: DIN-rail, stack, wall

Environment
- Humidity: 5 ~ 95%, non-condensing
- Operating Temperature: -10 ~ 70°C (14 ~ 158°F)
- Storing Temperature: -25 ~ 85°C (-13 ~ 185°F)

Ordering Information
- ADAM-5510M: 4-slot PC-based Controller
- ADAM-5510E: 8-slot PC-based Controller
- ADAM-5510TCP: 4-slot PC-based Controller with Ethernet
- ADAM-5510/E/County: 8-slot PC-based Controller with Ethernet
- ADAM-5510KW: 4-slot Softlogic Controller
- ADAM-5510KW/TCP: 8-slot Softlogic Controller with Ethernet
- MPROG-PRO535E: KW Multiprog Pro v5.35 (128k bytes I/O, Win7 support)
ADAM-5000/485
ADAM-5000E

Introduction
The ADAM-5000/485 and ADAM-5000E systems conform to the EIA RS-485 communication standard. This is the industry’s most widely used, balanced, bidirectional transmission line standard. RS-485 was specifically developed for industrial applications to transmit and receive data at high rates over long distances.

Specifications

Control System
- CPU: 16-bit 80188 microprocessor
- I/O Slots: ADAM-5000/485: 4, ADAM-5000E: 8
- LED Indicators: Power, CPU, communications
- Watchdog Timer: 1.6 sec. (System)

Communications
- Command Format: ASCII command/response protocol, Modbus/RTU
- Communication Distance: RS-485: 1.2 km (4000 feet)
- Data Format: Asynchronous. 1 start bit, 8 data bits, 1 stop bit, no parity
- Reliability Check: Communication error checking with checksum
- Speeds (kbps): 1.2, 2.4, 4.8, 9.6, 19.2, 38.4, 57.6, and 115.2

Power
- Power Consumption: 3 W @ 24 Vdc (ADAM-5000/485) (not including I/O modules)
- Power Input: Unregulated 10 – 30 Vdc

Software
- Driver Support: Windows DLL, OPC Server, Wonderware InTouch, Intellution, IFIX, Citect, Advantech Studio, ADAMView
- C and .NET Class Library

Protection
- Communication Line Isolation: 2,500 Vdc (ADAM-5000/485) 3,000 Vdc (ADAM-5000E)
- I/O Module Isolation: 2,500 Vdc (ADAM-5000/485) 3,000 Vdc (ADAM-5000E)
- Transient Protection: RS-485 communication lines, power input
- Power Reversal Protection: Yes

General
- Certification: CE, FM
- Connectors: 1 x DB9-M/DB9-F/screw terminal for RS-485 (communication) 1 x DB9-F for RS-232 (configuration) 1 x Screw-terminal for power input
- Dimensions (WxHxD): 4-slot: 231 x 110 x 75 mm 8-slot: 355 x 110 x 75 mm
- Enclosure: ABS+PC
- Mounting: DIN-rail, wall, rack (with mounting kit)

Environment
- Humidity: 5 – 95%, non-condensing
- Operating Temperature: -10 – 70°C (14 – 158°F)
- Storing Temperature: -25 – 85°C (-13 – 185°F)

Ordering Information
- ADAM-5000/485: 4-slot Distributed DA & C System for RS-485
- ADAM-5000E: 8-slot Distributed DA & C System for RS-485

Features
- RS-485 communication for easy installation and networking
- 4 or 8 slots for up to 128 points data monitoring card control in one module
- Extensive software support, includes Windows DLL drivers, OCX drivers, OPC server and popular HMI/SCADA software drivers
- Seamlessly integrated with easy-to-use ADAMView data acquisition software
- Supports ADAM ASCII protocol or Modbus®/RTU protocol
- Supports Modbus/RTU protocol with user-defined Modbus address
Introduction

The ADAM-5000L/TCP and ADAM-5000/TCP are both Ethernet-based I/O systems. Without a repeater, the ADAM-5000L/TCP and ADAM-5000/TCP can cover a communication distance up to 100 m. This allows remote configuration via Ethernet and eight PCs can simultaneously access the data. The ADAM-5000L/TCP and ADAM-5000/TCP are the solutions for easy configuration and efficient management. It is an ideal and cost-effective solution for eAutomation architecture.

Specifications

Control System
- CPU: 32-bit ARM RISC
- I/O Slots: ADAM-5000L/TCP: 4, ADAM-5000/TCP: 8
- Memory: Flash ROM: 512 KB, RAM: 4 MB
- Operating System: Real-time OS
- LED Indicators: Power (3.3 V, 5 V), CPU Communication (Link, Active, 10/100 Mbps, Tx, Rx), Battery

Communications (Ethernet)
- Data Transfer Rate: Up to 100 Mbps
- Event Response Time: < 5 ms
- Interface: 1 x 10/100Base-T (RJ-45)
- Wiring: UTP, category 5 or greater

Communications (Serial)
- Comm. Distance: RS-485: 1.2 km (4000 feet), RS-232: 15 m
- Comm. Protocol: Modbus/RTU
- Data Transfer Rate: Up to 115.2 kbps
- Interface: 1 x DB9-M for RS-485, 1 x DB9-F for RS-485, 1 x DB9-F for RS-232

Power
- Power Consumption: 4.0 W @ 24 VDC (ADAM-5000L/TCP) (not including I/O modules), 5.0 W @ 24 VDC (ADAM-5000/TCP) (not including I/O modules)
- Power Input: Unregulated 10 ~ 30 VDC

Software
- C and .NET Class Library
- Windows Utility: Network setting, I/O configuration & calibration, data stream, alarm setting
- Modbus/TCP OPC Server

Protection
- Communication Line Isolation: 3.000 VDC
- I/O Module Isolation: 3.000 VDC
- LAN Communication: 1.500 VDC
- Overvoltage Protection: Yes
- Power Reversal Protection: Yes

General
- Certification: CE, FCC class A
- Connectors: 1 x DB9-M/DB9-F/screw terminal for RS-485 (communication), 1 x DB9-F for RS-232 (internal use), 1 x Screw-terminal for power input
- Dimensions (W x H x D): ADAM-5000L/TCP: 231 x 110 x 75 mm, ADAM-5000/TCP: 355 x 110 x 75 mm
- Enclosure: ABS+PC
- Mounting: DIN-rail, wall

Environment
- Operating Humidity: 5 ~ 95%, non-condensing
- Operating Temperature: - 10 ~ 70°C (-14 ~ 158°F)
- Storage Temperature: - 25 ~ 85°C (-13 ~ 185°F)

Ordering Information
- ADAM-5000L/TCP 4-slot Ethernet-based Distributed DA & C System
- ADAM-5000/TCP 8-slot Ethernet-based Distributed DA & C System
## CompactPCI Systems

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To view all of Advantech’s CompactPCI Systems, please visit [www.advantech.com/products](http://www.advantech.com/products).
Introduction

Engineers have been trying to apply high-performance, low-cost PC technologies to critical applications such as telecommunications and industrial automation for quite some time. Unfortunately, the characteristics of desktop PC technologies do not readily lend themselves to critical applications where high serviceability, vibration & shock resistance, and good ventilation are required. CompactPCI may be the answer.

What is CompactPCI?

CompactPCI is a small, rugged, high-performance industrial computer architecture based on the standard PCI bus specification. It was developed by the PCI Industrial Computers Manufacturers Group (PICMG) in late 1994, and is ideal for embedded applications.

Three important technologies form the core of CompactPCI: PCI local bus, Eurocard mechanics, and airtight pin-and-socket connectors.

PCI Local Bus

PCI stands for Peripheral Component Interconnect. It was published by Intel® in 1992, and soon became popular in commercial PC designs. It is a high-performance, processor-independent data bus, and most importantly, it is very inexpensive. The PCI local bus specification defines two data widths: 32-bit and 64-bit operating at a speed up to 66 MHz. This provides theoretical throughput up to 264 MB/s at 32-bit or 528 MB/s at 64-bit. Most computer systems and operating systems support the PCI bus. For example, Pentium, Alpha, PowerPC, Windows, Unix, and MacOS. Because PCI components are manufactured in large quantities, they are inexpensive and readily available. With these advantages, the PCI bus is very suitable for high speed computing and high speed data communication applications.

Eurocard Mechanics

Eurocard is an industrial-grade packaging standard popularized by VMEbus. CompactPCI allows the use of 3U and 6U Eurocards. The dimensions of a 3U CompactPCI board are 160 mm deep x 100 mm high, while the dimensions of a 6U CompactPCI board are 160 mm deep x 233.35 mm high. The front panels of CompactPCI boards are IEEE 1101.1 and IEEE 1101.10 compliant, and may include optional EMC gaskets to minimize electromagnetic interference. Typically, the front panel contains I/O connectors, LED indicators, and switches. CompactPCI also supports rear panel I/O, which is compliant with IEEE 1101.11. Rear panel I/O is popular for telecommunication equipment because of its easy-to-maintain characteristics. If all the wiring is done on rear transition boards (passive boards), the front CompactPCI boards (active boards), which may require maintenance, are “clean” without any connected wiring. The front CompactPCI boards can then simply be replaced without the need for rewiring.

Airtight Pin-and-Socket Connectors

CompactPCI uses airtight, high-density pin-and-socket connectors as specified in the IEC-1076 international standard. These 2 mm “hard metric” connectors have low inductance and controlled impedance, which reduce signal reflections caused by the high speed PCI bus. They enable CompactPCI systems to have up to eight slots in one bus segment.

Eurocard Form Factor

The CompactPCI specification defines five connectors, designated as J1 through J5. The 3U CompactPCI board has two connectors labeled J1 and J2, while the 6U CompactPCI board has five connectors labeled J1 through J5. J1 and J2 are defined identically on both 3U and 6U CompactPCI boards, so 3U and 6U CompactPCI boards are electrically interchangeable.
CompactPCI versus Conventional Industrial PCs

Serviceability
Replacement of a card from a conventional industrial PC system is always time-consuming. Users need to unfasten the chassis cover, disconnect all wiring from the card, replace the card, reconnect the wiring, and refasten the chassis cover. It is a process prone to error because there can be internal cabling between cards and peripheral devices, and it is necessary to remove all cabling before a card can be replaced. The serviceability of conventional industrial PC systems is not as simple and fast as CompactPCI systems.

CompactPCI is designed to be a front loading and removable system. The replacement of a CompactPCI board is very simple, with no need to remove the chassis cover. In addition, if the I/O is cabled through the back of the system, the front CompactPCI boards are “clean” without any connected wiring, and the replacement of a CompactPCI board is quick and easy. The maintenance time can be reduced from a matter of hours (conventional industrial PCs) to a matter of minutes, yielding a lower Mean Time To Repair (MTTR).

Vibration and Shock Resistance
Conventional industrial PCs do not provide reliable and secure support for peripheral cards in the system. Cards inside conventional industrial PCs are screwed down at one point only, and the top and bottom card edges are not supported by guide rails. Therefore, the connecting edge of a card is prone to shift under shock and vibration.

CompactPCI boards are firmly mounted in the system. Guide rails support the top and bottom edges of the boards. Front panel retaining mechanisms securely lock the front panel to the surrounding mechanical frame. The connecting edge of the board is held tightly in place by the pin-and-socket connectors. With all four sides of the board firmly held in place, it is much less prone to suffer loss of electrical contact in high vibration and shock environments.

Ventilation
Conventional industrial PC systems cannot provide regular airflow paths, resulting in uneven cooling within the chassis. Airflow is blocked by backplanes, card brackets, and disk drives. Cooling air cannot circulate over all the cards, and hot air is not immediately forced out of the chassis. Electronic devices and circuit boards deteriorate because of these cooling related problems: warped circuit boards, bad connections, broken traces, and shortened component lives.

CompactPCI systems provide clear paths for airflow over all active, heat-producing boards in the system. Cooling air easily flows through the spaces between cards, and carries heat out of the spaces. A fan system can be integrated at the bottom of the boards to provide forced air to each slot. CompactPCI systems are therefore much less susceptible to cooling problems because of the even cooling pattern inherent in their mechanical design.

The Complete Offering for Mission-Critical Applications
The MIC-3000 series is an industrial CompactPCI solution which features front-end access, high shock and vibration tolerance characteristics, automatic cooling system, fault resilient and hot swappable capabilities. These features make MIC-3000 the most reliable PC-based computing platform, for mission-critical applications. Advantech leverages 3U CompactPCI as the industrial high-end computing platform, providing Pentium 4-grade CPU modules, 8-slot chassis, high-speed I/O and serial communication modules, to become a total solution provider for industrial CompactPCI solutions. Target applications include military defense, transportation, traffic control, test and measurement (T&M) and critical data acquisition & control markets.
**MIC-3001**

4U CompactPCI® Enclosure with 8-Slot 3U Backplane

### Features
- 8-slot 3U CompactPCI®
- Easy installation: rack or panel mount
- Hot swap compliant backplane
- Hot swap fan tray module
- Optional fault detection and alarm notification
- Logic ground and chassis ground can be isolated or common

### Specifications

<table>
<thead>
<tr>
<th>Backplane</th>
<th>Slots</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus</td>
<td>32-bit/33 MHz</td>
<td></td>
</tr>
<tr>
<td>Vio Voltage</td>
<td>3.3 V/5 V (short-bar selectable)</td>
<td></td>
</tr>
<tr>
<td>Device Bay</td>
<td>HDD or CD-ROM</td>
<td>Yes</td>
</tr>
<tr>
<td>Cooling</td>
<td>Fan 2 (2 x 113 CFM)</td>
<td></td>
</tr>
</tbody>
</table>

| Power           | Input 90 – 132 V/ac/180 – 264 V/ac @ 47 – 63 Hz. |
|-----------------|Output 400 W|
| Loading (A)     | Model: MIC-3001  |
|                 | Load Max. 20 42 |
|                 | Min. 0.2 2.5 |
|                 | +3.3 V -5 V 1 |
|                 | +5 V 14 0 0.75 |
|                 | -5 V 0 |
|                 | +12 V 0 |
|                 | -12 V 0 |
|                 | +5 Vsb 0 |

| Environment     | Operating Temperature 0 – 50°C (32 – 122°F) |
|-----------------|Storage Temperature -40 – 80°C (-40 – 176°F) |
|                 |Storage Humidity 10 – 90% @ 40°C, non-condensing |

| Physical        | Dimensions (W x H x D) 440 x 178 x 240 mm |
|-----------------| Dimensions (W x H x D) 440 x 178 x 283 mm |
|                 | Weight 7 kg (15.4 lb) |
|                 | Weight 10 kg (22 lb) |
|                 | Operating Vibration 1.0 G rms w/CF disk |
|                 | 0.5 G rms w/3.5” HDD |
|                 | Shock 10 G peak-to-peak, 11ms duration |

| Reliability     | MTBF (hours) 71174 hours |

| Compliance      | PICMG Compliance PICMG 2.0, R 2.1CompactPCI Specification |
|-----------------| PICMG 2.1, R 1.0 Hot Swap Specification |

### Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIC3001AR801E-ES</td>
<td>4U CompactPCI chassis with 8-slot backplane, fan tray module, rear I/O and AG ATX power supply</td>
</tr>
</tbody>
</table>
### Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Backplane</strong></td>
<td><strong>Slots</strong>: 6 CompactPCI slots (one system slot and 6 peripheral slots)</td>
</tr>
<tr>
<td></td>
<td><strong>Bus</strong>: 64-bit/33 MHz</td>
</tr>
<tr>
<td></td>
<td><strong>I/O Voltage</strong>: 3.3 V or 5 V, jumper selectable</td>
</tr>
<tr>
<td><strong>Cooling System</strong></td>
<td><strong>Air Flow</strong>: Two 46 CFM fans, 12 VDC brushless, dual ball bearing (with removable filter)</td>
</tr>
<tr>
<td></td>
<td><strong>Life Span</strong>: 80,048 hours @ 25°C</td>
</tr>
<tr>
<td><strong>Power Supply</strong></td>
<td><strong>Input</strong>: 100 ~ 240 VAC @ 47~63 Hz, full range</td>
</tr>
<tr>
<td></td>
<td><strong>Output</strong>: 250 W ATX power supply</td>
</tr>
<tr>
<td></td>
<td><strong>MTBF</strong>: 105,405 hours @ 25°C</td>
</tr>
<tr>
<td></td>
<td><strong>Max. Load</strong>: +5 V: 24, -5 V: 0.5, +12 V: 12, -12 V: 0.5, +3.3 V: 20, +5 Vsb: 1.5</td>
</tr>
<tr>
<td></td>
<td><strong>Min. Load</strong>: +5 V: 3, -5 V: 0, +12 V: 2, -12 V: 0, +3.3 V: 1, +5 Vsb: 0.1</td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td><strong>Operating Temperature</strong>: 0 ~ 60°C (32~140°F)</td>
</tr>
<tr>
<td></td>
<td><strong>Storage Temperature</strong>: -40 ~ 80°C (-40~112°F)</td>
</tr>
<tr>
<td></td>
<td><strong>Storage Humidity</strong>: 95% @ 60°C (140°F), non-condensing</td>
</tr>
<tr>
<td></td>
<td><strong>Vibration</strong>: 0.5 Grms</td>
</tr>
<tr>
<td></td>
<td><strong>Shock</strong>: 20 G peak-to-peak, 11 ms duration</td>
</tr>
<tr>
<td><strong>Physical</strong></td>
<td><strong>Model</strong>: MIC-3002A/6</td>
</tr>
<tr>
<td></td>
<td><strong>Dimensions (W x H x D)</strong>: 220 x 190 x 245 mm (8.7&quot; x 7.5&quot; x 9.7&quot;)</td>
</tr>
<tr>
<td></td>
<td><strong>Weight</strong>: 5.6 kg (12.3 lb) for MIC-3002A</td>
</tr>
<tr>
<td></td>
<td><strong>U Height (Slots)</strong>: 3 U</td>
</tr>
<tr>
<td></td>
<td><strong>Mounting Options</strong>: Wall, panel on front or rear side, desktop feet included</td>
</tr>
<tr>
<td></td>
<td><strong>Enclosure Materials</strong>: Aluminum frame and galvanized sheet steel</td>
</tr>
<tr>
<td><strong>Reliability</strong></td>
<td><strong>MTBF</strong>: 87,191 hours @ 25°C</td>
</tr>
<tr>
<td><strong>Compliance</strong></td>
<td><strong>PICMG Compliance</strong>: PICMG 2.0, Ver. 3.0 CompactPCI</td>
</tr>
<tr>
<td></td>
<td><strong>PICMG 2.1, Ver. 2.0 Hot Swap</strong></td>
</tr>
</tbody>
</table>

### Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIC-3002A/6</td>
<td>4U CompactPCI chassis with 6-slot backplane</td>
</tr>
</tbody>
</table>
Introduction

The MIC-3321D is a 3U CompactPCI system controller board that combines the performance of Intel’s Mobile Pentium M 760 2.0GHz processor with the high integration of the 915GM chipset and the I/O Controller Hub ICH6. The MIC-3321C with the low power of the Intel Mobile Celeron M makes it possible to work with high extended temperature ranges. The directly soldered CPU and memory provides less weight and a higher shock/vibration resistance than socket devices. In all, MIC-3321 is a powerful 3U CompactPCI Controller that fulfills requirements in mission critical applications, such as military defense, transportation, traffic control, test and measurement (T&M) as well as critical data acquisition & control applications.

Specifications

**CPU**
- MIC-3321D: Intel Pentium M 760 2.0 GHz with 2 MB L2 cache
- MIC-3321C: Intel Celeron M Ultra Low Voltage 373 1.0 GHz with 512 KB L2 cache

**Chipset**
- Built-in Intel® Pentium® M 760 2.0 GHz processor
- Built-in Intel® Celeron® M Ultra Low Voltage 373 1.0GHz processor

**BIOS**
- Award 4 MB Flash

**Bus**
- Front Side Bus: 533 MHz (Intel Pentium M 760 2.0 GHz CPU) / 400 MHz (Intel Celeron M Ultra Low Voltage 373 1.0 GHz CPU)
- PCI-to-PCI Bridge: PERICOM PI7C8150
- PCI Bus: 7 x 32-bit/33MHz CompactPCI bus Master interface

**Memory**
- Directed Soldered 512 MB DDR2 SDRAM

**Graphics**
- Controller: Intel Graphics Media Accelerator 900
- VRAM: 128MB
- Resolution: Up to 2048 x 1536 with 32-bit color at 75 Hz
- Interface: 10/100/1000 Mbps Gigabit Ethernet

**Ethernet**
- Controller: 1 x Intel 82573E/L PCI Express Gigabit Ethernet
- Connector: 2 x RJ-45

**Serial**
- Controller: 2 x 16C550 Compatible
- Stop Bits: 1, 1.5, 2
- Parity: None, Even, Odd
- Speed: 5, 6, 7, 8
- Data Signal: RXD, RXD, RTS, CTS, DTR, DSR, DCO, RI, GND
- Connector: 1 x DB9 male
- Two as front I/O, one as rear I/O

**P-IDE**
- One channel P-IDE
- Supports P10 mode 4 (16.67MHz/s data transfer rate) and ATA 33/66/100 (33/66/100MHz/s data transfer rate)
- 1 x CompactFlash Socket Type II
- 1 x 44-pin 2.5" HDD connector

**USB**
- 4 x USB 2.0 channels up to 480Mbps, 2 as front I/O, 2 as rear I/O

**PS/2**
- PS/2 for keyboard and mouse legacy support

**Watchdog Timer**
- 0 ~ 64s, 0.25s step, generate reset signal

**Hot Swap**
- Support for all signals to allow peripheral boards to be hot swapped. The individual cloths for each slot and access to the backplane ENUM# signal comply with the PICMG 2.1 Hot Swap specification. (PCI to PCI bridge GPIO3)

**Front Panel Functions**
- 4HP Board:
  - 1 x VGA-CRT 15-pin D-SUB connector
  - Ethernet: 1 x RJ-45 connector with integrated LEDs
  - USB: 2 x 4-pin connectors
  - Reset: Reset button, guarded
  - LED: Power, HDD
- 8HP Board (Additional to 4HP):
  - COM1: 1 x DB9 RS-232 connector
  - COM3: 1 x DB9 RS-232 connector
  - USB: 2 x 4-pin connectors
  - Ethernet: 1 x RJ-45 connector with integrated LEDs

**Rear I/O via J2**
- 2 x USB 2.0 channels
- 2 x Gigabit Ethernet channels with LED (shared with front I/O)
- 1 x COM port
- 1 x VGA-CRT channel (shared with front I/O)
- 1 x PS/2 keyboard/mouse channel (shared with front I/O)

**Compliancy**
- PICMG 2.0 Rev. 3.0 compatible
- CompactPCI Hot Swap Specification PICMG 2.1 R2.0

**Environment**
- Operating Temperature:
  - Pentium M 2.0G / Celeron M 1.0G CPU: 0 ~ 50°C / -13 ~ 158°F
  - Celeron M 1.0G CPU only: -25 ~ 70°C / -13 ~ 158°F

**Physical**
- Dimensions (L x H): 160 x 100 mm (3U)
- Weight: 0.6 kg

**Ordering Information**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIC-3321D-CE</td>
<td>Pentium M 2.0 GHz, 2MByte L2 cache, 512 MByte soldered DDR2 SDRAM, 4 HP width</td>
</tr>
<tr>
<td>MIC-3321C-CE</td>
<td>Celeron M 1.0 GHz, 512KByte L2 cache, 512 MByte soldered DDR2 SDRAM, 8 HP width</td>
</tr>
</tbody>
</table>
MIC-3323
3U CompactPCI® Intel Core® 2 Duo 1.66GHz / Atom™ D510 1.66GHz Controller

Features
- Supports two different CPU types
  - Intel® Core® 2 Duo or Atom™ D510 Processor
  - Intel® GME965 GMCH /ICH8M
- Supports up to 4GB DDR2 533/667 MHz SDRAM
- Dual Giga LAN ports
- High-performance Intel 965GME Graphics Media Accelerator
- Internal CompactFlash Slot or Support SATA 2.5” HDD
- Support Rear I/O Connections

Introduction
The MIC-3323 is a 3U CompactPCI® system control board, which support two different CPU grade, one adapts high performations Intel® Core® 2 Duo 1.6GHz processor and highly integrated Intel® 965GM Express chipset, and the other one adapts Intel® Atom™ Processor D510 1.66GHZ and ICH8M chipset. In addition to 4MB L2 Cache, it supports 2GMB DDR2 SDRAM up to 4GMB and dual Gigabit Ethernet.

MIC-3323 is a powerful 3U CompactPCI Controller that fulfills your requirements in mission critical applications, such as military defense, transportation, traffic control, test and measurement (T&M) as well as critical data acquisition & control application.

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>Intel® Core® 2 Duo 1.6GHz/Atom™ D510 1.66 GHz (Note 1)</td>
</tr>
<tr>
<td>L2 Cache</td>
<td>4 MB L2 Cache/1MB L2Cache</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel® 965GM GMCH/ICH8M</td>
</tr>
<tr>
<td>BIOS</td>
<td>Award™ 4 Mbit/AMI 16Mbit Flash BIOS</td>
</tr>
<tr>
<td>Front Side Bus</td>
<td>533MHz (Intel® Core® 2 Duo 1.6GHz CPU)</td>
</tr>
<tr>
<td>Side Bus</td>
<td>533MHz (Intel® Atom™ D510 1.66GHz CPU)</td>
</tr>
<tr>
<td>PCI Bus</td>
<td>PCI/PCI bridge PERICOM P7/CS150</td>
</tr>
<tr>
<td>Memory</td>
<td>SDRAM, DDR2 533/667 MHz Support 2G (Note 2)</td>
</tr>
<tr>
<td>Socket</td>
<td>2 x 200-pin SODIMM sockets</td>
</tr>
<tr>
<td>Graphics</td>
<td>Chipset: Integrated Intel 965GME Chipset/Intel Atom D510</td>
</tr>
<tr>
<td>Resolution</td>
<td>Up to 1920 x 1080</td>
</tr>
<tr>
<td>Graphics</td>
<td>Intel® Integrated Intel 965GME Chipset/Intel Atom D510</td>
</tr>
<tr>
<td>Ethernet</td>
<td>Interface: 1000/100/10M Base-TX Gigabit Ethernet</td>
</tr>
<tr>
<td>Controller</td>
<td>PCI-Expressx1 Intel®/B2574L Ethernet Controller</td>
</tr>
<tr>
<td>Connector</td>
<td>RJ-45 x 2</td>
</tr>
<tr>
<td>Optional</td>
<td>Optional Front End or Rear End Ethernet (Selected with Switch)</td>
</tr>
<tr>
<td>Serial</td>
<td>Interface: RS-232</td>
</tr>
<tr>
<td>UART</td>
<td>3 x 16550 compatible</td>
</tr>
<tr>
<td>Stop Bits</td>
<td>1.1.5.2</td>
</tr>
<tr>
<td>Parity</td>
<td>None, Even, Odd</td>
</tr>
<tr>
<td>Speed</td>
<td>50–115.2Kbps</td>
</tr>
<tr>
<td>Data Signal</td>
<td>TXD, RXD, RTS, CTS, DTR, DSR, DCD, RI GND</td>
</tr>
<tr>
<td>Connector</td>
<td>3 X DB-9 (two in Front Panel and one in Real I/O)</td>
</tr>
<tr>
<td>SATA</td>
<td>1 X SATA interface, data transfer rate up to 300MB/s</td>
</tr>
<tr>
<td>USB</td>
<td>4 x USB 2.0 channels up to 480Mbps, 2 as front I/O, 2 as rear I/O</td>
</tr>
<tr>
<td>PS/2</td>
<td>Used to Keyboard and mouse</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>256 levels timer interval, from 0 to 255 sec or min setup by software, jumper less selection, generates system reset</td>
</tr>
<tr>
<td>Hot-swap</td>
<td>Supports for all signal to allow peripheral boards to be hot swapped</td>
</tr>
<tr>
<td>Compliance</td>
<td>PICMG®-2.0 Rev.3.0 Compatible</td>
</tr>
<tr>
<td></td>
<td>Compact PCI Hot-swap PICMG®-2.1 Rev.2.0</td>
</tr>
<tr>
<td>Environment</td>
<td>Humidity: 5–95%(non-condensing)</td>
</tr>
<tr>
<td></td>
<td>Working Temp: 0 – 50°C</td>
</tr>
<tr>
<td></td>
<td>Storage Temp: -40°C – 80°C</td>
</tr>
<tr>
<td>Physical</td>
<td>Dimension (W X H): 160 X 100mm (3U)</td>
</tr>
<tr>
<td></td>
<td>Weight: 0.8Kg</td>
</tr>
<tr>
<td>Front panel</td>
<td>COM1/3: 2X DB9 RS-232</td>
</tr>
<tr>
<td>Function (BHP)</td>
<td>PS/2: 1 for keyboard and Mouse</td>
</tr>
<tr>
<td>(MIC-3323)</td>
<td>Ethernet: 2 x RJ-45 connector with LED</td>
</tr>
<tr>
<td></td>
<td>VGA: 1 x 15 pin D-SUB connector</td>
</tr>
<tr>
<td>Rear I/O Panel</td>
<td>USB 2: x USB2.0 and 4 pin Connector</td>
</tr>
<tr>
<td>Function (BHP)</td>
<td>Button: Reset Button</td>
</tr>
<tr>
<td>(MIC-3323)</td>
<td>LED: Power, HDD</td>
</tr>
</tbody>
</table>

Ordering Information
- **MIC-3323D01-D23E** 3U CompactPCI® Intel Core® 2 Duo 1.6GHz Controller with SATA HDD/8HP
- **MIC-3323D01-A33E** 3U CompactPCI® Intel Atom D510 1.66G Controller with SATA HDD/8HP
### MIC-3611

**Features**
- PCI Specification 2.1 compliant
- Speeds up to 921.6 kbps
- 16C363 UARTs with 128-byte standard
- Surge protection: 2,000 VDC
- OS support: Windows 98/2000/XP
- I/O address automatically assigned by PCI Plug & Play
- Standard Industrial CompactPCI® 3U Board size
- Automatic RS-485 data flow control

**Specifications**
- **Communication**
  - BUS controller: PLX9030
  - Control UART: 16C363
- **Data Bits**
  - 5, 6, 7, 8
- **Stop Bits**
  - 1, 1.5, 2
- **Parity**
  - None, even, odd
- **Speed**
  - 50bps ~ 921.6 kbps
- **Data Signals**
  - TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND
- **Surge Protection**
  - 2,500 VDC
- **Certification**
  - CE, FCC

**Ordering Information**
- MIC-3611/3-AE
  - 4-port RS-422/485 3U CompactPCI communication card w/isolation & surge protection

### MIC-3612

**Features**
- PCI Specification 2.1 compliant
- Speeds up to 921.6 kbps
- 4-port RS-232/422/485
- Surge protection: 2,000 VDC
- OS support: Windows 98/2000/XP
- I/O address automatically assigned by PCI Plug & Play
- Standard Industrial CompactPCI® 3U Board size
- Automatic RS-485 data flow control

**Specifications**
- **Communication**
  - BUS controller: PLX9030
  - Control UART: 16C363
- **Data Bits**
  - 5, 6, 7, 8
- **Stop Bits**
  - 1, 1.5, 2
- **Parity**
  - None, even, odd
- **Speed**
  - 50bps ~ 921.6 kbps
- **Data Signals**
  - TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND
- **Surge Protection**
  - 2,500 VDC
- **Certification**
  - CE, FCC

**Ordering Information**
- MIC-3612/3-A
  - 4-port RS-232/422/485 Card
- MIC-3612/6-A
  - 6-port RS-232/422/485 Card

### MIC-3620

**Features**
- PCI Specification 2.1 compliant
- Speeds up to 921.6 kbps
- 16C364 UARTs with 128-byte standard
- Surge protection: 2,000 VDC
- OS support: Windows 98/2000/XP
- I/O address automatically assigned by PCI Plug & Play
- Standard Industrial CompactPCI® 3U Board size
- Automatic RS-485 data flow control

**Specifications**
- **Communication**
  - BUS controller: PLX9030
  - Control UART: 16C364
- **Data Bits**
  - 5, 6, 7, 8
- **Stop Bits**
  - 1, 1.5, 2
- **Parity**
  - None, even, odd
- **Speed**
  - 50bps ~ 921.6 kbps
- **Data Signals**
  - TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND
- **Surge Protection**
  - 2,500 VDC
- **Certification**
  - CE, FCC

**Ordering Information**
- MIC-3620/3-A
  - 3U CompactPCI 8-port RS-232 Card
Features
- CompactPCI specification PICMG 2.0 R3.0 compatible
- Hot swap support
- Two individual CAN ports
- Supports CAN2.0 A/B
- High speed transmission up to 1 Mbps
- 16 MHz CAN controller frequency
- Optical isolation up to 2,500 V DC
- Microsoft Windows DLL library and examples included
- Supports Windows 98/2000/XP drivers and utility
- Supports Rear I/O

Specifications
Communications
- CAN Controller Frequency: 16 MHz
- CAN Transceiver: 82C250
- Communication Controller: SJA-1000
- Ports: 2
- Protocol: CAN 2.0 A/B
- Signal Support: CAN_H, CAN_L, GND
- Speed (bps): Up to 1 Mbps programmable transfer rate
- Isolation Protection: 2,500 V DC

General
- PICMG Compliance: CompactPCI V2.0, R 2.1 Hot swap V2.1, R 2.0
- Bus Type: CompactPCI
- I/O Connectors: 2 x DB9-M
- Dimensions (L x H) - 160 x 100 mm (6.3" x 3.9")
- Power Consumption: 5 V @ 400 mA (Typical)
- Operating Temperature: 0 ~ 65°C (32 ~ 149°F)
- Storage Temperature: -25 ~ 85°C (-13 ~ 185°F)
- Storage Humidity: 5 ~ 95% RH, non-condensing

Ordering Information
- MIC-3621RE 6U CompactPCI 8-port RS-232/485/422 Front I/O Card and Rear I/O Support
- MIC-3621RIOE 6U CompactPCI Rear I/O Module for MIC-3621RE

Features
- CompactPCI specification PICMG 2.0 R3.0 compatible
- Hot swap support
- Two individual CAN ports
- Supports CAN2.0 A/B
- High speed transmission up to 1 Mbps
- 16 MHz CAN controller frequency
- Optical isolation up to 2,500 V DC
- Microsoft Windows DLL library and examples included
- Supports Windows 98/2000/XP drivers and utility
- Supports Rear I/O

Specifications
Communications
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- Communication Controller: SJA-1000
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- Storage Temperature: -25 ~ 85°C (-13 ~ 185°F)
- Storage Humidity: 5 ~ 95% RH, non-condensing

Ordering Information
- MIC-3680/3-A 3U CompactPCI 2-port Isolated CAN Communication Card

Ordering Information
- MIC-3621RE 6U CompactPCI 8-port RS-232/485/422 Front I/O Card and Rear I/O Support
- MIC-3621RIOE 6U CompactPCI Rear I/O Module for MIC-3621RE
MIC-3716/3

Specifications

Analog Input
- Channels: 16
- Resolution: 16 bits
- Max. Sampling Rate: 250 kS/s
- FIFO Size: 1024 samples/ch
- Overvoltage Protection: 100 MHz/10 pF (0 V), 100 MHz/100 pF (5 V)
- Sampling Modes: Software, pacer, or external
- Input Range: ±5, ±2.5, ±1.25, ±0.625
- Input Impedance: 50 ohms or jumper selectable, 100 pF
- Power Consumption: Typical: +5 V @ 850 mA, +12 V @ 600 mA

Certification
- CE, FCC

Digital Input/Output
- Channels: 2
- Resolution: 16 bits
- Output Rate: Static update
- Output Range: ±20 mA

Ordering Information
- MIC-3716/3-A
- PCL-10901-3E
- PCL-10168-1E/2E
- ADAM-3968-AE

16-bit, 8-ch Analog Output 3U CompactPCI® Card

250 kS/s, 16-bit, 16-ch Multifunction 3U CompactPCI® Card

30 MS/s, 12-bit, Simultaneous 4-ch Analog Input 3U CompactPCI® Card

MIC-3714/3

Specifications

Analog Input
- Channels: 4
- Resolution: 12 bits
- Max. Sampling Rate: 30 MS/s (Only in FIFO 32k)
- FIFO Size: 32,768 samples/ch
- Overvoltage Protection: 30 Vp-p
- Input Impedance: 50 ohms or jumper selectable, 100 pF
- Sampling Modes: Software, pacer, post-trigger, pre-trigger, delay-trigger, abort-trigger
- Input Range: ±5, ±2.5, ±1.25, ±0.625

Ordering Information
- MIC-3714/3-A
- ADAM-3909-AE

12-bit, 4-ch Analog Input Card

3U, 250 Msa/s, 16-bit, 16-ch CompactPCI V2.0, R 2.1 Hot-Swap V2.1, R 2.0 CompactPCI Card

PICMG Compliance
- PICMG Compliance
- Bus Type: CompactPCI
- I/O Connectors Type: 5 V/TTL
- Dimensions (L x H x D): 160 x 100 mm (6.3" x 3.9") with 3U Bracket
- Power Consumption: Typical: 5 V @ 650 mA, 12 V @ 600 mA

Ordering Information
- MIC-3714/3-A
- ADAM-3909-AE

16-bit, 4-ch Analog Input Card

3U, 12-bit, Simultaneous 4-ch Analog Input Card

MIC-3723/3

Specifications

Analog Input
- Channels: 4
- Resolution: 16 bits
- Max. Sampling Rate: 1 MHz
- FIFO Size: 1024 samples/ch
- Power Consumption: Typical: -5 V @ 350 mA, +12 V @ 600 mA

Ordering Information
- MIC-3723/3-A
- PCL-10168-1E
- PCL-10168-2E
- ADAM-3968-AE

16-bit, 16-ch Digital Input/Output Card

3U, 16-bit, 8-ch CompactPCI® Card
### Specifications

**Isolated Digital Input**
- **Channels**: 32
- **Input Voltage**
  - Logic 0: 2 V max.
  - Logic 1: 10 V min. (50 V max.)
- **Interrupt Capable Ch.**: 2 (DI00, DI16)
- **Isolation Protection**: 2,500 VDC
- **Input Resistance**: 5.7kΩ

**Isolated Digital Output**
- **Channels**: 32
- **Output Type**: Sink (NPN)
- **Isolation Protection**: 2,500 VDC
- **Output Voltage**: 5 ~ 40 VDC
- **Sink Current**: 100 mA max./channel
- **Opto-Isolator Response**
  - OFF delay (±20%) 5 µs
  - ON delay (±20%) 120 µs
- **Photocouple Response Time**
  - 12 V: 120 µs
  - 24 V: 140 µs
  - 30 V: 150 µs
  - 50 V: 200 µs

**General**
- **PICMG Compliance**: CompactPCI V2.0, R 3.0
- **Bus Type**: CompactPCI
- **I/O Connectors**: 1 x 78-pin D-type female connector
- **Dimensions (L x H)**: 160 x 100 mm (6.9” x 3.9”) with 3U Bracket
- **Power Consumption**
  - Typical: 5 V @ 220 mA
  - Max: 5 V @ 260 mA
- **Operating Temperature**: 0 ~ 60°C (32 ~ 140°F) (IEC 68-2-1, 2)
- **Storage Temperature**: -20 ~ 70°C (-4 ~ 158°F)
- **Certification**: CE

### Ordering Information
- **MIC-3756/3-A**: 3U 64-channel isolated digital I/O Card
- **PCL-101100S-1**: 100-pin SCSI Cable, 1 m
- **ADAM-39100**: 100-pin SCSI wiring terminal, DIN-rail mounting
## Specifications

### Isolated Digital Input
- **Channels**: 8
- **Input Voltage**
  - Logic 0: 3 V max.
  - Logic 1: 10 V min. (50 V max.)
- **Input Current**
  - $10 \, V_0$: 1.6 mA (typical)
  - $12 \, V_0$: 1.9 mA (typical)
  - $24 \, V_0$: 4.1 mA (typical)
  - $48 \, V_0$: 8.5 mA (typical)
  - $50 \, V_0$: 8.9 mA (typical)
- **Interrupt Capable Ch.**
  - ID0 ~ ID7
- **Isolation Protection**: 2,500 VDC
- **Overvoltage Protection**: 70 VDC
- **Opto-Isolator Response**: 25 µs
- **Input Resistance**: $560 \, \Omega$

### Relay Output
- **Channels**: 8
- **Relay Type**: SPDT
  - (4 Form A, and 4 Form C)
- **Contact Rating**
  - 3 A @ 250 VAC or
  - 3 A @ 24 VDC
- **Relay on Time**: 15 ms max.
- **Relay off Time**: 5 ms max.
- **Life Span**
  - Mechanical: 2 x 10^7 ops. min.
  - Electrical: 2 x 10^5 ops. min. (contact rating)
- **Resistance**: 1 GΩ min. (at 500 VDC)

### General
- **PICMG Compliance**: CompactPCI V2.0, R 3.0
- **Bus Type**: CompactPCI
- **I/O Connectors**: 68-pin SCSI-II female
- **Dimensions (L x H)**: 160 x 100 mm (6.3" x 3.9") with 3U Bracket
- **Power Consumption**
  - Typical: +5 V @ 220 mA
  - Max.: +5 V @ 750 mA
- **Certification**: CE

### Ordering Information
- **MIC-3761/3-AE**
  - 3U 8-ch Relay Actuator and 8-ch Isolated D/I Card
- **PCL-10137-1E/2E/3E**
  - DB-37 cable assembly, 1, 2 and 3 m
- **ADAM-3937-BE**
  - DB-37 Wiring Terminal for DIN-rail Mounting
- **PCLD-780-BE**
  - Universal Screw Terminal Board

---

## Specifications

### Digital Input
- **Channels**: 8
- **Compatibility**: 5 V/TL
- **Input Voltage**
  - Logic 0: 0.8 V max.
  - Logic 1: 2.4 V min.
- **Interrupt Capable Ch.**: 1 (channel 0)

### Digital Output
- **Channels**: 8
- **Compatibility**: 5 V/TL
- **Output Voltage**
  - Logic 0: 0.5 V max. @ 24 mA
  - Logic 1: 2.4 V min. @ -15 mA
- **Output Capability**
  - Sink: 0.5 V max. @ 24 mA
  - Source: 2.4 V min. @ -15 mA

### Counter/Timer
- **Channels**: 8
- **Resolution**: 16 bits
- **Compatibility**: 5 V/TL
- **Max. Input Frequency**: 20 MHz
- **Reference Clock**: Internal: 20 MHz
- **Counter Modes**: 12 (programmable)
- **Interrupt Capable Ch.**: 8

### General
- **PICMG Compliance**: CompactPCI V2.0, R 3.0
- **Bus Type**: CompactPCI V2.1
- **I/O Connectors**: 68-pin SCSI-II female
- **Dimensions (L x H)**: 160 x 100 mm (6.3" x 3.9") with 3U Bracket
- **Power Consumption**
  - Typical: +5 V @ 900 mA
  - Max: +3.3 V @ 1.2 A
- **Operating Temperature**: 0 ~ 60°C (32 ~ 140°F) (refer to IEC 68-2-1, 2)
- **Storage Temperature**: -20 ~ 70°C (-4 ~ 158°F)
- **Relative Humidity**: 5 ~ 95 % RH non-condensing (refer to IEC 68-2-3)
- **Certification**: CE, FCC Class A

### Ordering Information
- **MIC-3780/3-A1**
  - 3U Compact PCI 8-ch, 16 bit counter/timer card
- **PCL-10168-1E/2E**
  - 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 1 and 2 m
- **ADAM-3968-AE**
  - 68-pin SCSI-II Wiring Terminal Board for DIN-rail mounting
**MIC-3100**

**3U CompactPCI Supports 2/7 Peripheral Slot**

---

**Introduction**

The MIC-3100 series are Advantech’s latest IPC’s and the first to use the CompactPCI standard. CompactPCI is an open standard that gives users the flexibility to add the components that they need. The small footprint of MIC-3100 makes it the smallest CPCI system available and offers either 2, 6 or 8 expansion slots to give users the flexibility to build the system they require. For improved access and configuration, the MIC-3100 is front accessible and the highly reliable nature of CompactPCI makes it the perfect choice for industrial applications. The three available models in the MIC-3100 series offer a choice of either high power or low power CPUs and therefore a range of prices to suit the requirements of specific companies.

---

**Features**

- High performance or low power consumption CPU selectable
- Lockable power on/off switch prevents inadvertent access
- 40dB Ultra low system noise for working environments
- Easy-accessible cooling fan and air filter for system maintenance
- Robust design, Anti-Vibration up to 2G with SSD

---

**Specifications**

<table>
<thead>
<tr>
<th></th>
<th>MIC-3106</th>
<th>MIC-3111</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power Supply</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Type</td>
<td>ATX</td>
<td>ATX</td>
</tr>
<tr>
<td>Input Voltage</td>
<td>100 – 240 V&lt;sub&gt;AC&lt;/sub&gt;</td>
<td>100 – 240 V&lt;sub&gt;AC&lt;/sub&gt;</td>
</tr>
<tr>
<td>Wattage</td>
<td>180W</td>
<td>180W</td>
</tr>
<tr>
<td>ON/OFF Switch</td>
<td>Lockable Toggle Switch</td>
<td>Lockable Toggle Switch</td>
</tr>
<tr>
<td><strong>Backplane</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Slot</td>
<td>1, on the right</td>
<td>7 Slots</td>
</tr>
<tr>
<td>Peripheral Slot</td>
<td>2 Slots</td>
<td>7 Slots</td>
</tr>
<tr>
<td>PCI Bus</td>
<td>32-bit 33MHz</td>
<td>32-bit 33MHz</td>
</tr>
<tr>
<td><strong>Physical</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions (W x H x D mm)</td>
<td>134 x 177 x 238</td>
<td>234 x 177 x 258</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Environment**

<table>
<thead>
<tr>
<th></th>
<th>Operating</th>
<th>Non-Operating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature (Degree C)</td>
<td>0 – 50°C</td>
<td>-20 – 60°C</td>
</tr>
<tr>
<td>Humidity (non-condensing)</td>
<td>0 – 85% @ 40°C</td>
<td>0 – 85% @ 40°C</td>
</tr>
<tr>
<td>Vibration (5 – 500 Hz)</td>
<td>2Gms (without HDD)</td>
<td>2Gms (without HDD)</td>
</tr>
<tr>
<td>Shock (11ms)</td>
<td>105G</td>
<td>106G</td>
</tr>
<tr>
<td><strong>Compliance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulatory</td>
<td>CE, FCC, CCC, UL, RoHS</td>
<td>CE, FCC, CCC, UL, RoHS</td>
</tr>
<tr>
<td>Compliance</td>
<td>PICMG 2.0 Rev. 3.0</td>
<td>PICMG 2.0 Rev. 3.0</td>
</tr>
</tbody>
</table>
# CPU option

<table>
<thead>
<tr>
<th>L1</th>
<th>Processor System</th>
<th>CPU</th>
<th>Intel Atom N455, 1.66GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Memory</td>
<td>2GB On board</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Storage</td>
<td>1 x CompactFlash Type II, 1 x 2.5&quot; SATA HDD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Front I/O</td>
<td>VGA</td>
<td>1 x DB15 port</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ethernet</td>
<td>2 x 10/100/1000 Mbps, RJ45 connector</td>
</tr>
<tr>
<td></td>
<td></td>
<td>USB 2.0</td>
<td>3 x Type A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Serial</td>
<td>2 x RS-232, DB9 connector</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PS/2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Operating System</td>
<td>Windows</td>
<td>XP, XPE, 7</td>
</tr>
<tr>
<td>H1</td>
<td>Processor System</td>
<td>CPU</td>
<td>Intel 3rd Gen. Core i3-3217UE, 1.6GHz</td>
</tr>
<tr>
<td></td>
<td>Memory</td>
<td>8GB On board</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Storage</td>
<td>1 x CFast, 1 x 2.5&quot; SATA HDD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Front I/O</td>
<td>VGA</td>
<td>1 x DB15 port</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ethernet</td>
<td>2 x 10/100/1000 Mbps, RJ45 connector</td>
</tr>
<tr>
<td></td>
<td></td>
<td>USB 3.0</td>
<td>2 x Type A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Serial</td>
<td>2 x RS-232, RJ45 connector</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PS/2</td>
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</tr>
<tr>
<td></td>
<td>Operating System</td>
<td>Windows</td>
<td>XP, XPE, 7</td>
</tr>
</tbody>
</table>

## Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIC-3106-L1-AE</td>
<td>Atom N455 CPU with 2 peripheral slots</td>
</tr>
<tr>
<td>MIC-3106-H1-AE</td>
<td>Core i3-3217UE CPU with 2 peripheral slots</td>
</tr>
<tr>
<td>MIC-3111-L1-AE</td>
<td>Atom N455 CPU with 7 peripheral slots</td>
</tr>
<tr>
<td>MIC-3111-H1-AE</td>
<td>Core i3-3217UE CPU with 7 peripheral slots</td>
</tr>
</tbody>
</table>

## Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan filter 130 x 10 x 12 mm³ (for MIC-3106)</td>
<td>175XXXXXXX-01 Bottom side fan 60 x 60 x 13 mm³</td>
</tr>
<tr>
<td>Fan filter 230 x 10 x 10 mm³ (for MIC-3111)</td>
<td>175XXXXXXX-01 Up side blower 51 x 51 x 15 mm³</td>
</tr>
<tr>
<td>4HP bracket cover</td>
<td>196XXXXXXX-01 Wall mount kit</td>
</tr>
<tr>
<td>Table mount kit</td>
<td>15-14</td>
</tr>
</tbody>
</table>
## M2M I/O Modules

### M2M I/O Modules Overview

16-2

### M2M I/O Modules Selection Guide

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<table>
<thead>
<tr>
<th>Product Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADAM-2510Z</td>
<td>Wireless Router</td>
</tr>
<tr>
<td>ADAM-2520Z</td>
<td>Wireless Modbus RTU Gateway</td>
</tr>
<tr>
<td>ADAM-2031Z</td>
<td>Wireless Temperature &amp; Humidity Sensor Node</td>
</tr>
<tr>
<td>ADAM-2017PZ</td>
<td>Wireless 6-ch Analog Input Node with Power Amplifier</td>
</tr>
<tr>
<td>ADAM-2051Z</td>
<td>Wireless 8-ch Digital Input Node</td>
</tr>
<tr>
<td>ADAM-2051PZ</td>
<td>Wireless 8-ch Digital Input Node with Power Amplifier</td>
</tr>
</tbody>
</table>

To view all of Advantech’s M2M I/O Modules, please visit [www.advantech.com/products](http://www.advantech.com/products).
M2M I/O Modules Overview

Introduction
The Internet of Things (IoT) is a new design paradigm, rapidly gaining wide global attention from academia, industry, and government. The fundamental concept is to emphasize ubiquitous computing among global networked machines and physical objects, denoted as things, such as sensors, actuators, machine-to-machine (M2M) devices, wireless sensor network (WSN) devices etc.

Machine To Machine (M2M) Technology
Machine To Machine (M2M) technology is now sufficiently mature that large numbers of companies are confident enough in its potential to launch their own projects that include innovation in services and products. The use of M2M technology is particularly well-suited to interaction with a large number of remote, and possibly mobile, devices, usually acting as the interface with an end-user.

Wireless Sensor Networks
The IoT is composed of four layers, an application layer, service layer, network layer and device layer. The application layer is the real application system, the service layer is now defined as cloud computing and the network layer is the wired/wireless network infrastructure. The device layer connects everything to the internet and is the key infrastructure of the IoT. One of the most important technologies is the Wireless Sensor Network, which is the wireless I/O and sensor solution/interface to collect and transmit analog/digital signals to the internet. The WSN is composed of two major parts; the wireless technology is based on IEEE 802.15.4 and the I/O technology. With different types of I/Os and sensors, signals can be measured in every situation. For instance, bridges can be measured through strain gauges, and buildings can be measured for energy usage. WSN is the next generation of wireless data acquisition solution.

Advantech’s IoT-ready Product Development Framework
IEEE 802.15.4

IEEE 802.15.4 is defined and maintained by the IEEE organization. The standard intends to offer fundamental lower network layers of low-rate wireless personal area networks (WPANs) which focuses on low-data rates, low-power consumption ubiquitous wireless communication between devices. IEEE 802.15.4 conforming devices may use one of three possible unlicensed frequency bands for operation:

- 868.0-868.6 MHz: Europe, allows one communication channel.
- 902-928 MHz: North America, up to ten channels, extended to thirty.
- 2400-2483.5 MHz: worldwide use, up to sixteen channels.

IEEE 802.15.4 defines the Wireless Medium Access Control (MAC) and Physical Layer (PHY) for WPANs only, upper layer stacks can be implemented by users for variety of applications. One example of the known protocols is ZigBee.

Network Topologies

Wireless Sensor Networks (WSN) can be built using a few or a lot of “nodes”. Each node can be connected to one or several sensors; the network topology is composed of three typical components, PAN Coordinator/Gateway, Router and End Device (or called End Node), which can be built to Star, Tree and Mesh network topologies.

Three components of a wireless sensor network

- PAN Coordinator/Gateway
  A coordinator is the data collection center and also exists as a gateway to transfer and translate wireless data to other interfaces.

- Router
  A router enhances the wireless signal and a wireless router is used to select the optimal path for wireless communication between the coordinator and the end nodes.

- End Node/Device
  An end node is a wireless remote I/O for data acquisition. Data is acquired from sensors or devices which are then transmitted through it. The end node communicates with the coordinator directly or via a router to a coordinator.

Three Network Topologies

- Star Topology
  It’s the simplest way to construct a network with a gateway and end nodes. The benefit of the topology is that it operates as a low-latency communication network. But has the limitation of low wireless signal coverage.

- Tree Topology
  Using a tree topology, the network can be extended through routers making it flexible enough to locate the end nodes in specified locations. Latency is increased with the number of routers hopping.

- Mesh Topology
  When routers connect to each other in a mesh topology they have the following benefits.
  1. Wide network coverage.
  2. Robust routing mechanism with self-healing.
  3. Multi-hopping mechanism.
  But also the following limitations:
  1. More power consumption than the other topologies.
  2. Routing path and hop counts affect the latency and performance.

Comparison of Topologies

<table>
<thead>
<tr>
<th>Topology</th>
<th>Star</th>
<th>Tree</th>
<th>Mesh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Consumption</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Installation Fee</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Network Coverage</td>
<td>Small</td>
<td>Large</td>
<td>Large</td>
</tr>
<tr>
<td>Network Capability</td>
<td>Small</td>
<td>Large</td>
<td>Large</td>
</tr>
<tr>
<td>Reliability</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>
M2M I/O Modules Overview

ADAM-2000 Series
Advantech provides ADAM-2000 series industrial grade Wireless Sensor Network I/O solutions for low-power consumption, cost-efficient and reliable networking for remote monitoring applications. It utilizes IEEE 802.15.4 wireless technology and supports star, tree and mesh topologies. Once the modules are configured, the ADAM-2000 series will automatically construct the most suitable network topology for your control system without further configuration.

The ADAM-2000 series contains several models, including coordinator (gateway), router, analog input, digital input, and sensor modules. To perform as a Wireless Sensor Network, a gateway ADAM-2520Z is essential for collecting data from end nodes. With the Modbus RTU protocol, the ADAM-2000 series can be easily integrated into any SCADA or Modbus RTU compliant system.

- ADAM-2520Z: Wireless Modbus RTU Gateway
- ADAM-2510Z: Wireless Router
- ADAM-2031Z: Wireless Temperature & Humidity Sensor Node

Features
Advantech’s ADAM-2000 Series are wireless I/O devices designed for industrial systems and applications.

Global Deployable ISM 2.4GHz IEEE 802.15.4 Standard
The standard has the following benefits.
- With the global deployable ISM 2.4 GHz RF band, the ADAM-2000 series can be installed worldwide.
- Compared to a wired solution, wireless technology makes the network easily extendible and can be installed in almost any location, especially in distributed construction applications.
- Enhances transmission power and high gain antennas can expand network coverage.
- Enables highly effective network structure to reduce development costs and maintainable complexity in harsh applications.
- Provides self-forming and self-healing ability to cope with communication failures or node failures conditions.
- Low data rates and low duty cycles make it possible to act as standalone devices with batteries for a long term operation without maintenance.

Industrial Communication and I/O Interfaces
The popular industrial communication protocol Modbus makes the ADAM-2000 series easy to integrate with industrial systems and is also compliant with ADAM-4000 and ADAM-6000 wired solutions. Multiple I/O interface selection provides users plentiful sensor options.

Low Power Consumption Design
The ADAM-2000 series is designed for applications that require long-time operation without maintenance. Therefore power consumption is taken into consideration during its design. The ADAM-2000 series not only follows the IEEE 802.15.4 standard for low-power consumption wireless communication, but also optimizes the peripheral hardware and firmware design to achieve uA-level power consumption. This allows ADAM-2000 input/output and sensor modules to be powered by 2 AA Alkaline batteries*.

* We suggest using Energizer L91 Ultimate Lithium AA battery.
* Only ADAM-2031Z and ADAM-2051Z support low power consumptions. For other modules batteries can still be used as back-up power.
Advantech and Industrial SCADA Software Support
The ADAM-2000 series can be configured through the Adam/Apax .NET Utility. Only a few steps are required, and wireless networks can be built up quickly. Due to the Modbus protocol design, the ADAM-2000 series can support any third-party SCADA software and HMI, including Advantech SCADA software, WebAccess.

Ensured Data Design
The ADAM-2000 family has an acknowledging mechanism feature to ensure data communicating processes can be successfully transferred between the coordinator and end device before device entering sleep mode.

Over The Air (OTA) Firmware Update
The ADAM-2000 modules with strengthened firmware maintenance technique, which integrates a stable backup buffer and secure mechanism allowing wireless module firmware updates during operation.

Event Triggering
ADAM-2000 digital input modules are empowered with an Event Triggering function. When receiving DI status change, ADAM-2000 digital input modules will wake up immediately from sleep mode and send I/O data to a coordinator. This avoids the missing of events during operation.

Site Survey Monitoring
ADAM-2000 modules provide a useful site survey tool in Adam/Apax .Net utility to help users to achieve network setup and major remote maintenance tasks to avoid try and error network processes. The topology monitoring of an ADAM-2000 network adopts an easy place and drag action allowing users to choose the working field image for monitoring backgrounds, and lists the relations among ADAM-2000 modules then illustrated in a single page. Through site survey monitoring, users can comprehensively know each device location, current status, and information in customized background.
# M2M I/O Modules

## Selection Guide

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<td><strong>380 uW @ 3 VDC (1 minute Tx Interval)</strong></td>
<td><strong>220 uW @ 3 VDC (2 minute Tx Interval)</strong></td>
<td><strong>130 uW @ 3 VDC (5 minute Tx Interval)</strong></td>
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<td><strong>-40°C ~ 85°C (-40°F ~ 184°F)</strong></td>
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<td><strong>20-95% RH</strong></td>
<td><strong>0-95% RH</strong></td>
<td><strong>0-95% RH</strong></td>
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<td><strong>16-10</strong></td>
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* Outdoor Range is estimated with line of sight, and please perform site survey to determine the set up range of wireless network.

** ADAM-2017PZ’s power consumption will be higher than other end devices to shorten the battery life, therefore, we suggest providing external power for its main power and batteries for power backup.
### ADAM-2510Z
- **Features**
  - Easy maintenance and field installation
  - Low duty wireless communication
  - Smart and simple indicator design
  - Extends network range and coverage

- **Specifications**
  - **Wireless Communication**
    - IEEE Standard: IEEE 802.15.4
    - Modulation Type: DSSS (OQPSK)
    - Frequency Band: ISM 2.4 GHz (2.4 GHz ~ 2.4835 GHz)
    - Channels: 11 - 26
    - RF Data Rate: 250 Kbps
    - Transmit Power: Typ. 19 ± 1 dBm
    - Receiver Sensitivity: -97 dBm
    - Topology: Star / Tree / Mesh
    - Outdoor Range: 1000 m with line of sight (with 2 dBi Antenna)
  - **General**
    - Connectors: 1 x plug-in terminal block (#14 ~ 22 AWG)
    - Power Input: Unregulated 10 – 30 Vdc
    - Battery Input: 2 x 2 AA Alkaline
    - Power Consumption: 0.8 W @ 24 Vdc
    - Function: Router

- **Common Specifications**
  - **Environment**
    - Operating Temperature: -20°C ~ 70°C (-4°F ~ 157.9°F)
    - Battery Power: 0°C ~ 50°C (32°F ~ 122°F)
    - Storage Temperature: -40°C ~ 85°C (-40°F ~ 184°F)
    - Operating Humidity: 20-95% RH
    - Storage Humidity: 0-95% RH

- **Ordering Information**
  - ADAM-2510Z Wireless Router

### ADAM-2520Z
- **Features**
  - 2.4 GHz IEEE 802.15.4 compliant RF
  - Provides RS-422/485 and USB interfaces
  - Multiple power input design

- **Specifications**
  - **Wireless Communication**
    - IEEE Standard: IEEE 802.15.4
    - Modulation Type: DSSS (OQPSK)
    - Frequency Band: ISM 2.4 GHz (2.4 GHz ~ 2.4835 GHz)
    - Channels: 11 - 26
    - RF Data Rate: 250 Kbps
    - Transmit Power: Typ. 19 ± 1 dBm
    - Receiver Sensitivity: -97 dBm
    - Topology: Star / Tree / Mesh
    - Outdoor Range: 1000 m with line of sight (with 2 dBi Antenna)
    - Network Capacity: 32 nodes (Routers & End Devices)*
    - Range Extenders: Maximum 5 Hops
  - **General**
    - Connectors: 1 x plug-in terminal block (#14 ~ 22 AWG)
    - Protocol: Modbus RTU
    - Power Input: Unregulated 10 – 30 Vdc
    - Battery Input: 2 x AA Alkaline
    - Power Consumption: 0.8 W @ 24 Vdc
    - 0.5 W @ 5 Vdc (USB)
    - 0.3 W @ 3 Vdc (Battery AA * 2)

- **Common Specifications**
  - **Environment**
    - Operating Temperature: -20°C ~ 70°C (-4°F ~ 157.9°F)
    - Battery Power: 0°C ~ 50°C (32°F ~ 122°F)
    - Storage Temperature: -40°C ~ 85°C (-40°F ~ 184°F)
    - Operating Humidity: 20-95% RH
    - Storage Humidity: 0-95% RH

- **Ordering Information**
  - ADAM-2520Z Wireless Modbus RTU Gateway
ADAM-2031Z
ADAM-2017PZ

Wireless Temperature & Humidity Sensor Node
Wireless 6-ch Analog Input Node with Power Amplifier

Features
- IEEE 802.15.4 Wireless Standard
- Supports Star/Tree/Mesh Network Topologies
- Modbus Communication Protocol
- Low Power Consumption
- LED Indicators
- Sensor Embedded

Specifications
Temperature Sensor Input
- Operating Range: -20°C ~ 70°C (-4°F ~ 157.9°F)
- Resolution: 0.02°C (0.04°F)
- Accuracy: ±1.0°C (±0.5°C @ 0°C ~ +35°C)
- Response Rate: ±1°C/min.
- Long Term Drift: < 0.04°C/Year (0.07°F/Year)

Humidity Sensor Input
- Operating Range: 0% ~ 100% RH
- Resolution: 0.15% RH
- Accuracy: ±3.0% RH
- Repeatability: ±0.1% RH
- Response Time: 8 seconds (Achieving 63% of a step function)
- Long Term Drift: 0.5% RH/Year

Ordering Information
- ADAM-2031Z: Wireless Temperature & Humidity Sensor Node

Common Specifications
Wireless Communication
- IEEE Standard: IEEE 802.15.4
- Modulation Type: DSSS (OQPSK)
- Frequency Band: ISM 2.4 GHz (2.4 GHz ~ 2.4835 GHz)
- Channels: 11 - 26
- RF Data Rate: 250 Kbps
- Transmit Power: 3 ± 1 dBm (ADAM-2031Z)
- 15 ± 1 dBm (ADAM-2017PZ)
- Receiver Sensitivity: -97 dBm
- Topologies: Star / Tree / Mesh
- Outdoor Range: 110 m with line of sight (ADAM-2031Z)
- 1000 m with line of sight (ADAM-2017PZ)
- Function: End Device

General
- Connectors: 1 x plug-in terminal block (#14 ~ 22 AWG)
- Power Input: Unregulated 10 ~ 30 Vdc
- Battery Input: 2 x AA Alkaline
- Power Consumption: 0.3 W @ 24 Vdc
- Battery AA * 2
- Transmit Power: 420 uW @ 3 Vcc (1 minute Tx intervals)
- 240 uW @ 3 Vcc (2 minute Tx Interval)
- 150 uW @ 3 Vcc (5 minute Tx Interval)

Environment
- Operating Temperature: -20°C ~ 70°C (-4°F ~ 157.9°F)
- Battery Power: 0°C ~ 50°C (32°F ~ 122°F)
- Storage Temperature: -40°C ~ 85°C (-40°F ~ 184°F)
- Operating Humidity: 20% ~ 95% RH
- Storage Humidity: 0% ~ 95% RH
ADAM-2051Z
ADAM-2051PZ

Wireless Sensor Network 8-ch Digital Input Node

Features
- IEEE 802.15.4 Wireless Standard
- Supports Star/Tree/Mesh Network Topologies
- Modbus Communication Protocol
- Low Power Consumption
- LED Indicators
- Event Triggering

Specifications
Digital Input
- Channels: 8
- Input Resistance: 10 KΩ
- Input Level
  - Dry contact: Logic level 0: Close to GND
                Logic level 1: Open
  - Wet contact: Logic level 0: 0-0.8 V max
                Logic level 1: 2.0 ~ 5.0 V
  (Note: The Digital Input Level 0 and 1 status can be inverted)

Ordering Information
- ADAM-2051Z*: Wireless 8-ch Digital Input Node
- ADAM-2051PZ*: Wireless 8-ch Digital Input Node with Power Amplifier

Common Specifications
Wireless Communication
- IEEE Standard: IEEE 802.15.4
- Modulation Type: DSSS (OQPSK)
- Frequency Band: ISM 2.4 GHz (2.4 GHz – 2.4835 GHz)
- Channels: 11 - 26
- RF Data Rate: 250 Kbps
- Transmit Power Typ.: 3 ± 1 dBm (ADAM-2051Z)
  19 ± 1 dBm (ADAM-2051PZ)
- Receiver Sensitivity: -97 dBm
- Topologies: Star / Tree / Mesh
- Outdoor Range: 110 m with line of sight (ADAM-2051Z)
                1000 m with line of sight (ADAM-2051PZ)
- Function: End Device

General
- Connectors: 1 x plug-in terminal block (#14 – 22 AWG)
- Power Input: Unregulated 10 – 30 VDC
- Battery Input: 2 x AA Alkaline
- Power Consumption: 0.3 W @ 24 VDC
  (ADAM-2051PZ) Battery AA * 2
  380 μW @ 3 VDC (1 minute Tx Interval)
  220 μW @ 3 VDC (2 minute Tx Interval)
  130 μW @ 3 VDC (5 minute Tx Interval)

Environment
- Operating Temperature
  - External Power: -20°C – 70°C (-4°F – 157.9°F)
  - Battery Power: 0°C – 50°C (32°F – 122°F)
- Storage Temperature: -20°C – 70°C (-4°F – 157.9°F)
- Operating Humidity: 20–95% RH
- Storage Humidity: 0–95% RH

*If want to operate in a wider temperature (-40°C– 85°C (-4°F – 157.9°F) ), contact our sales team.
# RS-485 I/O Modules: ADAM-4000

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<td>2-ch Serial Based Dual Loop PID Controller with Modbus</td>
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<td>ADAM-4050</td>
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<td>ADAM-4051</td>
<td>16-ch Isolated Digital Input Module with Modbus</td>
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<td>ADAM-4068</td>
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<td>ADAM-4069</td>
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<td>Isolated RS-232 to RS-422/485 Converter</td>
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<td>ADAM-4521</td>
<td>Addressable RS-422/485 to RS-232 Converter</td>
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<td>ADAM-4541</td>
<td>Multi-mode Fiber Optic to RS-232/422/485 Converter</td>
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<td>ADAM-4542+</td>
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<td>ADAM-4561/4562</td>
<td>1-port Isolated USB to RS-232/422/485 Converter</td>
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<td>Robust RS-232 to RS-422/485 Converter</td>
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<td>Robust 8-ch Analog Input Module with Modbus</td>
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<td>ADAM-4118</td>
<td>Robust 8-ch Thermocouple Input Module with Modbus</td>
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<td>ADAM-4150</td>
<td>Robust 15-ch Digital I/O Module with Modbus</td>
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</tr>
<tr>
<td>ADAM-4168</td>
<td>Robust 8-ch Relay Output Module with Modbus</td>
<td>17-20</td>
</tr>
</tbody>
</table>

To view all of Advantech’s RS-485 I/O Modules: ADAM-4000, please visit www.advantech.com/products.
**Introduction**

The ADAM-4000 series modules are compact, versatile sensor-to-computer interface units designed specifically for reliable operation in harsh environments. Their built-in microprocessors, encased in rugged industrial grade plastic, independently provide intelligent signal conditioning, analog I/O, digital I/O, data display and RS-485 communication. The ADAM-4000 series can be categorized into three groups: controllers, communication modules, and I/O modules.

**General Features**

**RS-485**

The ADAM-4000 series of modules use the EIA RS-485 communication protocol, the industry’s most widely used bi-directional, balanced transmission line standard. The EIA RS-485 was specifically developed for industrial applications. It lets ADAM-4000 modules transmit and receive data at high rates over long distances. All modules use optical isolators to prevent ground loop problems and reduce damages caused by power surges.

**Modbus Communication Protocol**

Since Modbus is one of the most popular communication standards in the world, Advantech has applied it as the major communication protocol for eAutomation product development. The new-generation ADAM-4000 modules now also support the Modbus/RTU protocol as the remote data transmission mechanism. Featuring the Modbus-support capacity, the new ADAM-4000 series becomes universal remote I/O modules, which work with any Modbus systems. The HMI server or controller can read/write data via standard Modbus command instead of complex ASCII code.

**Watchdog Timer**

A watchdog timer supervisory function will automatically reset the ADAM-4000 series modules if required, which reduces the need for maintenance. It also provides great reliability to the system.

**Applications**

- Remote data acquisition
- Process monitoring
- Industrial process control
- Energy management
- Supervisory control
- Security systems
- Laboratory automation
- Building automation
- Product testing
- Direct digital control
- Relay control

**Flexible Networking**

ADAM-4000 series modules need just two wires to communicate with their controlling host computer over a multidrop RS-485 network. Their ASCII-based command/response protocol ensures compatibility with virtually any computer system.

**Modular Industrial Design**

You can easily mount modules on a DIN-rail, a panel or modules can piggyback on top of each other. You make signal connections through plug-in screw-terminal blocks, ensuring simple installation, modification and maintenance.

**Controller Features**

**Alternative Standalone Control Solution**

A standalone control solution is made possible when the ADAM-4000 series modules are controlled by the ADAM-4501 or ADAM-4502 PC-based communication controller. The ADAM-4501 and ADAM-4502 allow users to download an application (written in a high-level programming language) into its Flash ROM. This allows customization for your applications.
Remote Data Acquisition and Control Modules Overview

I/O Module Features

Remotely Programmable Input Ranges
The ADAM-4000 series modules stand out because of their ability to accommodate multiple types and ranges of analog input. The type and range can be remotely selected by issuing commands from a host computer. One type of module satisfies many different tasks, which greatly simplifies design and maintenance. A single kind of module can handle the measurement needs of a whole plant. Since all modules are remotely configured by the host computer, physical adjustments are unnecessary.

Easy Plug-in System Integration
With ADAM-4000’s Modbus I/O, and built-in Modbus/RTU protocol, any controller using the Modbus/RTU standard can be integrated as part of an ADAM-4000 control system. Any Modbus Ethernet data gateway can upgrade these I/O Modules up to the Modbus/Modbus/TCP Ethernet layer. Most HMI software is bundled with a Modbus driver, and can access the ADAM-4000 I/O directly. Moreover, Advantech provides Modbus OPC Server and Modbus/TCP OPC Server as data exchange interfaces between the ADAM-4000 Modbus I/O and any Windows Applications.

Communication Module Features

Ethernet
ADAM-4570 and ADAM-4571 are designed for the connection between serial devices (RS-232/422/485) and Ethernet. With ADAM-4570 or ADAM-4571, you can use graphical control software to monitor and control I/O modules. With existing devices, you can connect to an Ethernet network with the benefits of enhanced host performance and convenience.

Fiber Optics
If users need to transmit over long distances without noise interference, ADAM-4541 and ADAM-4542+ are designed for this task. The ADAM-4541 is a multi-mode converter, which carries signals from fiber optics to RS-232/422/485. It offers a transmission distance of up to 2,500 m with a total immunity to electromagnetic noise. The ADAM-4542+ is a single-mode converter, which carries signals from fiber to optics to RS-232/422/485. It offers a transmission distance of up to 15 km with total immunity to electromagnetic noise.

USB Communications
ADAM-4561/4562 is an one-port isolated USB to RS-232/422/485 converter. ADAM-4561 can convert USB to RS-232/422/485 with plug-in terminal. The major features of ADAM-4562 are the capability to use 9-wire RS-232, and to get power from the USB port. With 9-wire RS-232 capability, this converter meets the requirements of PLCs, modems, and controller equipment. As a USB-to-serial converter, ADAM-4562 supports Plug & Play, and hot-swapping, which simplifies the configuration process, and it also acts as a power supply for the module. It is no longer necessary to have an external power supply.
## RS-485 I/O Modules: ADAM-4000

### Controllers

<table>
<thead>
<tr>
<th>Model</th>
<th>ADAM-4501</th>
<th>ADAM-4502</th>
<th>ADAM-4022T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network</td>
<td>Ethernet, RS-232, RS-485</td>
<td>RS-485</td>
<td>-</td>
</tr>
<tr>
<td>Comm. Protocol</td>
<td>Modbus/RTU, Modbus/TCP, TCP/IP, UDP, ICMP, ARP, DHCP</td>
<td>ASCII Command/Modbus</td>
<td>-</td>
</tr>
<tr>
<td>Comm. Speed (bps)</td>
<td>Ethernet: 10/100 M Serial: From 1,200 to 115.2 kbps</td>
<td>Serial: From 1,200 to 115.2 kbps</td>
<td>Serial: From 1,200 to 115.2 kbps</td>
</tr>
<tr>
<td>Comm. Distance</td>
<td>Ethernet: 100 m Serial: 1.2 km</td>
<td>RS-485: plug-in screw terminal</td>
<td>RS-485: plug-in screw terminal</td>
</tr>
<tr>
<td>Interface Connectors</td>
<td>Ethernet: RJ-45 RS-485: plug-in screw terminal RS-232: RJ-48</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>LED Indicators</td>
<td>Communication &amp; Power</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Data Flow Control</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>Isolation Voltage</td>
<td>-</td>
<td>1,000 Vdc</td>
<td>3,000 Vdc</td>
</tr>
<tr>
<td>Special Features</td>
<td>Email function: Built-in HTTP and FTP Server</td>
<td>PID Control</td>
<td>-</td>
</tr>
<tr>
<td>Power Requirements</td>
<td>4DI/4DO</td>
<td>1AI/1AO/2DI/2DO</td>
<td>-</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-10 ~ 70°C (14 ~ 158°F)</td>
<td>-10 ~ 70°C (14 ~ 158°F)</td>
<td>-10 ~ 70°C (14 ~ 158°F)</td>
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<tr>
<td>Power Consumption</td>
<td>4 W @ 24 Vdc</td>
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<td>-</td>
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### Repeaters

<table>
<thead>
<tr>
<th>Model</th>
<th>ADAM-4510</th>
<th>ADAM-4510S</th>
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</thead>
<tbody>
<tr>
<td>Comm. Protocol</td>
<td>RS-422 RS-485</td>
<td>-</td>
</tr>
<tr>
<td>Comm. Speed (bps)</td>
<td>Serial: From 1,200 to 115.2 kbps Serial: 1.2 km</td>
<td>Serial: From 1,200 to 115.2 kbps Serial: 1.2 km</td>
</tr>
<tr>
<td>Interface Connectors</td>
<td>RS-422/485: plug-in screw terminal</td>
<td>-</td>
</tr>
<tr>
<td>LED Indicators</td>
<td>Communication &amp; Power</td>
<td>Power Communication &amp; Power</td>
</tr>
<tr>
<td>Data Flow Control</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Power Requirements</td>
<td>-</td>
<td>ADAM-4570: 2,500 Vdc, ADAM-4510S: 3,000 Vdc</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-10 ~ 70°C (14 ~ 158°F)</td>
<td>5 ~ 95% RH</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>1.2 W @ 24 Vdc</td>
<td>1.5 W @ 24 Vdc</td>
</tr>
</tbody>
</table>

### Converters

<table>
<thead>
<tr>
<th>Model</th>
<th>ADAM-4520</th>
<th>ADAM-4521</th>
<th>ADAM-4541/4542+</th>
<th>ADAM-4561/4562</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comm. Protocol</td>
<td>-</td>
<td>Serial: From 1,200 to 115.2 kbps</td>
<td>ADAM-4541: 2.5 km ADAM-4542+: 15 km</td>
<td>-</td>
</tr>
<tr>
<td>Comm. Distance</td>
<td>Serial: 1.2 km Serial: 1.2 km</td>
<td>Serial: 1.2 km</td>
<td>USB: type A client connector</td>
<td>Serial: 1.2 km</td>
</tr>
<tr>
<td>LED Indicators</td>
<td>Communication &amp; Power</td>
<td>-</td>
<td>-</td>
<td>Communication &amp; Power</td>
</tr>
<tr>
<td>Data Flow Control</td>
<td>-</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>-</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>Isolation Voltage</td>
<td>3,000 Vdc</td>
<td>1,000 Vdc</td>
<td>-</td>
<td>ADAM-4561: 3,000 Vdc ADAM-4562: 2,500 Vdc</td>
</tr>
<tr>
<td>Power Requirements</td>
<td>10 ~ 30 Vdc</td>
<td>-</td>
<td>ADAM-4561: 3,000 Vdc, ADAM-4562: 2,500 Vdc</td>
<td>-</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-10 ~ 70°C (14 ~ 158°F)</td>
<td>5 ~ 95% RH</td>
<td>1.4 W @ 24 Vdc</td>
<td>-</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>1.2 W @ 24 Vdc</td>
<td>1 W @ 24 Vdc</td>
<td>ADAM-4541: 1.5 W @ 24 Vdc ADAM-4542+: 3 W @ 24 Vdc</td>
<td>ADAM-4561: 1.5 W @ 5 Vdc ADAM-4562: 1.1 W @ 5 Vdc</td>
</tr>
</tbody>
</table>

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Controllers: ADAM-4501, ADAM-4502, ADAM-4022T
Repeaters: ADAM-4510, ADAM-4510S
Converters: ADAM-4520, ADAM-4521, ADAM-4541, ADAM-4542+, ADAM-4561, ADAM-4562
## Analog Input

<table>
<thead>
<tr>
<th>Model</th>
<th>ADAM-4011</th>
<th>ADAM-4012</th>
<th>ADAM-4013</th>
<th>ADAM-4015</th>
<th>ADAM-4016</th>
<th>ADAM-4017+</th>
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<tbody>
<tr>
<td>Resolution</td>
<td>16 bit</td>
<td>16 bit</td>
<td>16 bit</td>
<td>16 bit</td>
<td>16 bit</td>
<td>16 bit</td>
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<tr>
<td>Channels</td>
<td>1 differential</td>
<td>1 differential</td>
<td>1 differential</td>
<td>6 differential</td>
<td>1 differential</td>
<td>8 differential</td>
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<tr>
<td>Sampling Rate</td>
<td>10 Hz</td>
<td>10 Hz</td>
<td>10 Hz</td>
<td>10 Hz</td>
<td>10 Hz</td>
<td>10 Hz</td>
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<tr>
<td>Voltage Input</td>
<td>±15 mV ±50 mV ±100 mV ±500 mV ±1 V ±5 V ±10 V</td>
<td>±15 mV ±50 mV ±100 mV ±500 mV ±1 V ±5 V ±10 V</td>
<td>±15 mV ±50 mV ±100 mV ±500 mV ±1 V ±5 V ±10 V</td>
<td></td>
<td></td>
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<tr>
<td>Current Input</td>
<td>±20 mA ±20 mA - - ±20 mA 4 – 20 mA ±20 mA 4 – 20 mA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Burn-out Detection</td>
<td>Yes</td>
<td>-</td>
<td>-</td>
<td>Yes</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Channel Independent Configuration</td>
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<td>-</td>
<td>Yes</td>
<td>-</td>
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<td>Analog Output</td>
<td>Channels</td>
<td>-</td>
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<td>-</td>
<td>1</td>
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<td>Voltage Output</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0 - 10 V</td>
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<tr>
<td>Current Output</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Digital Input/Output</td>
<td>Input Channels</td>
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<td>1</td>
<td>-</td>
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<td>Output Channels</td>
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<td>4</td>
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<td>Alarm Settings</td>
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<td>Yes</td>
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<td>-</td>
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</tr>
<tr>
<td>Counter (32-bit)</td>
<td>Channels</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Input Frequency</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Isolation Voltage</td>
<td>3,000 VDC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digital LED Indicator</td>
<td>Yes (System)</td>
<td>Yes (System)</td>
<td>Yes (System)</td>
<td>Yes (System &amp; Comm.)</td>
<td>Yes (System)</td>
<td>Yes (System &amp; Comm.)</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>Yes (System)</td>
<td>Yes (System)</td>
<td>Yes (System)</td>
<td>Yes (System &amp; Comm.)</td>
<td>Yes (System)</td>
<td>Yes (System &amp; Comm.)</td>
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<tr>
<td>Safety Setting</td>
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<td>-</td>
<td>-</td>
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<td>Modbus Support*</td>
<td>-</td>
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<td>Yes</td>
<td>-</td>
<td>Yes</td>
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<tr>
<td>Page</td>
<td>17-8</td>
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<td>17-9</td>
<td>17-9</td>
<td>17-10</td>
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</table>

*: All ADAM-4000 I/O Modules support ASCII Commands
# I/O Module Selection Guide

## Analog Input

<table>
<thead>
<tr>
<th>Model</th>
<th>ADAM-4018+</th>
<th>ADAM-4019+</th>
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<tbody>
<tr>
<td>Resolution</td>
<td>16 bit</td>
<td>10 Hz</td>
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<td>Channels</td>
<td>8 differential</td>
<td>8 differential</td>
</tr>
<tr>
<td>Sampling Rate</td>
<td>10 Hz</td>
<td>10 Hz</td>
</tr>
<tr>
<td>Voltage Input</td>
<td>±100 mV</td>
<td>±500 mV</td>
</tr>
<tr>
<td></td>
<td>±1 V</td>
<td>±2.5 V</td>
</tr>
<tr>
<td>Current Input</td>
<td>±10 V</td>
<td>±20 mA</td>
</tr>
<tr>
<td>Burn-out Detection</td>
<td>Yes</td>
<td>Yes (4 ~ 20 mA &amp; All T/C)</td>
</tr>
<tr>
<td>Channel Independent Configuration</td>
<td>Yes</td>
<td>Yes</td>
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## Analog Output

<table>
<thead>
<tr>
<th>Model</th>
<th>ADAM-4021</th>
<th>ADAM-4024</th>
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<tbody>
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<td>Channels</td>
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<td>-</td>
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<tr>
<td>Voltage Output</td>
<td>0~10 V</td>
<td>±10 V</td>
</tr>
<tr>
<td>Current Output</td>
<td>±20 mA</td>
<td>±20 mA</td>
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<tr>
<td>Input Channels</td>
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<tr>
<td>Output Channels</td>
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<tr>
<td>Alarm Settings</td>
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</tr>
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<td>Channel Independent Configuration</td>
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## Digital Input/Output

<table>
<thead>
<tr>
<th>Model</th>
<th>ADAM-4050</th>
<th>ADAM-4051</th>
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<tbody>
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<td>Channels</td>
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<td>Current Output</td>
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<td>Input Channels</td>
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<td>Output Channels</td>
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<tr>
<td>Alarm Settings</td>
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<tr>
<td>Alarm Setting</td>
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<td>-</td>
</tr>
<tr>
<td>Digital LED Indicator</td>
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</tr>
<tr>
<td>Isolation Voltage</td>
<td>3,000 Vdc</td>
<td>3,000 Vdc</td>
</tr>
<tr>
<td>Input Frequency</td>
<td>50 kHz</td>
<td>50kHz</td>
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<tr>
<td>Watchdog Timer</td>
<td>Yes (System &amp; Comm.)</td>
<td>Yes (System &amp; Comm.)</td>
</tr>
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<td>Safety Setting</td>
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<td>-</td>
</tr>
<tr>
<td>Modbus Support *</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

* All ADAM-4000 I/O Modules support ASCII Commands
## Selection Guide

### Relay Output

<table>
<thead>
<tr>
<th>Model</th>
<th>ADAM-4052</th>
<th>ADAM-4053</th>
<th>ADAM-4055</th>
<th>ADAM-4056S/4056SO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channels</td>
<td>8</td>
<td>8</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Resolution</td>
<td>16 bit</td>
<td>12 bit</td>
<td>12 bit</td>
<td>-</td>
</tr>
<tr>
<td>Sampling Rate</td>
<td>10 Hz</td>
<td>10 Hz</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Voltage Input</td>
<td>- 100 mV</td>
<td>± 500 mV</td>
<td>± 1 V</td>
<td>± 2.5 V ± 5 V ± 10 V</td>
</tr>
<tr>
<td>Current Input</td>
<td>4 ~ 20 mA</td>
<td>±20 mA</td>
<td>4 ~ 20 mA</td>
<td>±20 mA</td>
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<tr>
<td>Burn-out Detection</td>
<td>Yes</td>
<td>Yes</td>
<td>(4 ~ 20 mA &amp; All T/C)</td>
<td>-</td>
</tr>
<tr>
<td>Channel Configuration</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Voltage Output</td>
<td>-</td>
<td>-</td>
<td>0 ~ 10 V</td>
<td>±10 V</td>
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<tr>
<td>Current Output</td>
<td>-</td>
<td>-</td>
<td>0 ~ 20 mA</td>
<td>4 ~ 20 mA</td>
</tr>
<tr>
<td>Digital Input</td>
<td>-</td>
<td>-</td>
<td>4-ch relay</td>
<td>8-ch relay</td>
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<tr>
<td>Digital Output</td>
<td>-</td>
<td>-</td>
<td>8-ch power relay</td>
<td>-</td>
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<tr>
<td>Isolation Voltage</td>
<td>3,000 V DC</td>
<td>3,000 V DC</td>
<td>3,000 V DC</td>
<td>2,500 V DC</td>
</tr>
<tr>
<td>Digital LED Indicator</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>Yes (System &amp; Comm.)</td>
<td>Yes (System &amp; Comm.)</td>
<td>Yes (System &amp; Comm.)</td>
<td>Yes (System &amp; Comm.)</td>
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<tr>
<td>Safety Setting</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Modbus Support</td>
<td>Yes</td>
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### Counter

<table>
<thead>
<tr>
<th>Model</th>
<th>ADAM-4060</th>
<th>ADAM-4068</th>
<th>ADAM-4069</th>
<th>ADAM-4080</th>
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<tbody>
<tr>
<td>Channels</td>
<td>4</td>
<td>-</td>
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<tr>
<td>Resolution</td>
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<tr>
<td>Sampling Rate</td>
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<td>-</td>
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<tr>
<td>Voltage Input</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Current Input</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Direct Sensor</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Burn-out Detection</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Channel Configuration</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Voltage Output</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Current Output</td>
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<tr>
<td>Digital Input</td>
<td>-</td>
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<tr>
<td>Digital Output</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Isolation Voltage</td>
<td>3,000 V DC</td>
<td>3,000 V DC</td>
<td>3,000 V DC</td>
<td>2,500 V DC</td>
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<tr>
<td>Digital LED Indicator</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>Yes (System &amp; Comm.)</td>
<td>Yes (System &amp; Comm.)</td>
<td>Yes (System &amp; Comm.)</td>
<td>Yes (System &amp; Comm.)</td>
</tr>
<tr>
<td>Safety Setting</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Modbus Support</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
ADAM-4000 RS-485 I/O Modules

Specifications

General
- Power Consumption: ADAM-4011: 1.4 W @ 24 Vdc
- Supported Protocols: ADAM-4011: ASCII command

Analog Input
- Channels: 1
- Input Impedance: Voltage: 2 MΩ
  - Current: 125 Ω (Added by user)
- Input Type: T/C, mV, V or mA
- Input Range:
  - ±15 mV, ±50 mV, ±100 mV
  - ±500 mV, ±1 V
  - ±2.5 V, ±20 mA
- Accuracy: Voltage mode: ±0.1% or better
  - Current mode: ±0.2% or better
- T/C Type and Temperature Range
  - J: 0 ~ 750°C
  - K: 0 ~ 1,370°C
  - T: 0 ~ 1,000°C
- Span Drift: ±25 ppm/°C
- Zero Drift: ±6 µV/°C

Digital Input
- Channels: 1
- Logic level 0: 1 V max.
  - Logic level 1: 3.5 ~ 30 V
- Pull up current: 0.5 mA, 10 kΩ resistor to 5 V
- Max. input freq.: 50 Hz
- Event Counter

Digital Output
- Channels: 2, open collector to 30 V, 30 mA max. load
- Power Dissipation: 300 mW
- Supports high/low alarms

Common Specifications

General
- Power Input: Unregulated 10 ~ 30 Vdc
- Connectors: 1 x plug-in terminal block (#14 ~ 22 AWG)
- Watchdog Timer: System (1.6 second)

Analog Input
- Resolution: 16-bit
- Sampling Rate: 10 sample/second
- CMR @ 50/60 Hz: 150 dB
- NMR @ 50/60 Hz: 100 dB
- Isolation Voltage: 3,000 Vdc

Environment
- Operating Humidity: 5 ~ 95% RH
- Operating Temperature: -10 ~ 70°C (14 ~ 158°F)
- Storage Temperature: -25 ~ 85°C (-13 ~ 185°F)

Ordering Information
- ADAM-4011: 1-ch Thermocouple Input Module
- ADAM-4012: 1-ch Analog Input Module
- ADAM-4013: 1-ch RTD Input Module
ADAM-4015
ADAM-4015T
ADAM-4016

6-ch RTD Module with Modbus
6-ch Thermistor Module with Modbus
1-ch Analog Input/Output Module

Specifications

General
- Connectors: 2 x plug-in terminal blocks (#14 – 28 AWG)
- Power Consumption: 1.2 W @ 24 Vdc
- Watchdog Timer: System (1.6 s) & Communication
- Supported Protocols: ASCII command and Modbus/RTU
- Burn-out Detection: Yes

Analog Input
- Channels: 6 differential
- Input Impedance: 10 MΩ
- Input Type: Pt, Balco and Ni RTD
- RTD Types and Temperature Ranges
  - Pt 100 RTD: Pt-50°C to 150°C, Pt 0°C to 100°C, Pt5°C to 200°C, Pt10°C to 400°C, Pt-200°C to 200°C
  - IEC RTD 100 ohms (a = 0.00385)
  - JIS RTD 100 ohms (a = 0.00392)
  - Pt 1000 RTD: Pt-40°C to 160°C
  - Balco 500 RTD: -30°C to 120°C
  - Ni 50 RTD: Ni-30°C to 100°C
  - Ni 508 RTD: Ni 0°C to 100°C
  - BA1: 200°C to 650°C
- Accuracy: ±0.1% or better
- CMR @ 50/60 Hz: 120 dB
- Span Drift: ±25 ppm/°C
- Zero Drift: ±3 µV/°C
- Input Type: Thermistor (NTC)
- Thermistor Types and Temperature Ranges
  - Thermistor 3 k: 0 ~ 100°C
  - Thermistor 10 k: 0 ~ 100°C
- Drive Current: 30 mA
- Output Range: ±500 mV, ±20 mA
- Output Type: Current mode: ±0.2% or better
- Voltage mode: ±0.1% or better

Analog Output
- Channels: 4, open collector to 30 V, 30 mA max. load
- Power Dissipation: 300 mW

Environment
- Operating Humidity: 5 ~ 95% RH
- Operating Temperature: -10 ~ 70°C
- Storage Temperature: -25 ~ 85°C
- Drive Current: 30 mA
- Isolation Voltage: 3,000 VDC

Common Specifications

General
- Power Input: Unregulated 10 ~ 30 Vdc
- Analog Input
  - Resolution: 16-bit
  - NMR @ 50/60 Hz: 100 dB
  - Sampling Rate: 10 sample/second (total)
  - Isolation Voltage: 3,000 Vdc

Ordering Information
- ADAM-4015: 6-ch RTD Input Module with Modbus
- ADAM-4015T: 6-ch Thermistor Input Module with Modbus
- ADAM-4016: 1-ch Analog Input/Output Module

Online Download: www.advantech.com/products
**ADAM-4017+**
8-ch Analog Input Module with Modbus

**ADAM-4018+**
8-ch Thermocouple Input Module with Modbus

**ADAM-4019+**
8-ch Universal Analog Input Module with Modbus

---

### Specifications

#### General
- **Power Consumption**: 1.2 W @ 24 Vdc
- **Watchdog Timer**: System (1.6 second) & Communication
- **Supported Protocols**: ASCII command and Modbus/RTU

#### Analog Input
- **Channels**: 8 differential
- **Channel Independent**: Yes
- **Configuration**: Voltage: 20 MΩ, Current: 120 Ω
- **Input Type**: mV, mA
- **Input Range**: ±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V, ±20 mA, 4 – 20 mA

#### Analog Input
- **Channels**: 8 differential
- **Channel Independent**: Yes
- **Configuration**: Voltage: 20 MΩ, Current: 120 Ω
- **Input Impedance**: Thermocouple, mA
- **Input Range**: 0 – 20 mA, 4 – 20 mA
- **T/C Types and Temperature Ranges**
  - J: 0 – 760°C
  - K: 0 – 1,370°C
  - T: -100 – 400°C
  - E: 0 – 1,000°C

- **Burn-out Detection**: All T/C

---

### Common Specifications

#### General
- **Power Input**: Unregulated 10 – 30 Vdc
- **Connectors**: 2 x plug-in terminal block (#14 – 22 AWG)

#### Analog Input
- **Accuracy**: Voltage mode: ±0.1% or better
  - Current mode: ±0.2% or better
- **Resolution**: 16-bit
- **Sampling Rate**: 10 sample/second (total)
- **Isolation Voltage**: 3,000 Vdc

- **Overvoltage Protection**: ±35 Vdc
- **CMR @ 50/60 Hz**: 120 dB
- **NMR @ 50/60 Hz**: 100 dB
- **Span Drift**: ±25 ppm/°C
- **Zero Drift**: ±50 μV/°C
- **Built-in TVS/ESD Protection**

#### Environment
- **Operating Humidity**: 5 – 95% RH
- **Operating Temperature**: -10 – 70°C
- **Storage Temperature**: -25 – 85°C

---

### Ordering Information

- **ADAM-4017+**: 8-ch Analog Input Module with Modbus
- **ADAM-4018+**: 8-ch Thermocouple Input Module with Modbus
- **ADAM-4019+**: 8-ch Universal Analog Input Module with Modbus
## Specifications

### General
- **Connectors**: 2 x plug-in terminal blocks (#14 – 22 AWG)
- **Power Consumption**: 1.4 W @ 24 Vcc
- **Watchdog Timer**: System (1.6 second)
- **Supported Protocols**: ASCII command

### Analog Output
- **Channels**: 1
- **Output Impedance**: 0.5 Ω
- **Output Range**: 0 - 20 mA, 4 - 20 mA, 0 - 10 V
- **Output Type**: mA, V
- **Accuracy**: ±0.2% of FSR for current output, ±0.2% of FSR for voltage output
- **Current Load Resistor**: 0 to 500 Ω (source)
- **Resolution**: 12-bit
- **Isolation Voltage**: 3,000 VDC
- **Programmable Output Slope**: 0.025 - 64.0 V/sec.
- **Readback Accuracy**: ±1% of FSR
- **Span Temperature Coefficient**: ±25 ppm/°C
- **Zero Drift**: Voltage output: ±30 μV/°C
  Current output: ±0.2 μA/°C

### Analog Input (Only AI0 and AI2 are the PID input)
- **Channels**: 4
- **Input Type**: mA, V, Thermistor, RTD
- **Input Range**: 0 - 20 mA, 4 - 20 mA, 0 - 10 V
- **Thermistor Type and Temperature Ranges**:
  - Pt 100 RTD
  - JIS RTD 100 ohms (a = 0.00392)
- **RTD Type and Temperature Ranges**:
  - Pt 100 RTD
  - JIS RTD 100 ohms (a = 0.00392)
- **Resolution**: 16-bit
- **Sampling Rate**: 10 sample/second
- **Isolation Voltage**: 3,000 VDC

### Digital Input
- **Channels**: 4
- **Input Level**: Logic level 0: 1 V max.
- **Isolation Voltage**: 3,000 Vcc
- **Dry Contact**: Logic level 0-close to GND
  Logic level 1-open
- **Power Dissipation**: 300 mW

### Digital Output
- **Channels**: 2
- **Output Type**: Open Collector to 30 V, 30 mA max. load
- **Power Dissipation**: 300 mW

---

## Common Specifications

### General
- **Power Input**: Unregulated 10 – 30 Vcc
- **Environment**
  - **Operating Humidity**: 5 – 95% RH
  - **Operating Temperature**: -10 ~ 70°C (14 ~ 185°F)
  - **Storage Temperature**: -25 ~ 85°C (-13 ~ 185°F)

### Digital Input
- **Channels**: 2
- **Dry Contact**: Logic level 0-close to GND
  Logic level 1-open

### Digital Output
- **Channels**: 2
- **Output Type**: Open Collector to 30 V, 30 mA max. load
- **Power Dissipation**: 300 mW

## Ordering Information
- **ADAM-4021**: 1-ch Analog Output Module
- **ADAM-4022T**: 2-ch Serial Based Dual Loop PID Controller w/ Modbus
- **ADAM-4024**: 4-ch Analog Output Module with Modbus

---

**Online Download**: [www.advantech.com/products](http://www.advantech.com/products)
**ADAM-4050**
**ADAM-4051**
**ADAM-4052**

## Specifications

### General
- **Connectors**: 2 x plug-in terminal blocks (#14 – 22 AWG)
- **Power Consumption**: 0.4 W @ 24 VDC
- **Watchdog Timer**: System (1.6 second)
- **Supported Protocols**: ASCII command

### Digital Input
- **Channels**: 7
- **Input Level**:
  - Logic level 0: 1 V max.
  - Logic level 1: 3.5 ~ 30 V
  - Pull up current: 0.5 mA, 10 kΩ resistor to 5 V

### Digital Output
- **Channels**: 8
- **Power Dissipation**: 300 mW
- **Input Level**:
  - Logic level 0: 1 V max.
  - Logic level 1: 3 ~ 30 V

## Specifications

### General
- **Connectors**: 2 x plug-in terminal blocks (#14 – 28 AWG)
- **Power Consumption**: 1 W @ 24 VDC
- **Watchdog Timer**: System (1.6 second)
- **Supported Protocols**: ASCII command and Modbus/RTU
- **LED Indicators**: Yes

### Digital Input
- **Channels**: 16
- **Input Voltage**: 50 V max
- **Input Level**:
  - Dry contact: Logic level 0: open
  - Logic level 1: close to GND
  - Wet contact: Logic level 0: 3 V max
  - Logic level 1: 10 – 50 V
  - Isolation Voltage: 2,500 VDC
  - Input Resistance: 3 kΩ
  - Overvoltage Protection: 70 VDC

### Digital Output
- **Channels**: 8
- **Input Level**:
  - Logic level 0: 1 V max.
  - Logic level 1: 3 ~ 30 V
- **Isolation Voltage**: 5,000 Vrms
- **Input Resistance**: 3 kΩ

## Common Specifications

### General
- **Power Input**: Unregulated 10 – 30 VDC

### Environment
- **Operating Humidity**: 5 ~ 95% RH
- **Operating Temperature**: -10 ~ 70°C (14 ~ 158°F)
- **Storage Temperature**: -25 ~ 85°C (-13 ~ 185°F)

## Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>ADAM-4050</td>
<td>15-ch Digital I/O Module</td>
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<tr>
<td>ADAM-4051</td>
<td>16-ch Isolated Digital Input Module with Modbus</td>
</tr>
<tr>
<td>ADAM-4052</td>
<td>8-ch Isolated Digital Input Module</td>
</tr>
</tbody>
</table>
ADAM-4055
ADAM-4056S/4056SO
ADAM-4080

Specifications

General
- Connectors: 2 x plug-in terminal blocks (#14 – 28 AWG)
- Power Consumption: 1 W @ 24 VDC
- Watchdog Timer: System (1.6 second) & Communication
- Supported Protocols: ASCII command and Modbus/RTU
- Isolation Voltage: 2,500 VDC
- LED Indicators: Yes

Digital Input
- Channels: 8
- Input Level: Dry Contact: Logic level 0: open, Logic level 1: close to GND, Wet Contact: Logic level 1: 3 V max, Logic level 1: 10 – 50 V
- Overvoltage Protection: 70 VDC

Digital Output
- Channels: 8, open collector to 40 V (200 mA max. load)
- Power Dissipation: Channel: 1 W max., Total: 2.2 W (8 Channels)

Specifications

ADAM-4055S
- Digital Output Channels: 12
  - Power Dissipation: Channel: 1 W max., Total: 4 W (12 Channels)
  - Digital Output Type: Sink

ADAM-4056SO
- Digital Output Channels: 12
  - VCC: 10 – 35 VDC
  - Digital Output Type: Source

Common Specifications

General
- Power Input: Unregulated 10 – 30 VDC

Environment
- Operating Humidity: 5 – 95% RH
- Operating Temperature: -10 – 70°C (14 – 158°F)
- Storage Temperature: -25 – 85°C (-13 – 185°F)

Ordering Information

ADAM-4055
- 16-ch Isolated Digital I/O Module with Modbus
- 12-ch Sink Type Isolated Digital Output Module with Modbus
- 2-ch Counter/Frequency Module

ADAM-4056S
- 12-ch Sink Type Isolated Digital Output Module with Modbus

ADAM-4056SO
- 12-ch Source Type Isolated Digital Output Module with Modbus

ADAM-4080
- 2-ch Counter/Frequency Modules

Digital Output
- Channels: 2, open collector to 30 V, 30 mA max. load
- Power Dissipation: 300 mW for each channel
**ADAM-4060**

4-ch Relay Output Module

**ADAM-4068**

8-ch Relay Output Module with Modbus

**ADAM-4069**

8-ch Power Relay Output Module with Modbus

---

### Specifications

**General**

- Connectors: 2 x plug-in terminal blocks (#14 – 28 AWG)
- Power Consumption: 0.6 W @ 24 VDC
- Watchdog Timer: System (1.6 second) & Communication
- Supported Protocols: ASCII command and Modbus/RTU

**Relay Output**

- Breakdown Voltage: 500 VAC (50/60 Hz)
- Channels: 2 x Form A
- Contact Rating (Resistive): 0.6 A @ 125 VAC, 0.3 A @ 250 VAC, 2 A @ 30 VDC, 0.6 A @ 110 VDC
- Initial Insulation Resistance: 1 GΩ min. at 500 VDC
- Relay off Time (Typical): 2 ms
- Relay on Time (Typical): 3 ms
- Maximum Operating Speed: 20 operations/min (at related load)

---

### Common Specifications

**General**

- Power Input: Unregulated 10 – 30 VDC

---

### Environment

- Operating Humidity: 5 – 95% RH
- Operating Temperature: -10 – 70°C (-14 – 158°F)
- Storage Temperature: -25 – 85°C (-13 – 185°F)

---

### Ordering Information

- ADAM-4060: 4-ch Relay Output Module
- ADAM-4068: 8-ch Relay Output Module with Modbus
- ADAM-4069: 8-ch Power Relay Output Module with Modbus

---

### Dimensions

Unit: mm

---

**Specifications**

**General**

- Connectors: 2 x plug-in terminal blocks (#14 – 22 AWG)
- Power Consumption: 0.6 W @ 24 VDC
- Watchdog Timer: System (1.6 second) & Communication
- Supported Protocols: ASCII command and Modbus/RTU

**Relay Output**

- Breakdown Voltage: 500 VAC (50/60 Hz)
- Channels: 4 x Form A
- Contact Rating (Resistive): 0.5 A @ 120 VAC, 0.25 A @ 240 VAC, 1 A @ 30 VDC, 0.3 A @ 110 VDC
- Initial Insulation Resistance: 1 GΩ min. at 500 VDC
- Relay off Time (Typical): 4 ms
- Relay on Time (Typical): 3 ms
- Maximum Operating Speed: 50 operations/min (at related load)

---

**Specifications**

**General**

- Connectors: 2 x plug-in terminal blocks (#14 – 28 AWG)
- Power Consumption: 2.2 W @ 24 VDC
- Watchdog Timer: System (1.6 second) & Communication
- Supported Protocols: ASCII command and Modbus/RTU

**Relay Output**

- Breakdown Voltage: 1,000 VAC (50/60 Hz)
- Channels: 2 x Form A
- Contact Rating (Resistive): 5 A @ 250 VAC, 2 A @ 110 VDC
- Initial Insulation Resistance: 1 GΩ min. at 500 VDC
- Relay off Time (Typical): 5.6 ms
- Relay on Time (Typical): 5 ms
- Maximum Operating Speed: 6 operations/min (at related load)

---

**Specifications**

**General**

- Connectors: 2 x plug-in terminal blocks (#14 – 28 AWG)
- Power Consumption: 2.2 W @ 24 VDC
- Watchdog Timer: System (1.6 second) & Communication
- Supported Protocols: ASCII command and Modbus/RTU

**Relay Output**

- Breakdown Voltage: 1,000 VAC (50/60 Hz)
- Channels: 2 x Form A
- Contact Rating (Resistive): 5 A @ 250 VAC, 2 A @ 110 VDC
- Initial Insulation Resistance: 1 GΩ min. at 500 VDC
- Relay off Time (Typical): 5.6 ms
- Relay on Time (Typical): 5 ms
- Maximum Operating Speed: 6 operations/min (at related load)
ADAM-4510/S
ADAM-4520
ADAM-4521

Specifications

General
- Connectors: 2 x plug-in terminal blocks (#14 ~ 22 AWG) (RS-422/485)
- Isolation Voltage: 3,000 VDC (ADAM-4510S)
- Power Consumption: 1.4 W @ 24 VDC

Serial Communications
- Input: RS-485 (2-wire) or RS-422 (4-wire)
- Output: RS-485 (2-wire) or RS-422 (4-wire)
- Speed Modes (bps): 1,200, 2,400, 4,800, 9,600, 19.2 k, 38.4 k, 57.6 k, 115.2 k, RTS control and RS-422 (switchable)

Specifications

General
- Connectors: 1 x plug-in terminal block (#14 ~ 22 AWG) (RS-422/485)
- Isolation Voltage: 3,000 VDC
- Power Consumption: 1.2 W @ 24 VDC

Serial Communications
- Input: RS-232 (DB9)
- Output: RS-485 (2-wire) or RS-422 (4-wire)
- Speed Modes (bps): 1,200, 2,400, 4,800, 9,600, 19.2 k, 38.4 k, 57.6 k, 115.2 k, RTS control and RS-422 (switchable)

Specifications

General
- Connectors: 1 x plug-in terminal block (#14 ~ 22 AWG) (RS-422/485)
- Isolation Voltage: 3,000 VDC
- Power Consumption: 1.0 W @ 24 VDC
- Built-in microprocessor and watchdog timer

Serial Communications
- Input: RS-232 (DB9)
- Output: RS-485 (2-wire) or RS-422 (4-wire)
- Speed Modes (bps): 300, 600, 1,200, 2,400, 4,800, 9,600, 19.2 k, 38.4 k, 57.6 k, 115.2 k (software configurable)
- RS-232 and 485 can be set to different baudrates
- RS-485 surge protection and automatic RS-485 data flow control
- Software configurable to either addressable or non-addressable mode

Common Specifications

General
- Power Input: Unregulated 10 – 30 VDC w/ power reversal protection

Environment
- Operating Humidity: 5 – 95% RH
- Operating Temperature: -10 – 70°C (14 – 158°F)
- Storage Temperature: -25 – 85°C (-13 – 185°F)

Ordering Information
- ADAM-4510: RS-422/485 Repeater
- ADAM-4510S: Isolated RS-422/485 Repeater
- ADAM-4520: Isolated RS-232 to RS-422/485 Converter
- ADAM-4521: Addressable RS-422/485 to RS-232 Converter
## Specifications

### General
- Power Input: Unregulated 10 – 30 Vdc
- Connectors: 1 x plug-in terminal block (#14 – 22 AWG) (RS-232/422/485)
- Power Consumption: 1.5 W @ 24 Vdc

### Serial Communications
- Communication Mode: Asynchronous
- Speed Modes (bps): 1,200, 2,400, 4,800, 9,600, 19.2 k, 38.4 k, 57.6 k, 115.2 k and RS-232/422/485 mode (switchable)
- Transmission Mode: Full/half duplex, bidirectional

### Fiber Optic Communications
- Optical Power Budget (Attenuation): 12.5 dB (measured with 62.5/125 µm)
- Transmission Distance: 2.5 km
- Transmission Mode: Multi mode (Send and Receive)
- Wavelength: 820 nm

### Common Specifications
- Environment
  - Operating Humidity: 5 – 95% RH
  - Operating Temperature: ADAM-4541/4542+: -10 – 70°C (14 – 158°F)
  - Storage Temperature: -25 – 85°C (-13 – 185°F)

## Ordering Information

- **ADAM-4541**
  - Multi-mode Fiber Optic to RS-232/422/485 Converter
- **ADAM-4542+**
  - Single-mode Fiber Optic to RS-232/422/485 Converter
- **ADAM-4561**
  - 1-port Isolated USB to RS-232/422/485 Converter
- **ADAM-4562**
  - 1-port Isolated USB to RS-232 Converter
ADAM-4100 Series

Introduction
The robust ADAM-4000 family includes the ADAM-4100 series modules, ADAM-4150i and ADAM-4520i modules. The ADAM-4100 series are compact, versatile sensor-to-computer interface units designed for reliable operation in harsh environments. Their built-in microprocessors, encased in rugged industrial-grade ABS+PC plastic, independently provide intelligent signal conditioning, analog I/O, digital I/O, LED data display, and an address mode with an user-friendly design for convenient address reading. The ADAM-4150i and ADAM-4520i modules are robust industrial-grade communication modules.

The ADAM-4000 robust family is designed to endure more severe and adverse environments. The operating temperature is -40 ~ 85°C which makes them suitable for more widespread applications.

Designed for Severe Industrial Environments

Broader Operating Temperature Range
The ADAM-4000 robust family supports a broad operating temperature range of -40 to 85°C.

Higher Noise Immunity
In order to prevent noise from affecting your system, the ADAM-4000 robust family has been designed with more protection to counteract these effects. New standard features include: 1 kV surge protection on power inputs, 3 kV EFT, and 8 kV ESD protection.

Broader Power Input Range
The ADAM-4000 robust family accepts any unregulated power source between 10 and 48 V DC. In addition, they are also protected against accidental power reversals, and can be safely connected or disconnected without disturbing a running network.

New Features for I/O Modules

- **ADAM-4150**
  1. Over current and temperature protection circuit
  2. DI channels support counter (32-bit, overflow flag) and frequency type signal input
  3. DO channels support pulse (1 kHz) and delay (high-to-low and low-to-high) type signal output
  4. Support invert DI status

- **ADAM-4168**
  1. Supports 1 kHz pulse output

**ADAM-4110 Module with LED Display**

The ADAM-4100 series modules have a LED display that lets you monitor the channel status. Using ADAM-4117/4118, the LED will be lit when related channel is active. Using ADAM-4150/4168, the LED will be lit when related channel value is high. The ADAM-4100 series modules have two operating modes (initial and normal), unlike the old module using extra wiring. ADAM-4100 modules can use the switch on the case to set “initial” mode or “normal” mode. It is very convenient for the user to configure. When you set to “initial” mode, the LED display can represent the node address of that module. Besides, when you use multiple ADAM-4100 series modules, you can locate the module through ADAM utility and LED display. All of these functions are very helpful to diagnose the ADAM-4100 series system.

Online Firmware Updates
The ADAM-4100 series modules have a friendly and convenient design where firmware can be updated through a local network or the Internet. You can easily update latest firmware using utility on host PC. This saves time and ensures that the module always runs with the latest functional enhancements.

Legacy Communication Protocol Support
To satisfy both the current ADAM users, and Modbus users, The ADAM-4100 series modules support both the ADAM (ASCII) protocol and the Modbus/RTU protocol. You can select the communication mode you want through the Windows Utility Software. The Modbus protocol not only supports the original data format (N, 8, 1) for (parity check, data bit, stop check) but also accepts (N,8,1) (N, 8, 2) (E, 8, 1) (0, 8, 1).
# Robust RS-485 I/O Module Selection Guide

## Analog Input

<table>
<thead>
<tr>
<th>Model</th>
<th>ADAM-4117</th>
<th>ADAM-4118</th>
<th>ADAM-4150</th>
<th>ADAM-4168</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>16 bit</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Channels</td>
<td>8 differential</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sampling Rate</td>
<td>10/100 Hz (total)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Voltage Input</td>
<td>0 ~ 150 mV, 0 ~ 500 mV, 0 ~ 1 V, 0 ~ 5 V, 0 ~ 10 V, ±15 V, ±50 mV, ±1 V, ±5 V, ±10 V, ±15 V</td>
<td>±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1 V, ±2.5 V</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Current Input</td>
<td>0 ~ 20 mA, ±20 mA, 4 ~ 20 mA</td>
<td>±20 mA, 4 ~ 20 mA</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Direct Sensor Input</td>
<td>J, K, T, E, R, S, B</td>
<td>Thermocouple</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Burn-out Detection</td>
<td>Yes (mA)</td>
<td>Yes (mA and All T/C)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Channel Independent Configuration</td>
<td>Yes</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

## Digital Input/Output

<table>
<thead>
<tr>
<th>Model</th>
<th>ADAM-4510I</th>
<th>ADAM-4520I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network</td>
<td>RS-422/485</td>
<td>RS-232 to RS-422/485</td>
</tr>
<tr>
<td>Communication Speed (bps)</td>
<td>From 1,200 to 115.2k</td>
<td></td>
</tr>
<tr>
<td>Communication Distance</td>
<td>Serial: 1.2 km</td>
<td></td>
</tr>
<tr>
<td>Digital LED Indicators</td>
<td>Communication and Power</td>
<td>RS-422/485: plug-in screw terminal</td>
</tr>
<tr>
<td>Auto Data Flow Control</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Isolation Voltage</td>
<td>3,000 Vcc</td>
<td></td>
</tr>
<tr>
<td>Power Requirement</td>
<td>10 ~ 48 Vcc</td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40 ~ 85°C (-40 ~ 185°F)</td>
<td>-40 ~ 85°C (-40 ~ 185°F)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40 ~ 85°C (-40 ~ 185°F)</td>
<td>-40 ~ 85°C (-40 ~ 185°F)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>5 ~ 95%</td>
<td></td>
</tr>
<tr>
<td>Power Consumption</td>
<td>1.2 W @ 24 Vcc, 0.5 W @ 24 Vcc, 0.7 W @ 24 Vcc, 1.8 W @ 24 Vcc</td>
<td>1.4 W @ 24 Vcc, 1.2 W @ 24 Vcc</td>
</tr>
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<td>Page</td>
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<td>17-20</td>
</tr>
</tbody>
</table>
ADAM-4510I
ADAM-4520I
ADAM-4117

Specifications

General
- Connectors: 2 x plug-in terminal blocks (#14 – 22 AWG)
- Power Consumption: 1.4 W @ 24 VDC

Communications
- Input: RS-485 (2-wire) or RS-422 (4-wire)
- Output: RS-485 (2-wire) or RS-422 (4-wire)
- Speed Modes (bps): 1,200, 2,400, 4,800, 9,600, 19.2 k, 38.4 k, 57.6 k, 115.2 k, RTS control and RS-422 (switchable)
- Supports Auto Baud-Rate
- Provide RS-485 to RS-422 Convert Ability

ADAM-4520I

Specifications

General
- Connectors: 1 x plug-in terminal block (#14 – 22 AWG)
- Power Consumption: 1.2 W @ 24 VDC

Communications
- Input: RS-232 (DB9)
- Output: RS-485 (2-wire) or RS-422 (4-wire)
- Speed Modes (bps): 1,200, 2,400, 4,800, 9,600, 19.2 k, 38.4 k, 57.6 k, 115.2 k, RTS control and RS-422 (switchable)
- Supports Auto Baud-Rate
- Robust RS-422/485 Repeater
- Robust RS-232 to RS-485/422 Converter
- Robust 8-ch Analog Input Module with Modbus

ADAM-4117

Specifications

General
- Connectors: 2 x plug-in terminal blocks (#14 – 22 AWG)
- Power Consumption: 1.2 W @ 24 VDC
- Watchdog Timer: (1.6 second) & Communication
- Supported Protocols: ASCII Command and Modbus/RTU

Analog Input
- Channels: 8 differential and independent configuration channels
- Input Impedance: Voltage: 800 Ω
- Current: 120 μA
- Input Type: mV, V (supports unipolar and bipolar), mA
- Input Range: 0 – 150mV, 0 – 500mV, 0 – 1V, 0 – 5V, 0 – 10V, ±150 mV, ±500 mV, ±1V, ±5 V, ±10 V, ±15V, ±20 mA, 0 – 20 mA, 4 – 20mA
- Accuracy: Voltage mode: ±0.1% or better
- Current mode: ±0.2% or better
- Resolution: 16-bit
- Sampling Rate: 10/100 samples/sec (selected by utility)
- CMR @ 50/60 Hz: ≥92 dB
- NMR @ 50/60 Hz: ≥60 dB
- Over Voltage Protection: ±60 VDC
- High Common Mode: 200 VDC
- Span Drift: ±25 ppm/°C
- Zero Drift: ±60 μV/°C
- Built-in TVS/ESD Protection

Common Specifications

General
- Power Input: Unregulated 10 – 48 VDC w/power reversal protection
- Isolation Voltage: 3,000 VDC

Environment
- Operating Humidity: 5 – 95% RH
- Operating Temperature: -40 – 85°C (-40 – 185°F)
- Storage Temperature: -40 – 85°C (-40 – 185°F)
- Supports Noise Rejection

Ordering Information
- ADAM-4510I: Robust RS-422/485 Repeater
- ADAM-4520I: Robust RS-232 to RS-422/485 Converter
- ADAM-4117: Robust 8-ch Analog Input Module with Modbus

RoHS COMPLIANT 2002/95/EC

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Online Download
RS-485 I/O Modules: ADAM-4000

ADAM-4118
Robust 8-ch Thermocouple Input Module with Modbus
ADAM-4150
Robust 15-ch Digital I/O Module with Modbus
ADAM-4168
Robust 8-ch Relay Output Module with Modbus

Specifications

General
- Power Consumption: 0.5W @ 24 VDC

Analog Input
- Channels: 8 differential and independent configuration channels
- Input Impedance:
  Voltage: 20 MΩ
  Current: 120 Ω
- Input Type: T/C, mV, V, mA
- Input Range:
  Thermocouple:
    J: 0 ~ 760°C
    K: 0 ~ 1,370°C
    T: -100 ~ 400°C
    B: 500 ~ 1,800°C
    E: 0 ~ 1,000°C
  Voltage mode:
    ±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1 V, ±2.5 V
  Current mode:
    ±20 mA, 4 ~ 20 mA
- Accuracy:
  Voltage mode: ±0.1% or better
  Current mode: ±0.2% or better
- Resolution: 16-bit
- Sampling Rate:
  Voltage mode: 10/100 samples/sec
  (selected by Utility) 92 dB
- CMR @ 50/60 Hz: 60 VDC
- NMR @ 50/60 Hz: 50 VDC
- Overvoltage Protection: ±60 VDC
- High Common Mode: 200 VDC
- Span Drift: ±25 ppm/°C
- Zero Drift: ±50 μV/°C
- Built-in TVS/ESD Protection
- Burn-out Detection

Digital Input
- Channels: 7
- Input Level:
  Dry contact: Logic level 0: Close to GND
  Logic level 1: Open
  Wet contact: Logic level 0: 0 ~ 30 V
  Logic level 1: 10 ~ 30 V
  (Note: The Digital Input Level 0 and 1 status can be inverted)
- Supports 3 kHz Counter Input (32-bit + 1-bit overflow)
- Supports 3 kHz Frequency Input
- Supports Invert DI Status
- Over Voltage Protection: 40 VDC

Digital Output
- Channels: 8, open collector to 40 V (1 A max. load)
- Power Dissipation: 1W load max
- RON Maximum: 150 mΩ
- Supports 1 kHz Pulse Output
- Supports High-to-Low Delay Output
- Supports Low-to-High Delay Output

Common Specifications

General
- Power Input: Unregulated 10 ~ 48 VDC
- Watchdog Timer: System (1.6 second) & Communication
- Connector: 2 x plug-in terminal blocks (#14 ~ 22 AWG)
- Isolation Voltage: 3,000 VDC
- Supported Protocols: ASCII Command and Modbus/RTU

Environment
- Operating Humidity: 5 ~ 95% RH
- Operating Temperature:
  -40 ~ 85°C (-40 ~ 185°F)
- Storage Temperature:
  -40 ~ 85°C (-40 ~ 185°F)

Ordering Information
- ADAM-4118: Robust 8-ch Thermocouple Input Module w/ Modbus
- ADAM-4150: Robust 15-ch Digital I/O Module w/ Modbus
- ADAM-4168: Robust 8-chan Relay Output Module w/ Modbus
Ethernet I/O Modules:
ADAM-6000

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<td>ADAM-6015</td>
<td>7-ch Isolated RTD Input Modbus TCP Module 18-6</td>
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<td>ADAM-6017</td>
<td>8-ch Isolated Analog Input Modbus TCP Module with 2-ch DO</td>
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<td>ADAM-6018</td>
<td>8-ch Isolated Thermocouple Input Modbus TCP Module with 8-ch DO</td>
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<td>18-ch Isolated Digital I/O Modbus TCP Module 18-7</td>
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<td>14-ch Isolated Digital I/O Modbus TCP Module with 2-ch Counter</td>
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<td>ADAM-6052</td>
<td>16-ch Source-type Isolated Digital I/O Modbus TCP Module</td>
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<td>ADAM-6060</td>
<td>6-ch Digital Input and 6-ch Relay Modbus TCP Module 18-8</td>
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<td>ADAM-6066</td>
<td>6-ch Digital Input and 6-ch Power Relay Modbus TCP Module</td>
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Real-time Ethernet I/O Modules

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To view all of Advantech's Ethernet I/O Modules: ADAM-6000, please visit www.advantech.com/products.
**ADAM-6000 Series**

**The Path to Seamless Integration**

The integration of automation and enterprise systems requires a change in the architecture of open control systems. From Advantech’s point of view, the level of integration between automation and enterprise systems can only be accomplished through Internet technology. It is believed that IP/Ethernet protocols will progress beyond the control layer, into the field layers. Placing remote I/O with IP/Ethernet connections on the shop floor is economical. Advantech believes that over the next five years, Internet protocols over Ethernet will dominate major field connections. The Advantech ADAM-6000 series offers ideal remote I/O solutions with Internet protocols for industrial automation environments.

ADAM-6000 firmware features a built-in Modbus/TCP server. Advantech provides the ADAM .NET Utility, ADAM .NET class library and OPC Server for the ADAM-6000 series to support these functions as well. Users can configure DA&C systems via ADAM.NET Utility and integrate it with an HMI software package via Modbus/TCP driver or Modbus/TCP OPC Server. Furthermore, users can easily use the ADAM .NET class library to develop their own applications.

**Web-enabled Technology Becomes Popular on Factory Floors**

As Internet technologies and standards have rapidly developed over the past decade, Web-based control methodologies now obviously represent a powerful opportunity for extending efficient network-based management techniques to encompass non-IT real-world assets. The ADAM-6000 series is equipped with a built-in web server so that its data can be viewed, anytime-anywhere via the Internet. Moreover, the ADAM-6000 series allows users to configure user-defined web pages to meet the diverse needs in various applications. With this powerful function, the ADAM-6000 series breaks the boundary of traditional multi-layer automation architecture and allows users to access field data directly in real time, which enables seamless integration between the plant floor and the front office.

HMI has provided a friendly operator interface for discrete control and sharply reduced the cost and complexity of automation systems. A web server has been added to most HMI software and a browser allows access to HMI displays from remote locations via the network. The end user is able to see and use an identical HMI from any Internet connected computer anytime, anywhere. ADAM-6000 series can be be fully integrated with standard HMI software which supports Modbus/TCP.

**Features**

- Ethernet-based smart I/O
- Mixed I/O in single module
- Pre-built HTTP server and web pages in each module
- Pre-built HTTP server and web pages in each module
- Web language support: XML, HTML 5, Java Script
- Remote monitoring and control with smart phone/pad
- Active I/O message by data stream or event trigger function
- Industrial Modbus/TCP protocol
- Easily update firmware through Ethernet
- ADAM.NET Class Library for .NET application
- Intelligent control ability by Peer-to-Peer and GCL function
- Group configuration capability for multiple module setup
- Flexible user-defined Modbus address
- System configuration backup
- User Access Control

**System Architecture**

The diagram illustrates the system architecture for the ADAM-6000 series. It shows the connection between the UNO-1170s Fanless Box PC and other components like OPC-enable HMI/SCADA, Ethernet, and Internet/Browser. The system diagram includes various modules such as ADAM-6000 Digital I/O, ADAM-6000 Analog I/O, and an Industrial Ethernet Switch, illustrating the modular setup and connectivity of the ADAM-6000 I/O modules.
What is GCL?

GCL (Graphic Condition Logic) gives Ethernet I/O modules control ability. Users can define the control logic rules using the graphic configuration environment in the ADAM.NET Utility, and download defined logic rules to ADAM-6000 Ethernet I/O modules. Then, that Ethernet I/O module will execute the logic rules automatically just like a standalone controller.

For each Ethernet I/O module, 16 logic rules can be defined. In the configuration environment of ADAM.NET Utility, four graphic icons shows the four stages of one logic rule: Input, Logic, Execution and Output (Refer to figure below). Users can simply click on each icon and one dialog window will pop-up for users to configure each stage. After completing all configurations, users can click one button to download the defined logic rules to the specific Ethernet I/O module.

ADAM-6000 GCL is the Simplest Logic Ethernet I/O

- **Complete Graphic Configuration Environment**
  Unlike other text-based logic configuration utilities, Advantech GCL provides a complete graphic configuration utility, which is very intuitive to use. By simply clicking the icons, all related configurations can be done through the pop-up dialog window. GCL is not only easy-to-use, but is also features very powerful functionality.

- **Supports Both Local and Remote Output**
  When users define the destination of Output stage (such as digital output, analog output, counter and pulse output), users can choose either the local module or another remote module as the target.

- **Cascade Logic**
  The output of one logic rule can be another rule. Therefore, different rules can be combined together. GCL provides this kind of functionality called Cascade Logic. It helps to create more input numbers of logic rule. For example, if users combine rule 1 and rule 2 with rule 3, the maximum inputs become seven. (Two inputs of rule 3 will be rule 1 and rule 2. Refer to figure below.) So users can define complex logic architecture to satisfy various application requirements.

- **Distributed Cascade Logic**
  Users can assign other rules as the output of one logic rule. In fact, that “Other Rule” can be on the same module, or on another remote module. So, one GCL logic architecture can operate across different modules. Several Ethernet I/O modules can be integrated into one complete logic system.

- **Feedback**
  Users can assign input and output of logic rule to the same internal register. This gives GCL feedback ability. No hardware wiring is needed.

- **Rich I/O Options**

  | Analog Input | Thermocouple, RTD, Voltage, Current |
  | Analog Output | Voltage, Current |
  | Digital Input | Dry Contact, Wet Contact, Counter/Frequency input |
  | Digital Output | Sink, Source, Relay output, Pulse output |

- **Fast Execution Time**
  Advantech GCL features extremely short logic rule execution time in the market. When users choose local output (input and output channel are on the same module), the processing time (including hardware input delay time, one logic rule execution time and hardware output delay time) is less than 1 millisecond. When users choose remote output (input and output channel are on different modules), the total time needed (including processing and communication time) is less than 3 milliseconds.

- **Analog Input Scaling**
  When configuring analog input condition, GCL provides linear scaling function to convert measured voltage/current value to its engineer unit value (such as temperature or pressure unit). Then users can use the engineer unit value to define the logic condition, and it is more intuitive for users.

- **Online Monitoring**
  After users complete all GCL configurations in ADAM.NET Utility, they can simply click the “Run Monitoring” button. Then users can see real-time execution workflow of logic rule on ADAM-6000 modules. Besides, current input values will also be displayed. This helps users to maintain the system easily.

- **Sending Messages**
  In GCL, you can define your customized message. When conditions are satisfied, message’s IP and I/O status will be sent to defined PC or device.

- **Local DO Status Can be Input Condition**
  In GCL, you can read the local DO channel value and use it in the input condition. So you can define logic rule based on the local DO status.
Requirements
One of our clients has three branches across multiple countries. For each branch, cameras were installed near the gates. At the headquarters, people in the control room can monitor each gate via the Intranet. Now they want to enhance the system to remotely control each gate, so that each gate can be controlled from inside the control room of the headquarters. Since the distance between the headquarters and each branch is thousands of miles away, it may be very difficult to establish extra communication network for this purpose.

Solution
Through three pairs of Advantech ADAM-6000 Peer-to-Peer Ethernet I/O modules (without any additional hardware), this application has been easily solved. For each pair of ADAM-6000 modules, one module is inside the headquarters’ control room, and another is located at each branch. When the module in headquarters is activated, it will notify its paired module at the branch to open or close the gate. The communication is Ethernet-based, so that our clients can leverage their existing Ethernet infrastructure.

What Benefits Do Peer-to-Peer Modules Provide?

No Controller Required
For Ethernet I/O modules without Peer-to-Peer functionality, a controller is needed to read data from the input module and then send data to the output module. With Peer-to-Peer solutions, the controller can be removed since data will automatically transfer. This not only simplifies the process, but also helps save system hardware costs.

No Programming Required
To utilize Peer-to-Peer modules, the only thing required is to configure related setting through the ADAM .NET Utility. No additional programming effort is needed, therefore reducing system development time.

Simple and Flexible System Wiring
Long distance wiring can be difficult. For some automation applications, if the PLC and the sensors are far away, one remote I/O module needs to be located near the sensors, and a proprietary communication network needs to connect the PLC and the remote I/O module, and the communications distance is severely limited. Moreover, networks provided by PLC manufacturers are rarely open. Peer-to-Peer modules can replace limited and closed networks with no limitations since they leverage the most open and flexible Ethernet networks.

Why is Advantech’s Peer-to-Peer Technology the Best Choice?

- **Flexible Channel Mapping**
  ADAM-6000 Peer-to-Peer modules provide two modes: Basic and Advanced. For Basic mode, channels on one input module are directly mapped to channels on another single output module. For Advanced mode, channels on one input module can be mapped to channels on different output modules. (Refer to figure below)

- **Fast Response Time**
  Advantech Peer-to-Peer modules feature excellent execution performance in market. The execution time to transfer data from input to output module is less than 1.2 millisecond.

- **Advanced Security**
  When engineers use Peer-to-Peer modules, they don’t want it to be controlled by non-authorized computers or devices. ADAM-6000 Peer-to-Peer module lets users decide which IP or MAC address has control authority. This can make sure the output module is only controlled by its paired input module.

- **Advanced Reliability**
  When communication between a pair of ADAM-6000 Peer-to-Peer modules is broken, the digital output module can generate pre-defined value to ensure safety.
# ADAM-6000 Series Selection Guide

## Model Selection

<table>
<thead>
<tr>
<th>Spec.</th>
<th>ADAM-6015</th>
<th>ADAM-6017</th>
<th>ADAM-6018</th>
<th>ADAM-6022</th>
<th>ADAM-6024</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface</td>
<td>10/100 Mbps Ethernet</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Peer-to-Peer</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Receiver Only2</td>
<td>No</td>
</tr>
<tr>
<td>GCL1</td>
<td>Yes</td>
<td></td>
<td></td>
<td>No</td>
<td>Receiver Only2</td>
</tr>
<tr>
<td>Resolution</td>
<td>16 bit</td>
<td>16 bit for AI</td>
<td>12 bit for AO</td>
<td>16 bit for AI</td>
<td>12 bit for AO</td>
</tr>
</tbody>
</table>

### Analog Input

<table>
<thead>
<tr>
<th>Channels</th>
<th>ADAM-6015</th>
<th>ADAM-6017</th>
<th>ADAM-6018</th>
<th>ADAM-6022</th>
<th>ADAM-6024</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage Input</td>
<td>±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V</td>
<td>±10 V</td>
<td>±10 V</td>
<td>±10 V</td>
<td>±10 V</td>
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<tr>
<td>Current Input</td>
<td>0 – 20 mA</td>
<td>0 – 20 mA</td>
<td>0 – 20 mA</td>
<td>0 – 20 mA</td>
<td>0 – 20 mA</td>
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</table>

### Analog Output

<table>
<thead>
<tr>
<th>Channels</th>
<th>ADAM-6015</th>
<th>ADAM-6017</th>
<th>ADAM-6018</th>
<th>ADAM-6022</th>
<th>ADAM-6024</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage Output</td>
<td>0 – 10 V with 30 mA</td>
<td>4 – 20 mA with 15 VDC</td>
<td>0 – 10 V with 30 mA</td>
<td>4 – 20 mA with 15 VDC</td>
<td>0 – 10 V with 30 mA</td>
</tr>
</tbody>
</table>

### Digital Input/Output

<table>
<thead>
<tr>
<th>Channels</th>
<th>ADAM-6015</th>
<th>ADAM-6017</th>
<th>ADAM-6018</th>
<th>ADAM-6022</th>
<th>ADAM-6024</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Channels</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Output Channels</td>
<td>2</td>
<td>2</td>
<td>2</td>
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</tbody>
</table>

### Remarks

- **Note 1:** Peer-to-Peer and GCL cannot run simultaneously; only one feature is enabled at one time.
- **Note 2:** ADAM-6024 can only act as a receiver and generate analog output when using Peer-to-Peer or GCL.
- **Note 3:** Only for analog input and analog output channels.

---

## Model Selection

<table>
<thead>
<tr>
<th>Spec.</th>
<th>ADAM-6050</th>
<th>ADAM-6051</th>
<th>ADAM-6052</th>
<th>ADAM-6060</th>
<th>ADAM-6066</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface</td>
<td>10/100 Mbps Ethernet</td>
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<tr>
<td>Peer-to-Peer</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>GCL1</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Channels</td>
<td>ADAM-6050</td>
<td>ADAM-6051</td>
<td>ADAM-6052</td>
<td>ADAM-6060</td>
<td>ADAM-6066</td>
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<tr>
<td>Input Channels</td>
<td>12</td>
<td>12</td>
<td>8</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Output Channels</td>
<td>6 (Sink)</td>
<td>2 (Sink)</td>
<td>8 (Source)</td>
<td>6-channel relay</td>
<td>6-channel power relay</td>
</tr>
</tbody>
</table>

### Remarks

- **Note 1:** Peer-to-Peer and GCL cannot run simultaneously; only one feature is enabled at one time.
- **Note 2:** ADAM-6024 can only act as a receiver and generate analog output when using Peer-to-Peer or GCL.
- **Note 3:** Only for analog input and analog output channels.
## Specifications

### Analog Input
- **Channels**: 7 (differential)
- **Input Impedance**: > 10 MΩ
- **Input Connections**: 2 or 3 wire
- **Input Type**: Pt, Balco and Ni RTD
- **RTD Types and Temperature Ranges**:
  - Pt 100: -50°C ~ 150°C
  - Pt 1000: -40°C ~ 160°C
- **Supports both IEC 60751 ITS90 (0.03851 W/W°C) and JIS C 1604 (0.03916 W/W°C)**
- **Accuracy**: ± 0.1 %
- **Span Drift**: ± 25 ppm/°C
- **Zero Drift**: ± 6 μV/°C
- **Resolution**: 16-bit
- **Sampling Rate**: 10 sample/second (total)
- **CMR @ 50/60 HZ**: 90dB
- **NMR @ 50/60 HZ**: 60dB
- **Wire Burn-out Detection**

### Ordering Information
- **ADAM-6015**: 7-ch Isolated RTD Input Modbus TCP Module

### Digital Output
- **Channels**: 2, open collector to 30 V, 100 mA max. load
- **Power Dissipation**: 300 mW for each module

### Common Specifications

#### General
- **LAN**: 10/100Base-T(X)
- **Power Consumption**: 2 W @ 24 Vdc
- **Connectors**: 1 x RJ-45 (LAN), Plug-in screw terminal block (I/O and power)
- **Watchdog**: System (1.6 second) and Communication (programmable)
- **Power Input**: 10 ~ 30 Vdc
- **Supports Peer-to-Peer**
- **Supports GCL**
- **Supports Modbus/TCP, TCP/IP, UDP and HTTP Protocols**

#### Protection
- **Over Voltage Protection**: ±35 Vdc
- **Isolation Protection**: 2,000 Vdc
- **Built-in TVS/ESD Protection**
- **Power Reversal Protection**

#### Environment
- **Operating Temperature**: -10 ~ 70°C (14 ~ 158°F)
- **Storage Temperature**: -20 ~ 80°C (-4 ~ 176°F)
- **Operating Humidity**: 20 ~ 95% RH (non-condensing)
- **Storage Humidity**: 0 ~ 95% RH (non-condensing)
ADAM-6050
ADAM-6051
ADAM-6052

18-ch Isolated Digital I/O Modbus TCP Module
14-ch Isolated Digital I/O Modbus TCP Module with 2-ch Counter
16-ch Source-type Isolated Digital I/O Modbus TCP Module

Specifications

Digital Input
- Channels: 12
  - Dry Contact
    - Logic level 0: close to GND
    - Logic level 1: open
  - Wet Contact
    - Logic level 0: 0 ~ 3 VDC
    - Logic level 1: 10 ~ 30 VDC
- Supports 3 kHz Counter Input (32-bit + 1-bit overflow)
- Keep/Discard Counter Value when Power-off
- Supports 3 kHz Frequency Input
- Supports Inverted DI Status

Digital Output
- Channels: 6 (sink type), open collector to 30 V, 100 mA maximum load
- Supports 5 kHz Pulse Output
- Supports High-to-Low and Low-to-High Delay Output

Ordering Information
- ADAM-6050 18-ch Isolated DI/O Modbus TCP Module
- ADAM-6051 16-ch Isolated DI/O with Counter Modbus TCP Module
- ADAM-6052 16-ch Source-type Isolated DI/O Modbus TCP Module

Common Specifications

General
- LAN: 10/100Base-T(X)
- Power Consumption: 2 W @ 24 VDC
- Connectors: 1 x RJ-45 (LAN), Plug-in screw terminal block (I/O and power)
- Watchdog: System (1.6 second) and Communication (programmable)

- Power Input: 10 ~ 30 VDC
- Supports Peer-to-Peer, GCL
- Supports User Defined Modbus Address
- Supports Modbus/TCP, TCP/IP, UDP, DHCP and HTTP Protocol

Protection
- Power Reversal Protection
- Isolation Protection: 2,000 VDC

Environment
- Operating Temperature: -10 ~ 70°C (14 ~ 158°F)
- Storage Temperature: -20 ~ 80°C (-4 ~ 176°F)
- Operating Humidity: 20 ~ 95% RH (non-condensing)
- Storage Humidity: 0 ~ 95% RH (non-condensing)

Ordering Information
- ADAM-6050 18-ch Isolated DI/O Modbus TCP Module

Ordering Information
- ADAM-6051 16-ch Isolated DI/O with Counter Modbus TCP Module

Ordering Information
- ADAM-6052 16-ch Source-type Isolated DI/O Modbus TCP Module
ADAM-6060
ADAM-6066

Specifications

General
- **LAN**: 10/100Base-T(X)
- **Power Consumption**:
  - 2 W @ 24 VDC (ADAM-6060)
  - 2.5 W @ 24 VDC (ADAM-6066)
- **Connectors**: 1 x RJ-45 (LAN), Plug-in screw terminal block (I/O and power)
- **Power Input**: 10 ~ 30 VDC
- **Supports** Peer-to-Peer, GCL
- **Supports User Defined Modbus Address**
- **Supports Modbus/TCP, TCP/IP, UDP, DHCP and HTTP Protocols**

Digital Input
- **Channels**: 6
- **Dry Contact**:
  - Logic level 0: close to GND
  - Logic level 1: open
- **Wet Contact**:
  - Logic level 0: 3 VDC
  - Logic level 1: 10 ~ 30 VDC
- **Supports 3 kHz Counter Input (32-bit + 1-bit overflow)**
- **Supports 3 kHz Frequency Input**
- **Supports Inverted DI Status**

Relay Output (Form A)
- **Channels**: 6
- **Contact Rating (Resistive)**:
  - ADAM-6060: 120 VAC @ 0.5 A
  - 30 VDC @ 1 A
  - ADAM-6066: 250 VAC @ 5 A
  - 30 VDC @ 3 A
- **Breakdown Voltage**: 500 VAC (50/60 Hz)
- **Relay On Time**: 7 ms
- **Relay Off Time**: 3 ms
- **Total Switching Time**: 10 ms
- **Insulation Resistance**: 1 GΩ min. at 500 VDC
- **Maximum Switching Rate (at rated load)**: 20 operations/minute
- **Supports Pulse Output**

Protection
- **Isolation Voltage**: 2,000 VAC
- **Power Reversal Protection**

Environment
- **Operating Temperature**: -10 ~ 70°C (-14 ~ 158°F)
- **Storage Temperature**: -20 ~ 60°C (-4 ~ 176°F)
- **Operating Humidity**: 20 ~ 85% RH (non-condensing)
- **Storage Humidity**: 0 ~ 95% RH (non-condensing)

Ordering Information
- **ADAM-6060**: 6-ch DI and 6-ch Relay Modbus TCP Module
- **ADAM-6066**: 6-ch DI and 6-ch Power Relay Modbus TCP Module

ADAM-6000 Series Dimensions

Unit: mm

ADAM-6000 Series Common Specifications

General
- **Dimensions (W x H x D)**: 70 x 122 x 27 mm
- **Enclosure**: ABS-PC/PC
- **Mounting**: DIN 35 rail, stack, wall
Real-time Systems

A real-time system is one in which the correctness of a result not only depends on correct calculations, but also upon correct timing.

In computing, real-time refers to a time frame that is very brief, appearing to be immediate. When a computer processes data in real time, it reads and handles data as it is received, producing results without delay. A non real-time computer process does not have a deadline. Such a process can be considered non-real-time, even if fast results are preferred. A real-time system, on the other hand, is expected to respond not just quickly, but also within a predictable period of time. In an automation control system, real time technology provides multiple advantages, such as improved safety, quality, and efficiency.

To build a real-time distributed control system, it is critical to establish reliable and real-time communication among the controllers and targets. Distributed processors must be able to intercommunicate via real-time protocols. There is now increasing interest in the use of Ethernet as the link-layer protocol, such as EtherNet/IP, PROFINET, EtherCAT, Ethernet PowerLink, SERCOS III.

EtherNet/IP

EtherNet/IP was developed in the late 1990’s by Rockwell Automation for use in process control and other industrial automation applications, ensuring multi-vendor system interoperability. EtherNet/IP is a lot like standard office Ethernet, using the same TCP/IP messaging but with a new application layer added where data is arranged. This is known as Object-Oriented Organization, and allows ordinary office Ethernet to become a more versatile system. Today, EtherNet/IP is commonly used in industrial automation applications, such as water processing, manufacturing, and utilities.

PROFINET

PROFINET is the open industrial Ethernet standard of PROFIBUS & PROFINET International (PI) for automation. Like EtherNet/IP, it uses TCP/IP standards as protocols for communication in the network. It includes two modes - PROFINET IO and PROFINET CBA - and allows to combine distributed automation and distributed I/O. With its flexible capabilities, PROFINET is suitable for most automation technology requirements.

Feature Highlights

Daisy Chain Connections

Each ADAM-6100 module has two built in Ethernet switches to allow daisy chain connections in an Ethernet network, making it easier to deploy, helping improve scalability and improving resistance against interference common in factory settings.

2,500 Vdc Isolation Protection

With triple isolation, including power supply, input/output, and Ethernet communication, ADAM-6100 series ensures I/O data to be controlled correctly, and prevents devices from breaking down.

Multiple Mounting Mechanisms

Advantech provides versatile mounting methods to fit various demands in the field. ADAM-6100 series supports DIN-rail mounting, wall mounting and piggybacking.
# ADAM-6100 Series Selection Guide

<table>
<thead>
<tr>
<th>Model</th>
<th>ADAM-6117</th>
<th>ADAM-6124</th>
<th>ADAM-6150</th>
<th>ADAM-6151</th>
<th>ADAM-6156</th>
<th>ADAM-6160</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>10/100 Mbps Ethernet</td>
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<td></td>
</tr>
<tr>
<td>Support Protocol</td>
<td>ADAM-6100EI: EtherNet/IP; ADAM-6100PN: PROFINET</td>
<td></td>
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<tr>
<td>Analog Input</td>
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</tr>
<tr>
<td>Resolution</td>
<td>16-bit</td>
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<td>-</td>
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<tr>
<td>Channels</td>
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<td>Sampling Rate (sample/second)</td>
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<td>Voltage Input</td>
<td>±150 mV</td>
<td>±500 mV</td>
<td>±1 V</td>
<td>±5 V</td>
<td>±10 V</td>
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<tr>
<td>Current Input</td>
<td>0 ~ 20 mA</td>
<td>4 ~ 20 mA</td>
<td>±20 mA</td>
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<td>Direct Sensor Input</td>
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<td>Analog Output</td>
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<tr>
<td>Resolution</td>
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<td>12-bit</td>
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<td>0~20 mA</td>
<td>4~20 mA</td>
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<td>-</td>
<td>-</td>
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<tr>
<td>Voltage Output</td>
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<td>0 ~ 5 V</td>
<td>0 ~ 10 V, ±5 V, ±10 V</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Digital Input/Output</td>
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</tr>
<tr>
<td>Input Channels</td>
<td>-</td>
<td>-</td>
<td>4 (Dry Contact Only)</td>
<td>8</td>
<td>16</td>
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<tr>
<td>Output Channels</td>
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<td>7</td>
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<td>16</td>
<td>6-ch power relay</td>
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<tr>
<td>Isolation Protection</td>
<td>2,500 Vdc</td>
<td>2,500 Vdc</td>
<td>2,500 Vdc</td>
<td>2,500 Vdc</td>
<td>2,500 Vdc</td>
<td>2,500 Vdc</td>
</tr>
<tr>
<td>Connectors</td>
<td>2 x RJ-45 LAN (Daisy Chain)</td>
<td>Plug-in screw terminal block (I/O and power)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Page</td>
<td>18-11</td>
<td>18-11</td>
<td>18-12</td>
<td>18-12</td>
<td>18-12</td>
<td>18-12</td>
</tr>
</tbody>
</table>
ADAM-6117  
ADAM-6124

Specifications

Analog Input

- **Channels**: 8 (differential)
- **Input Impedance**
  - Voltage: > 10 MΩ
  - Current: 120 Ω
- **Input Range**
  - ±150 mV, ±500 mV, ±1 V
  - ±5 V, ±10 V, 0–20 mA, ±20 mA
- **Span Drift**: ± 30 ppm/°C
- **Zero Drift**: ± 6 μV/°C
- **Resolution**: 16-bit
- **Accuracy**: ± 0.1% of FSR (Current) at 25°C
- **Accuracy**: ± 0.2% of FSR (Current) at 25°C
- **Sampling Rate**: 10 sample/second (total)
- **CMR**: 92 dB
- **NMR**: 67 dB
- **High Common Mode**: 200 VDC

Analog Output

- **Channels**: 4
- **Output Impedance**: 2.1 Ω
- **Output Setting Time**: 20 μs
- **Driving Load**
  - Voltage: 2kΩ
  - Current: 500 Ω
- **Programmable**: 0.125 – 128 mA/sec
- **Output Slope**: 0.0625 – 64 V/sec
- **Output Type**: V, mA
- **Output Range**
  - Voltage: 0 – 5 V, 0 – 10 V, ± 5 V, ± 10 V
  - Current: 0 – 20 mA, 4 – 20 mA
- **Accuracy**: 0.3% of FSR (Voltage) at 25°C
- **Accuracy**: 0.5% of FSR (Current) at 25°C
- **Resolution**: 12-bit
- **Current Load Resistor**: ± 500 Ω
- **Drift**: ± 50 ppm/°C

Digital Input

- **Channels**: 4 (Dry Contact only)
- **Dry Contact**
  - Logic 0: Open
  - Logic 1: Closed to DGND

Ordering Information

- **ADAM-6117EI**: 8-ch Isolated AI EtherNet/IP Module
- **ADAM-6117PN**: 8-ch Isolated AI PROFINET Module

- **ADAM-6124PN**: 4-ch Isolated Analog Output PROFINET Module

Common Specifications

General

- **LAN**: 10/100Base-T(X)
- **Power Consumption**
  - ADAM-6117: 3.5 W @ 24 VDC
  - ADAM-6124: 6 W @ 24 VDC
- **Connectors**
  - 2 x RJ-45 LAN (Daisy Chain)
- **Watchdog**
  - System (1.6 second)
- **Power Input**: 10 – 30 VDC

Protection

- **Isolation Protection**: 2,500 VDC
- **Built in TVS/ESD Protection**
- **Power Reversal Protection**

Environment

- **Operating Temperature**: -10 – 70°C (14 – 158°F)
- **Storage Temperature**: -20 – 80°C (-4 – 176°F)
- **Operating Humidity**: 20 – 95% RH (non-condensing)
- **Storage Humidity**: 0 – 95% RH (non-condensing)

RoHS COMPLIANT 2002/95/EC
ADAM-6150
ADAM-6151/6156
ADAM-6160

Specifications

Digital Input
- Channels
  - ADAM-6150: 8
  - ADAM-6151: 16
- Dry Contact
  - Logic level 0: open
  - Logic level 1: close to DGND
- Wet Contact
  - Logic level 0: 0 – 3 VDC or 0 – -3 VDC
  - Logic level 1: 10 – 30 VDC or -10 – -30 VDC
  (Dry/Wet Contact decided by switch)
- Input Impedance 5.2 kΩ (Wet Contact)
- Transition Time
  - From logic level 0 to 1: 0.2 ms
  - From logic level 1 to 0: 0.2 ms

Digital Output
- Channels
  - ADAM-6150: 7
  - ADAM-6156: 16
- Output Voltage Range 8 – 35 VDC
- Normal Output Current 100 mA (per channel)

Ordering Information
- ADAM-6150EI 15-ch Isolated DI/O EtherNet/IP Module
- ADAM-6151EI 16-ch Isolated DI EtherNet/IP Module
- ADAM-6156EI 16-ch Isolated DO EtherNet/IP Module
- ADAM-6150PN 15-ch Isolated DI/O PROFINET Module
- ADAM-6151PN 16-ch Isolated DI PROFINET Module
- ADAM-6156PN 16-ch Isolated DO PROFINET Module

Relay Output
- Channels 5 Form C and 1 Form A
- Contact Rating
  - 250 VAC @ 5A
  - 30 VDC @ 5A
- Max. Switching Voltage
  - 400 VAC
  - 300 VDC
- Breakdown Voltage
  - 500 VAC (50/60Hz)
- Max. Breakdown Capacity 1250 VA
- Frequency of Operation
  - 360 operations/hour with load
  - 72,000 operations/hour without load
- Set/Reset Time
  - 8 ms/8 ms
- Mechanical Endurance
  - > 15 x 10⁶ operations
- Isolation between Contact 1000 Vrms
- Insulation Resistance > 10 GΩ @ 500 VDC

Ordering Information
- ADAM-6160EI 6-ch Relay EtherNet/IP Module
- ADAM-6160PN 6-ch Relay PROFINET Module

Common Specifications

General
- LAN 10/100Base-T(X)
- Power Consumption
  - ADAM-6150: 3 W @ 24 VDC
  - ADAM-6151: 2.7 W @ 24 VDC
  - ADAM-6156: 3.2 W @ 24 VDC
  - ADAM-6160: 4.5 W @ 24 VDC
- Connectors 2 x RJ-45 LAN, (Daisy Chain)
- Watchdog Plug-in screw terminal block (I/O and power)
- Power Input 10 – 30 VDC

Protection
- Over Voltage Protection ±35 VDC
- Isolation Protection 2,500 VDC
- Power Reversal Protection

Environment
- Operating Temperature -10 – 70°C (14 – 158°F)
- Storage Temperature -20 – 80°C (-4 – 176°F)
- Operating Humidity 20 – 95% RH (non-condensing)
- Storage Humidity 0 – 95% RH (non-condensing)
ADAM-6200 Series

Feature
- Daisy chain connection with auto-bypass protection
- Remote monitoring and control with smart phone/pad
- Group configuration capability for multiple module setup
- DI/O LED indication
- Flexible user-defined Modbus address
- Intelligent control ability by Peer-to-Peer and GCL function
- Multiple protocol support: Modbus TCP, TCP/IP, UDP, HTTP, DHCP
- Web language support: XML, HTML 5, Java Script
- System configuration backup
- User Access Control

Transition and Vision on Remote DAQ Device

In 2002, Advantech released its first Ethernet I/O module, ADAM-6000 series, which aims to provide ideal remote Ethernet I/O solution for industrial automation environments. It could work as a standalone station to conduct data acquisition, processing and delivery reliably in diverse of automation applications such as factory automation, EFMS and building automation.

However, as of today, the information technologies and network infrastructure are getting well-developed in the world. More and more enterprises not only face the requirement of enhancing their existing automation systems for greater overall equipment effectiveness (OEE), but also need up-to-date information integration, plant management and business systems. In the same way, the remote DAQ modules should be evolved to make it more effective, interoperable, and smarter than before to meet new requirements.

In the future, there are plenty of potential key elements like intelligence, energy-efficiency, cloud computing, cyber-security and mobile communication technologies being progressively leveraged in automation market. We believe that these will also contribute to ideal remote DAQ devices in IoT world.

In order to fulfill the transition of requirements and future applications, Advantech releases ADAM-6200 series, a new selection of Ethernet I/O family comprised of analog I/O, digital I/O and relay modules. ADAM-6200 series module possesses plenty of advanced features whatever the evolution of hardware design and what’s worth expecting for user is a variety of useful software functions to make it effective in the application field. With new design and strong capabilities, ADAM-6200 can be a well-integrated I/O solution in Ethernet control systems.
ADAM-6200 Key Features

Flexible Deployment with Daisy Chain Networking and Auto-Bypass Protection

ADAM-6200 module has built-in Ethernet switches to allow daisy chain connections in an Ethernet network, making it easier to deploy, saving wiring costs, and helping improve scalability. The two Ethernet ports are fully compliant with IEEE 802.3u 10/100Mbps through standard RJ-45 connectors.

Although daisy chain topology brings attractive benefits for user, it still comes with the risk that once any device in the daisy-chain network suffers power outage, it will cause the disconnection of all devices data stream.

Auto-bypass Protection

To prevent this critical issue from happening, Advantech especially refines the hardware design of ADAM-6200 so that it can rapidly recover the network connection in about 2.5 seconds. Therefore, the damage will be greatly minimized.

Remote Monitoring and Control with Smart Phone/Pad

In early stage of automation, it’s hard to access or obtain the data of equipments online when conducting on-site inspection. Mostly, the possible way to do that is communicating with engineers in branch or central control room where the SCADA program is running. It always takes extra efforts to complete an on-site checking or debugging.

The ADAM-6200 series module integrates the latest Web language HTML 5, allowing users to remotely monitor the status of all online modules without bridging SCADA system and to perform basic I/O configurations on any built-in HMI devices such as Smart Phone, Smart Pad over the Internet. Moreover, users can further develop its extended applications based on the default HTML 5 file embedded in the module.

HTML 5

HTML is a markup language popularly used to program the content for Web page over the Internet. The fifth revision (HTML 5) is the latest version which enhances its syntax structure and additionally mixes up with rich Web technologies like CSS, Java Script to implement more Web service, API, interactive applications in mobile communications.

Group Configuration Capability for Multiple Module Setup

In certain application scenario, it requires to set multiple modules with the same settings because these modules are doing the same tasks on different sites. Users have to set configurations of module one after another before onsite deployment. After the modules are installed and the system is running, it will still require repetitive efforts in maintenance when doing firmware update.

ADAM-6200 series modules are equipped with group configuration capability to reduce the repetitive efforts and quickly finish the multiple module setups, including firmware upgrade, configuration and HTML 5 file at one time. Users can finish the module installation faster than before as the configuration time tremendously reduced.
### ADAM-6200 Series
**Selection Guide**

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<td>18-16%</td>
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ADAM-6217
8-ch Isolated Analog Input Modbus TCP Module

ADAM-6218
6-ch Thermocouple Input Modbus TCP Module

ADAM-6224
4-ch Isolated Analog Output Modbus TCP Module

Specifications

Analog Input
- Channels: 8 (differential)
- Input Impedance: > 10 MΩ (voltage)
- Input Type: mV, V, mA
- Input Range: ±150 mV, ±500 mV, ±1 V, ±20 mA, ±10 V, 0–20 mA, ±5 V, ±10 V, ±10 V, ±20 mA
- Span Drift: ± 30 ppm/°C
- Zero Drift: ± 6 μV/°C
- Resolution: 16-bit
- Accuracy: ± 0.1% of FSR (Voltage) at 25°C
- Sampling Rate: 10 sample/second (total)
- CMR @ 50/60 Hz: 92 dB
- NMR @ 50/60 Hz: 67 dB
- Common Mode: 200 VDC

Ordering Information
- ADAM-6217: 8-ch Isolated Analog Input Modbus TCP Module

Specifications

Analog Output
- Channels: 4
- Output Impedance: 2.1 Ω
- Output Settling Time: 20 μs
- Driving Load: Voltage: 2kΩ
- Output Slope: ±30 ppm/°C
- Output Type: V, mA
- Output Range: ±50 mV, ±100 mV, ±500 mV, ±1 V, ±20 mA, ±10 V, ±500 mV, ±1 V, ±20 mA, ±10 V, ±10 V, ±20 mA
- Accuracy: ± 0.3% of FSR (Voltage) at 25°C
- Resolution: ± 0.3% of FSR (Current) at 25°C
- Current Load Resistor: 0 ~ 500 Ω
- Drift: ± 50 ppm/°C

Digital Input
- Channels: 4 (Dry Contact only)
- Dry Contact: Logic 0: Open
- Support DI Filter: Logic 1: Closed to DGND
- Support Inverted DI Status: Logic 0: Open
- Support Trigger to Startup or Safety Value: Logic 1: Closed to DGND

Ordering Information
- ADAM-6224: 4-ch Isolated Analog Output Modbus TCP Module

Common Specifications

General
- Ethernet: 2-port 10/100 Base-TX (for Daisy Chain)
- Protocol: Modbus/TCP, TCP/IP, UDP, HTTP, DHCP
- Connector: Plug-in 5P/15P screw terminal blocks
- Power Input: 10 - 30 VDC (24 VDC standard) forTemperature Range
- Power Reversal protection: System (1.6 seconds)
- Communication: Programmable
- Dimensions: 70 x 122 x 27 mm
- Protection: Built-in TVS/ESD protection
- Power Consumption: Over Voltage protection: ± 35Vdc
- Isolation protection: 2500 Vdc
- ADAM-6217: 3.5W @ 24 Vdc
- ADAM-6218: 3.5W @ 24 Vdc
- ADAM-6224: 6W @ 24 Vdc

Features
- Daisy chain connection with auto-bypass protection
- Remote monitoring and control with smart phone/pad
- Group configuration capability for multiple module setup
- Intelligent control ability by Peer-to-Peer and GCL function
- Multiple protocol support: Modbus TCP, TCP/IP, UDP, HTTP, DHCP
- Web language support: XML, HTML 5, Java Script
- System configuration backup
- User Access Control

Environment
- Operating Temperature: -10 – 70°C (14 – 158°F)
- Storage Temperature: -20 – 80°C (4 – 176°F)
- Operating Humidity: 20 – 95% RH (non-condensing)
- Storage Humidity: 0 – 95% RH (non-condensing)
Specifications

Digital Input
- Channels
  ADAM-6250: 8
  ADAM-6251: 16
- Dry Contact
  Logic 0: Open
  Logic 1: Closed to DGND
- Wet Contact
  Logic 0: 0 – 3 Vdc or 0 – -3 Vdc
  Logic 1: 10 – 30 Vdc or -10 – -30 Vdc
  (Dry/Wet Contact decided by Switch)
- Input Impedance
  5.2 kΩ (Wet Contact)
- Transition Time
  0.2 ms
- Frequency Input Range
  0.1 – 3kHz
- Counter Input
  3kHz (32 bit + 1 bit overflow)
- Keep/Discard Counter Value when power off
- Supports Inverted DI Status

Digital Output
- Channels
  ADAM-6250: 7 (Sink Type)
  ADAM-6256: 16 (Sink Type)
- Output Voltage Range
  10 – 30 Vdc
- Normal Output Current
  100 mA (per channel)
- Pulse Output
  Up to 5kHz
- Delay Output
  High-to-Low and Low-to-High

Ordering Information
- ADAM-6250
  15-ch Isolated Digital I/O Modbus TCP Module
- ADAM-6251
  16-ch Isolated Digital Input Modbus TCP Module
- ADAM-6256
  16-ch Isolated Digital Output Modbus TCP Module

Common Specifications

General
- Ethernet
  2-port 10/100 Base-TX (for Daisy Chain)
- LED Indication
  ADAM-6250: 8 DI + 7 DO
  ADAM-6251: 16 DI
  ADAM-6256: 16 DO
- Protocol
  Modbus/TCP, TCP/IP, UDP, HTTP, DHCP
- Connector
  Plug-in 5P/15P screw terminal blocks
- Power Input
  10 - 30 VDC (24 VDC standard)
- Watchdog Timer
  System (1.6 seconds)
  Communication (Programmable)
- Dimensions
  70 x 122 x 27 mm
- Protection
  Built-in TVS/ESD protection
  Power Reversal protection
  Over Voltage protection: +/- 35Vdc
  Isolation protection: 2500 Vdc
- Power Consumption
  ADAM-6250: 3 W @ 24 Vdc
  ADAM-6251: 2.7 W @ 24 Vdc
  ADAM-6256: 3.2 W @ 24 Vdc

Features
- Daisy chain connection with auto-bypass protection
- Remote monitoring and control with smart phone/pad
- Group configuration capability for multiple module setup
- DI/O LED Indication
- Flexible user-defined Modbus address.
- Intelligent control ability by Peer-to-Peer and GCL function
- Multiple protocol support: Modbus TCP, TCP/IP, UDP, HTTP, DHCP
- Web language support: XML, HTML 5, Java Script
- System configuration backup
- User Access Control

Environment
- Operating Temperature
  -10 – 70°C (14 – 158°F)
- Storage Temperature
  -20 – 80°C (-4 – 176°F)
- Operating Humidity
  20 – 95% RH (non-condensing)
- Storage Humidity
  0 – 95% RH (non-condensing)
ADAM-6260
ADAM-6266

Specifications

**Relay Output**
- **Channels**
  - ADAM-6260: 5 Form C and 1 Form A
  - ADAM-6266: 4 Form C
- **Contact Rating**
  - 250 VAC @ 5A
  - 30 VDC @ 5A
- **Max. Switching Voltage**
  - 400 VAC
  - 300 VDC
- **Breakdown Voltage**
  - 500 VAC (50/60Hz)
- **Max. Breakdown Capacity**
  - 1250 VA
- **Frequency of Operation**
  - 360 operations/hour with load
  - 72,000 operations/hour without load
- **Set/Reset Time**
  - 8 ms/8 ms
- **Mechanical Endurance**
  - > 15 x 10^6 operations
- **Isolation between Contact**
  - 1000 Vrms
- **Insulation Resistance**
  - > 10 GΩ @ 500 VDC

**Digital Input**
- **Channels**
  - ADAM-6266: 4
- **Dry Contact**
  - Logic 0: Open
  - Logic 1: Closed to DI COM
- **Wet Contact**
  - Logic 0: 0 ~ 3 VDC or 0 ~ -3 VDC
  - Logic 1: 10 ~ 30 VDC or -10 ~ -30 VDC
  - (Dry/Wet Contact decided by Switch)
- **Input Impedance**
  - 5.2 kΩ
- **Transition Time**
  - 0.2 ms
- **Frequency Input Range**
  - 0.1 ~ 3kHz
- **Counter Input**
  - 3kHz (32 bit + 1 bit overflow)
- **Keep/Discard Counter Value when power off**
- **Supports Inverted DI Status**

**Ordering Information**
- **ADAM-6260**
  - 6-ch Relay Output Modbus TCP Module
- **ADAM-6266**
  - 4-ch Relay Output Modbus TCP Module with 4-ch DI

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**Common Specifications**

**General**
- **Ethernet**
  - 2-port 10/100 Base-TX (for Daisy Chain)
- **LED Indication**
  - ADAM-6260: 6 RL
  - ADAM-6266: 4 RL + 4 DI
- **Protocol**
  - Modbus/TCP, TCP/IP, UDP, HTTP, DHCP
- **Connector**
  - Plug-in 5P/15P screw terminal blocks
- **Power Input**
  - 10 ~ 30 VDC (24 VDC standard)
- **Watchdog Timer**
  - System (1.6 seconds)
  - Communication (Programmable)
- **Dimensions**
  - 70 x 122 x 27 mm
- **Protection**
  - Built-in TVS/ESD protection
  - Power Reversal protection
  - Over Voltage protection: +/- 35VDC
  - Isolation protection: 2500 VDC
- **Power Consumption**
  - ADAM-6260: 4.5 W @ 24 VDC
  - ADAM-6266: 4.2 W @ 24 VDC

**Features**
- Daisy chain connection with auto-bypass protection
- Remote monitoring and control with smart phone/pad
- Group configuration capability for multiple module setup
- DI/O LED Indication
- Flexible user-defined Modbus address
- Intelligent control ability by Peer-to-Peer and GCL function
- Multiple protocol support: Modbus TCP, TCP/IP, UDP, HTTP, DHCP
- Web language support: XML, HTML 5, Java Script
- System configuration backup
- User Access Control

**Environment**
- **Operating Temperature**
  - -10 ~ 70°C (14 ~ 158°F)
- **Storage Temperature**
  - -20 ~ 80°C (-4 ~ 176°F)
- **Operating Humidity**
  - 20 ~ 95% RH (non-condensing)
- **Storage Humidity**
  - 0 ~ 95% RH (non-condensing)
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To view all of Advantech’s Data Acquisition Boards, please visit www.advantech.com/products.
The most significant criteria when selecting A/D hardware are:
1. Number of input channels
2. Single-ended or differential input signals
3. Sampling rate (in samples per second)
4. Resolution (usually measured in bits of resolution)
5. Input range (specified in full-scale volts)
6. Noise and nonlinearity

Analog Outputs (D/A)
The opposite of analog to digital conversion is digital to analog (D/A) conversion. This operation converts digital information into analog voltage or current. D/A devices allow a computer to control real-world events.

Digital Inputs and Outputs
Digital input/output functions are useful in applications such as contact closure and switch status monitoring, industrial On/Off control and digital communications.

Counter/Timer
A counter/timer can be used for event counting, flowmeter monitoring, frequency counting, pulse width measurement, time period measurement, and so on.

Advantech: The Source For What You Need
Advantech manufactures data acquisition hardware and software for measurement, monitoring and applications control. The following guide is provided to help you choose components for your data acquisition system.

Step 1: Know Your Fundamental Goal
Decide whether your DAQ system will be used primarily for measurement, monitoring, control, or analysis. Know the data requirements of your process, and know the number of data collection points in your system. Know the required data collection speed, the sampling rate, the type of measurement, the voltage or current being produced, the desired accuracy and the output resolution at each data collection point. Finally, know the timing of events in your system, and any special environmental conditions that exist.

Step 2: Hardware Selection
Select the hardware required to achieve your fundamental goal. Advantech provides plug-in boards for Analog-to-Digital, Digital-to-Analog, Digital I/O needs. Both ISA and PCI bus products are available. Your hardware selection should be based on five major criteria:
1. Number and types of channels
2. Differential or single-ended inputs
3. Resolution
4. Speed
5. Software compatibility with hardware

Step 3: Accessory Selection
Most applications require additional accessories which are available as separate items. These include:
1. Expansion peripherals to add channels to your system
2. Cables, signal conditioners and external boxes such as screw terminals or BNC accessories

Step 4: Software Selection
More than any other single factor, software will determine your system start-up time, as well as its effectiveness, suitability for your application, and ease of modification.

Three major criteria should determine the choice of software:
1. Operating system used
2. User programming expertise
3. Software compatibility with hardware
DAQNavi Introduction

What is DAQNavi?

DAQNavi is a Advantech next-generation driver package, for programmers to develop their application programs using Advantech DAQ boards or devices. This integrated driver package includes device drivers, SDK, tutorial and utility. With the user-friendly design, even the beginner can quickly get familiar with how to utilize DAQ hardware and write programs through the intuitive “Advantech Navigator” utility environment. Many example codes for different development environment dramatically decrease users’ programming time and effort.

You can go to www.advantech.com/DAQNavi for more information about Advantech DAQNavi.

Multiple Operating System Support

DAQNavi supports many popular operating systems (OS) used in automation applications. For different OSs, API functions will be the same, so users can simply install the driver without modifying their program again when migrating between two different OSs.

DAQNavi supports latest Windows 8/7/Vista/XP and Windows CE (both 32-bit and 64-bit). Besides Windows operating system, Linux is famous for its openness and flexibility. DAQNavi software package also support Linux OS including Ubuntu, Fedora, Debian, Suse distributions. For other distributions, please contact the local Advantech branch or dealer in your area.

Note: DAQNavi only supports Windows 8 desktop version. Windows RT version is not supported.

LabVIEW and Matlab Support

LabVIEW is popular graphical development environment used for measurement and automation. For LabVIEW user, DAQNavi offers two options for programming: Express VI and Polymorphic VIs. Express VI helps user quickly complete his programming without extra wiring. When user drags the Express VI on LabVIEW Block Diagram, a pop-up intuitive wizard window will appear and user can perform configurations. After that, the programming is done. So it is similar to the .NET Component DAQ Wizard used in Microsoft Visual Studio environment, making programming more easily. As for the Polymorphic VI, user can use several VIs and wiring to build more complex program. Except LabVIEW, DAQNavi also support Matlab programming.

.NET Support

DAQNavi offers a series of .NET Component object, that you can benefit from platform-unified feature by latest .NET technology. User can simply drag and drop the .NET Components within .NET programming environment, such as Microsoft Visual C# and VB .NET. An intuitive window (called “DAQNavi Wizard”) will pop-up, and user can perform all configurations by sequence. It is so-called “Configure & Run” programming. Programmers also can choose writing code manually with the .NET Component, to have a more flexible object calling. With Advantech CSCL technology, engineers can do the similar programming in an native environment such as Visual C++.

C++, Delphi, VB, BCB, Java and Qt Support

DAQNavi offers C++ Class Library (for VC++ and Borland C++ Builder) and ActiveX (for Visual Basic, Delphi, and BCB) for Native programming environment with the same calling interface as .NET Class Library. With DAQNavi Java class library and Qt class library, users can develop Java and Qt programs to migrate between different operating systems (including Windows and Linux).

Support Modules

DAQNavi supports all PCI Express, PCI, PC/104, and PCI-104 cards, as well as all USB DAQ devices.

DAQNavi Driver Package Architecture

Note: When you visit Advantech DAQNavi download website, you can find two software: (1) DAQNavi SDK (2) individual DAQNavi driver for specific hardware. You need to install these two software on your computer to utilize the hardware.
### Powerful Intuitive Utility: Advantech Navigator

#### Devices
You can see all your installed Advantech DAQ devices here, including the simulated DAQ device called "DemoDevice". In other words, you don't need any hardware installed on your computer to test all operations within DAQNavi. For each device, there are four items you can select.

1. **Device Setting**
   You can perform all hardware configurations for the selected device.

2. **Device Test**
   You can test all hardware functionality here, without any programming.

3. **Scenarios**
   Advantech defines commonly-used measurement and automation applications, named "scenarios" for users to refer. For each scenario, one example program is embedded within Advantech Navigator that you can execute it directly. Corresponding source code for each scenario is provided, written by different language (C#, VB .NET, C++, Delphi, Qt, VB6, and Java). Besides, wiring diagram for each scenario is available here.

4. **Reference**
   You can find the detailed user manual for the selected device.

#### Scenarios: Commonly-used for Measurement and Automation Applications

<table>
<thead>
<tr>
<th>Category</th>
<th>Scenario</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Analog Input</strong></td>
<td>Instant AI</td>
<td>Read single AI value once</td>
</tr>
<tr>
<td></td>
<td>Asynchronous One Buffered AI</td>
<td>Read a buffer of AI values once (Don't need to wait the acquisition is done to run other program)</td>
</tr>
<tr>
<td></td>
<td>Synchronous One Buffered AI</td>
<td>Read a buffer of AI values once (Need to wait the acquisition is done to run other program)</td>
</tr>
<tr>
<td></td>
<td>Streaming AI</td>
<td>Continuously read a buffer of AI values</td>
</tr>
<tr>
<td><strong>Analog Output</strong></td>
<td>Static AO</td>
<td>Change AO value once</td>
</tr>
<tr>
<td></td>
<td>Asynchronous One Waveform AO</td>
<td>Change AO value based on a pre-defined waveform once (Don't need to wait the generation is done to run other program)</td>
</tr>
<tr>
<td></td>
<td>Synchronous One Waveform AO</td>
<td>Change AO value based on a pre-defined waveform once (Need to wait the generation is done to run other program)</td>
</tr>
<tr>
<td></td>
<td>Streaming AO</td>
<td>Continuously change AO value based on a pre-defined waveform</td>
</tr>
<tr>
<td><strong>Digital Input</strong></td>
<td>Static DI</td>
<td>Read the selected DI port value once</td>
</tr>
<tr>
<td></td>
<td>DI Interrupt</td>
<td>When DI bit meets a pre-defined edge change (rising or falling), an interrupt is generated</td>
</tr>
<tr>
<td></td>
<td>DI Pattern Match Interrupt</td>
<td>When selected DI port meets pre-defined pattern, an interrupt is generated</td>
</tr>
<tr>
<td></td>
<td>DI Status Change</td>
<td>When the status of certain selected channel of DI port changes, an interrupt is generated</td>
</tr>
<tr>
<td><strong>Digital Output</strong></td>
<td>Static DO</td>
<td>Change DO values once</td>
</tr>
<tr>
<td></td>
<td>Delayed Pulse Generation</td>
<td>When a trigger from counter gate is met, a pulse is generated after a specific period</td>
</tr>
<tr>
<td></td>
<td>Pulse Output with Timer Interrupt</td>
<td>Continuously generate a periodic pulse train (using counter internal clock), and an event will be sent out at the same time</td>
</tr>
<tr>
<td></td>
<td>Event Counter</td>
<td>Continuously count the pulse number of signal from counter input</td>
</tr>
<tr>
<td></td>
<td>Frequency Measurement</td>
<td>Measure frequency of signal from counter input</td>
</tr>
<tr>
<td></td>
<td>Pulse Width Measurement</td>
<td>Measure pulse width of signal from counter input</td>
</tr>
<tr>
<td></td>
<td>PWM Output</td>
<td>Generate PWM (Pulse Width Modulation) signal</td>
</tr>
</tbody>
</table>

#### SDKs

1. **DAQ User Interface Manual**
   To shorten the development time, Advantech offer a lot of tutorial and reference documentation. There are two programming ways you can refer: (1) Class Library (2) Device Control. You can find instructions for programming. It not only teaches you how to create one application project, but also how to write the program with a programming chart and example code.

2. **Tutorial Video**
   If you don't know how to start creating a project, Advantech offers a tutorial video for your programming reference.
Introduction

Advantech DAQNavi Data Logger is ready-to-use application software that engineers can leverage its easy-to-use interface to perform data logging, display and recording. Without spending any time on programming, engineers can benefit from flexibility to acquire and store data from various Advantech data acquisition devices for their data logging tasks.

Features Details

Data Acquisition Devices Configuration

Before data logging measurement, engineers can do all necessary analog and digital input channels configuration using built-in DAQNavi wizard. Step-by-step instructions by intuitive window can help engineer easily complete related settings. Except real data acquisition devices, DAQNavi Data Logger also offer simulated device that engineers can do all operation without any hardware installed on computer.

Configuration Management by Project Files

Engineer can create and edit a project to include one or several data logging tasks. Within one project, data can be acquired and displayed from one or multiple data acquisition devices. Current input channels configurations and logging settings can be saved as a specific project file. Afterwards, engineer can open previous project file to load all configurations and start data logging tasks immediately.

Real-time Data Logging, Display and Recording

After data acquisition configuration is done, engineers can immediately start data acquisition and display the logging data on a real-time graph. The graph can be zoom in, zoom out or pan dynamically during data logging. Engineers can decide if they want to record the data (save data into a pre-defined file) during data logging.

Historical Data Playback

Previous recorded data can be loaded back to DAQNavi Data Logger software and viewed by Playback function. Related zoom in, zoom out and pan operation is also available for historical data display.

Specifications

Supported Hardware

- PCI Express multifunction, analog input and digital input cards
- PCI multifunction, analog input and digital input cards
- USB multifunction, analog input and digital input modules
- PC/104 and PCI-104 multifunction, analog input and digital input cards
<table>
<thead>
<tr>
<th>Category</th>
<th>Multifunction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bus</strong></td>
<td>PCI</td>
</tr>
<tr>
<td><strong>Model</strong></td>
<td><strong>PCI-1710U/UL</strong></td>
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<tr>
<td>Resolution</td>
<td>12 bits</td>
</tr>
<tr>
<td>Channels</td>
<td>16 SE/8 Diff.</td>
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<tr>
<td>Onboard FIFO</td>
<td>4,096 samples</td>
</tr>
<tr>
<td>Sampling Rate</td>
<td>100 kS/s</td>
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<tr>
<td><strong>Analog Input</strong></td>
<td></td>
</tr>
<tr>
<td>Input Ranges</td>
<td></td>
</tr>
<tr>
<td>Unipolar Inputs (V)</td>
<td>±10, 5, 2.5, 0.625</td>
</tr>
<tr>
<td></td>
<td>±10, 5, 2.5, 0.625</td>
</tr>
<tr>
<td>Bipolar Inputs (V)</td>
<td>±10, 5, 2.5, 0.625</td>
</tr>
<tr>
<td>Configurable Per-Channel</td>
<td></td>
</tr>
<tr>
<td>Pacer/Software/External Pulse</td>
<td></td>
</tr>
<tr>
<td>Analog Slope</td>
<td></td>
</tr>
<tr>
<td>Advanced Trigger</td>
<td></td>
</tr>
<tr>
<td>Data Transfer Modes</td>
<td>Software</td>
</tr>
<tr>
<td>DMA</td>
<td></td>
</tr>
<tr>
<td><strong>Analog Output</strong></td>
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<td>Resolution</td>
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<tr>
<td>Channels</td>
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<tr>
<td>Onboard FIFO</td>
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</tr>
<tr>
<td>Output Range (V)</td>
<td>0 – 5, 0 – 10</td>
</tr>
<tr>
<td>Output Rate</td>
<td>Static update</td>
</tr>
<tr>
<td>DMA Transfer</td>
<td>-</td>
</tr>
<tr>
<td>Input Channels</td>
<td>16</td>
</tr>
<tr>
<td>Output Channels</td>
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</tr>
<tr>
<td>Channels</td>
<td>1</td>
</tr>
<tr>
<td>Resolution</td>
<td>16 bits</td>
</tr>
<tr>
<td>Max. Input Frequency</td>
<td>10 MHz</td>
</tr>
<tr>
<td>Isolation Voltage</td>
<td></td>
</tr>
<tr>
<td>Auto Calibration</td>
<td></td>
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<tr>
<td>BoardID Switch</td>
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</tr>
<tr>
<td>Dimensions (mm)</td>
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<tr>
<td>Connector</td>
<td>68-pin SCSI</td>
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<tr>
<td>Legacy Driver</td>
<td>Windows XP/2000</td>
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<tr>
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<td>WinCE</td>
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<td>Linux</td>
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<td>WinCE</td>
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<tr>
<td>LabVIEW Driver</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Page</td>
<td>19-23</td>
</tr>
</tbody>
</table>

* All channels should be set to the same range.
** SS: Single DMA channel, Single A/D channel scan; SM: Single DMA channel, Multiple A/D channel scan.
<table>
<thead>
<tr>
<th>Category</th>
<th>Multifunction</th>
<th>ISA</th>
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<td>0 - 5, 0 - 10</td>
<td>0 - 5, 0 - 10</td>
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<td>Output Rate</td>
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<td>BoardID Switch</td>
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<td>Dimensions (mm)</td>
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<tr>
<td>Connector</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Windows XP/2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WinCE</td>
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<tr>
<td>Linux</td>
<td></td>
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<tr>
<td>Windows 8/7/Vista/XP/2000</td>
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<tr>
<td>WinCE</td>
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<td>Linux</td>
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<tr>
<td>LabVIEW Driver</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Page</td>
<td>19-27</td>
<td>19-27</td>
</tr>
</tbody>
</table>

* All channels should be set to the same range.
** SS: Single DMA channel, Single A/D channel scan; SM: Single DMA channel, Multiple A/D channel scan
## Analog I/O & Multifunction Card Selection Guide

<table>
<thead>
<tr>
<th>Category</th>
<th>PC/104</th>
<th>Multifunction</th>
<th>PCIe-104</th>
<th>PCIe-1810</th>
<th>PCIe-1816</th>
<th>PCIe-1816H</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bus</strong></td>
<td>PCM-3718H</td>
<td>PCM-3718HG</td>
<td>PCM-3718HO</td>
<td>PCM-3810I</td>
<td>PCIE-1810</td>
<td>PCIE-1816</td>
</tr>
<tr>
<td><strong>Model</strong></td>
<td>PCM-3810</td>
<td>PCM-3810I</td>
<td>PCIE-1810</td>
<td>PCIE-1816</td>
<td>PCIE-1816H</td>
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</table>

### General Spec.

<table>
<thead>
<tr>
<th>Resolution</th>
<th>PC/104</th>
<th>Multifunction</th>
<th>PCIe-104</th>
<th>PCIe-1810</th>
<th>PCIe-1816</th>
<th>PCIe-1816H</th>
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</thead>
<tbody>
<tr>
<td>Channels</td>
<td>12 bits</td>
<td>12 bits</td>
<td>12 bits</td>
<td>12 bits</td>
<td>12 bits</td>
<td>16 bits</td>
</tr>
<tr>
<td>Onboard FIFO</td>
<td>1,024 samples</td>
<td>4,096 samples</td>
<td>4,096 samples</td>
<td>4,096 samples</td>
<td>4,096 samples</td>
<td>4,096 samples</td>
</tr>
<tr>
<td>Sampling Rate</td>
<td>100 kS/s</td>
<td>100 kS/s</td>
<td>100 kS/s</td>
<td>250 kS/s</td>
<td>500 kS/s</td>
<td>500 kS/s</td>
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### Input Ranges

<table>
<thead>
<tr>
<th>Unipolar Inputs (V)</th>
<th>PC/104</th>
<th>Multifunction</th>
<th>PCIe-104</th>
<th>PCIe-1810</th>
<th>PCIe-1816</th>
<th>PCIe-1816H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bipolar Inputs (V)</td>
<td>±10, 5, 2.5, 1.25, 0.625</td>
<td>±10, 5, 1, 0.5, 0.1, 0.05, 0.01, 0.005</td>
<td>±10, 5, 2.5, 1.25, 0.625</td>
<td>±10, 5, 2.5, 1.25, 0.625</td>
<td>±10, 5, 2.5, 1.25, 0.625</td>
<td>±10, 5, 2.5, 1.25, 0.625</td>
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### Configurable Per-Channel

<table>
<thead>
<tr>
<th>Pacemaker/Software/External Pulse</th>
<th>PC/104</th>
<th>Multifunction</th>
<th>PCIe-104</th>
<th>PCIe-1810</th>
<th>PCIe-1816</th>
<th>PCIe-1816H</th>
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### Analog Output

<table>
<thead>
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<th>PCIe-104</th>
<th>PCIe-1810</th>
<th>PCIe-1816</th>
<th>PCIe-1816H</th>
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</thead>
<tbody>
<tr>
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<td>16 bits</td>
<td>16 bits</td>
<td>16 bits</td>
<td>16 bits</td>
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<tr>
<td>Onboard FIFO</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4,096 samples</td>
<td>4,096 samples</td>
<td>4,096 samples</td>
</tr>
<tr>
<td>Output Range (V)</td>
<td>-</td>
<td>-</td>
<td>0 ~ 5, 0 ~ 10</td>
<td>±5, ±10</td>
<td>±5, ±10</td>
<td>±5, ±10</td>
</tr>
<tr>
<td>Output Rate</td>
<td>-</td>
<td>-</td>
<td>Static update</td>
<td>250 kS/s</td>
<td>500 kS/s/s</td>
<td>3 MS/s</td>
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### Digital I/O

<table>
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<th>PC/104</th>
<th>Multifunction</th>
<th>PCIe-104</th>
<th>PCIe-1810</th>
<th>PCIe-1816</th>
<th>PCIe-1816H</th>
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<tbody>
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<td>16 bits</td>
<td>16 bits</td>
<td>16 bits</td>
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<tr>
<td>Max. Input Frequency</td>
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<td>10 MHz</td>
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### Dimensions (mm)

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<th>2 x 20-pin</th>
<th>2 x 20-pin</th>
<th>2 x 20-pin</th>
<th>50-pin/26-pin box header</th>
<th>68-pin SCSI</th>
<th>68-pin SCSI</th>
<th>68-pin SCSI</th>
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### Legacy Driver

<table>
<thead>
<tr>
<th>Windows XP/2000</th>
<th>PC/104</th>
<th>Multifunction</th>
<th>PCIe-104</th>
<th>PCIe-1810</th>
<th>PCIe-1816</th>
<th>PCIe-1816H</th>
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</thead>
<tbody>
<tr>
<td>WinCE</td>
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### DMA/IEEE Driver

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<tbody>
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<td>-</td>
<td>-</td>
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</tr>
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<td>Linux</td>
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### LabVIEW Driver

<table>
<thead>
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<th>Multifunction</th>
<th>PCIe-104</th>
<th>PCIe-1810</th>
<th>PCIe-1816</th>
<th>PCIe-1816H</th>
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</table>

* 80 kHz on Pentium 4-based (or upper) system
** SS: Single DMA channel, Single A/D channel scan
<table>
<thead>
<tr>
<th>Category</th>
<th>Analog Input</th>
<th>Analog Output</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bus</strong></td>
<td><strong>PCI</strong></td>
<td><strong>ISA</strong></td>
</tr>
<tr>
<td><strong>Model</strong></td>
<td><strong>PCI-1713U</strong></td>
<td><strong>PCI-1714U</strong></td>
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<td>12 bits</td>
<td>12 bits</td>
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<tr>
<td>Channels</td>
<td>32 SE/16 Diff.</td>
<td>4 SE</td>
</tr>
<tr>
<td>Onboard FIFO</td>
<td>4,096 samples</td>
<td>32,768 samples</td>
</tr>
<tr>
<td>Sampling Rate</td>
<td>100 kS/s</td>
<td>30 MS/s</td>
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<tr>
<td>Unipolar Inputs (V)</td>
<td>0 ~ 10, 0 ~ 5</td>
<td>0 ~ 2.5, 0 ~ 1.25</td>
</tr>
<tr>
<td>Bipolar Inputs (V)</td>
<td>±10, 5, 2.5, 1.25, 0.625</td>
<td>±5, 2.5, 1, 0.5</td>
</tr>
<tr>
<td>Configurable Per-Channel</td>
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<td>✓</td>
</tr>
<tr>
<td>Pacer/Software/External Pulse</td>
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<td>✓</td>
</tr>
<tr>
<td>Analog Slope</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Advanced Trigger</td>
<td>-</td>
<td>✓</td>
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<tr>
<td>Data Transfer Modes</td>
<td>Software</td>
<td>✓</td>
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<tr>
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<tr>
<td>Resolution</td>
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<tr>
<td>Channels</td>
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</tr>
<tr>
<td>Onboard FIFO</td>
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</tr>
<tr>
<td>Output Range (V)</td>
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<td>-</td>
</tr>
<tr>
<td>Output Rate</td>
<td>-</td>
<td>-</td>
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<tr>
<td>DMA Transfer</td>
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<tr>
<td>Input Channels</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Output Channels</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Channels</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Resolution</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Max. Input Frequency</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Isolation Voltage</td>
<td>2,500 VDC</td>
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</tr>
<tr>
<td>Auto Calibration</td>
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<tr>
<td>BoardID Switch</td>
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</tr>
<tr>
<td>Dimensions (mm)</td>
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<td>175 x 100</td>
</tr>
<tr>
<td>Connector</td>
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<td>4 x BNC</td>
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<td>✓</td>
</tr>
<tr>
<td>Windows 7/Vista/XP/2000 Driver</td>
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<td>✓</td>
</tr>
<tr>
<td>Linux</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>DAQNavi Driver</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>LabVIEW Driver</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
| Page | 19-29 | 19-28 | 19-28 | 19-29 | 19-30 | online | 19-47 | 19-31 | 19-32 | **80 kHz on Pentium 4-based (or upper) system**

* SS: Single DMA channel, Single A/D channel scan
### Data Acquisition Boards

#### Digital I/O & Counter Card Selection Guide

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<tr>
<th>Category</th>
<th>Analog Output</th>
<th>ISA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bus</strong></td>
<td>PCI</td>
<td>ISA</td>
</tr>
<tr>
<td><strong>Model</strong></td>
<td>PCI-1723</td>
<td>PCI-1724U</td>
</tr>
<tr>
<td><strong>Analog Input</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>General Spec.</strong></td>
<td>Resolution</td>
<td>Channels</td>
</tr>
<tr>
<td><strong>Input Ranges</strong></td>
<td>Unipolar Inputs (V)</td>
<td>Bipolar Inputs (V)</td>
</tr>
<tr>
<td><strong>Trigger Modes</strong></td>
<td>Pacer/Software/External Pulse</td>
<td>Analog Slope</td>
</tr>
<tr>
<td><strong>Data Transfer Modes</strong></td>
<td>Software</td>
<td>DMA</td>
</tr>
<tr>
<td><strong>Analog Output</strong></td>
<td>Resolution</td>
<td>Channels</td>
</tr>
<tr>
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<td>14 bits</td>
</tr>
<tr>
<td><strong>Output Rate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Output Range (V)</strong></td>
<td>±10, 0 - 20 mA, 4 - 20 mA</td>
<td>±10, 0 - 20 mA</td>
</tr>
<tr>
<td><strong>BoardID Switch</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions (mm)</strong></td>
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<td>175 x 100</td>
</tr>
<tr>
<td><strong>Connector</strong></td>
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<td>DB62</td>
</tr>
<tr>
<td><strong>Legacy Driver</strong></td>
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<tr>
<td><strong>WinCE</strong></td>
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<td>✓</td>
</tr>
<tr>
<td><strong>Linux</strong></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>DAQ/NAVY Driver</strong></td>
<td>Windows 8/7/Vista/XP/2000</td>
<td></td>
</tr>
<tr>
<td><strong>WinCE</strong></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Linux</strong></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>LabVIEW Driver</strong></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Page</strong></td>
<td>19-33</td>
<td>19-31</td>
</tr>
</tbody>
</table>

---

**Legacy Driver**
- Windows XP/2000
- WinCE
- Linux

**DAQ/NAVY Driver**
- Windows 8/7/Vista/XP/2000
- WinCE
- Linux

**LabVIEW Driver**
- ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
## Category: Non-Isolated Digital I/O

<table>
<thead>
<tr>
<th>Bus</th>
<th>Model</th>
<th>Input Channels</th>
<th>Output Channels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PCI-1735U</td>
<td>32 (shared)</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>PCI-1737U</td>
<td>24 (shared)</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>PCI-1739U</td>
<td>48 (shared)</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>PCI-1751</td>
<td>48 (shared)</td>
<td>48</td>
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<td></td>
<td>PCI-1753</td>
<td>96 (shared)</td>
<td>96</td>
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<td>PCI-1755</td>
<td>96 (shared)</td>
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</tr>
<tr>
<td></td>
<td>PCI-1757UP</td>
<td>32 (shared)</td>
<td>32</td>
</tr>
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</table>

### TTL DI/O

<table>
<thead>
<tr>
<th>Channel</th>
<th>Sink Current</th>
<th>Source Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>24 mA @ 0.5V</td>
<td>15 mA @ 2.0V</td>
</tr>
<tr>
<td>Output</td>
<td>24 mA @ 0.4 V</td>
<td>24 mA @ 2.4 V</td>
</tr>
</tbody>
</table>

### Isolated DI/O

<table>
<thead>
<tr>
<th>Channel</th>
<th>Isolation Voltage</th>
<th>Input Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Output</td>
<td>-</td>
<td>-</td>
</tr>
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</table>

### Timer/Counter

<table>
<thead>
<tr>
<th>Channel</th>
<th>Resolution</th>
<th>Max. Input Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>16 bits</td>
<td>10 MHz</td>
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</tbody>
</table>

### Advanced Function

<table>
<thead>
<tr>
<th>Pattern Match</th>
<th>Change of State</th>
<th>BoardID Switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>✓</td>
</tr>
</tbody>
</table>

### Dimensions (mm)

<table>
<thead>
<tr>
<th>Connector</th>
<th>5 x 20-pin</th>
<th>1 x 50-pin</th>
<th>2 x 50-pin</th>
<th>68-pin PCI</th>
<th>100-pin SCSI</th>
<th>100-pin SCSI-II</th>
<th>1 x DB25</th>
</tr>
</thead>
<tbody>
<tr>
<td>175 x 100</td>
<td>175 x 100</td>
<td>175 x 100</td>
<td>175 x 100</td>
<td>175 x 100</td>
<td>175 x 100</td>
<td>120 x 65</td>
<td></td>
</tr>
</tbody>
</table>

### Legacy Driver

| Windows XP/2000 | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WinCE | - | - | - | - | - | - | - |
| Linux | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

### DAQnav Driver

| Windows 8/7/Vista/XP/2000 | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WinCE | - | - | - | - | - | - | - |
| Linux | - | - | - | ✓ | ✓ | ✓ | ✓ |

### LabVIEW Driver

| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

* Dry/wet contact can be mixed at the same time within one group.
## Digital I/O & Counter Card Selection Guide

<table>
<thead>
<tr>
<th>Category</th>
<th>Non-Isolated Digital I/O</th>
<th>ISA</th>
<th>PC/104</th>
<th>PCI-104</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus: TTL DIO</td>
<td>PCL-720+</td>
<td>PCL-722</td>
<td>PCL-724</td>
<td>PCL-731</td>
</tr>
<tr>
<td>Model:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input Channels</td>
<td>32</td>
<td>144 (shared)</td>
<td>24 (shared)</td>
<td>48 (shared)</td>
</tr>
<tr>
<td>Output Channels</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sink Current</td>
<td>24 mA @ 0.5 V</td>
<td>24 mA @ 0.4 V</td>
<td>24 mA @ 0.4 V</td>
<td>24 mA @ 0.4 V</td>
</tr>
<tr>
<td>Source Current</td>
<td>15 mA @ 2.0 V</td>
<td>-15 mA @ 2.4 V</td>
<td>15 mA @ 2.4 V</td>
<td>15 mA @ 2.4 V</td>
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<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input Channels</td>
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<tr>
<td>Isolation Voltage</td>
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<td>-</td>
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</tr>
<tr>
<td>Input Range</td>
<td>-</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Output: Isolated DIO</td>
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</tr>
<tr>
<td>Channels</td>
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</tr>
<tr>
<td>Isolation Voltage</td>
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* Dry/wet contact can be mixed at the same time within one group.
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<td>2 A @ 30 VAC</td>
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<td>168 x 100</td>
<td>168 x 100</td>
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<td>-</td>
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<tr>
<td></td>
<td>Linux</td>
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</tr>
<tr>
<td>LabVIEW Driver</td>
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</table>

* Dry/wet contact can be mixed at the same time within one group.
### Digital I/O & Counter Card Selection Guide

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<tr>
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<th>Isolated Digital I/O</th>
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<tbody>
<tr>
<td><strong>Bus</strong></td>
<td>PCI</td>
</tr>
<tr>
<td><strong>Model</strong></td>
<td>PCI-1730U PCI-1733 PCI-1734 PCI-1750 PCI-1752U PCI-1754</td>
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<tr>
<td><strong>Input Channels</strong></td>
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</tr>
<tr>
<td><strong>Output Channels</strong></td>
<td>16 - - - - -</td>
</tr>
<tr>
<td><strong>Output Channel</strong></td>
<td>24 mA @ 0.5 V - - - - -</td>
</tr>
<tr>
<td><strong>Source Current</strong></td>
<td>15 mA @ 2.4 V - - - - -</td>
</tr>
<tr>
<td><strong>Input Channels</strong></td>
<td>16 32 - 16 - 64</td>
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<tr>
<td><strong>Isolation Voltage</strong></td>
<td>2,500 VDC 2,500 VDC - 2,500 VDC - 2,500 VDC</td>
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<td><strong>Input Range</strong></td>
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<td><strong>Output Channels</strong></td>
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<td><strong>Output Range</strong></td>
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<td><strong>Timer/Counter</strong></td>
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<td><strong>Resolution</strong></td>
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<td><strong>Max. Input Frequency</strong></td>
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<tr>
<td><strong>BoardID Switch</strong></td>
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<tr>
<td><strong>Change of State</strong></td>
<td>- - - - -</td>
</tr>
<tr>
<td><strong>Channel-Freeze Function</strong></td>
<td>✓ - - - ✓ ✓</td>
</tr>
<tr>
<td><strong>Advanced Function</strong></td>
<td>- - - - -</td>
</tr>
<tr>
<td><strong>Output Status Read Back</strong></td>
<td>✓ - - - ✓ ✓</td>
</tr>
<tr>
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<td><strong>Dimensions (mm)</strong></td>
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<td><strong>Connector</strong></td>
<td>1 x DB37 4 x 20-pin 1 x DB37 1 x DB37 1 x DB37 100-pin SCSI 100-pin SCSI</td>
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<tr>
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<td>Windows XP/2000 ✓ ✓ ✓ ✓ ✓ ✓</td>
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<tr>
<td><strong>WinCE</strong></td>
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</tr>
<tr>
<td><strong>Linux</strong></td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
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<tr>
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<td><strong>WinCE</strong></td>
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<tr>
<td><strong>Linux</strong></td>
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<tr>
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* Dry/wet contact can be mixed at the same time within one group.
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<tr>
<td><strong>Model</strong></td>
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<td><strong>Input Channels</strong></td>
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</tr>
<tr>
<td><strong>Output Channels</strong></td>
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<tr>
<td><strong>TTL DI/O</strong></td>
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<td><strong>Input Channels</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Output Channels</strong></td>
<td>-</td>
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<td><strong>Isolated DI/O</strong></td>
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<td><strong>Output Channels</strong></td>
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<td><strong>Timers/Counters</strong></td>
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<td><strong>Resolution</strong></td>
<td>-8 x Up CTR, 2 x PWM</td>
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<tr>
<td><strong>Max. Input Frequency</strong></td>
<td>500 Hz for Up CTR</td>
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<td><strong>Advanced Function</strong></td>
<td>- Pattern Match, Change of State, BoardID Switch, Channel-Free Function, Output Status Read Back, Dry/Wet Contact*</td>
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<td><strong>Connector</strong></td>
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# Digital I/O & Counter Card Selection Guide

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<th>Isolated Digital I/O</th>
<th>Counter</th>
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<tr>
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<td>Change of State</td>
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<td>BoardID Switch</td>
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<td>Channel-Freeze Function</td>
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<td>Output Status Read Back</td>
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* Dry/wet contact can be mixed at the same time within one group.
** Jumper selectable Form A/Form B-type relay output
**PCIE-1730**

**32-ch TTL and 32-ch Isolated Digital I/O PCI Express Card**

**Features**
- 32-ch isolated DI/O (16-ch digital input, 16-ch digital output)
- 32-ch TTL DI/O (16-ch digital input, 16-ch digital output)
- High output driving capacity
- Interrupt handling capability
- 2 x 20-pin connectors for isolated DI/O channels and 2 for TTL DI/O channels
- D-type connector for isolated input and output channels
- High-voltage isolation on output channels (2,500 V<sub>DC</sub>)

**Introduction**
PCIE-1730 offers isolated digital input channels as well as isolated digital output channels with isolation protection up to 2,500 V<sub>DC</sub>, which makes them ideal for industrial applications where high-voltage isolation is required. There are also 32 TTL digital I/O channels on PCIE-1730.

**Specifications**

### Digital Input
- **Channels**: 16
- **Compatibility**: 5 V/TTL
- **Input Voltage**
  - Logic 0: 0.8 V max.
  - Logic 1: 2.0 V min.
- **Interrupt Capable Ch.**: 2 (DI0, DI8)

### Isolated Digital Input
- **Channels**: 16
- **Input Voltage**
  - Logic 0: 3 V max.
  - Logic 1: 10 V min. (30 V max.)
- **Interrupt Capable Ch.**: 2 (IDI0, IDI8)
- **Isolation Protection**: 2,500 V<sub>DC</sub>
- **Opto-Isolator Response**: 50 μs
- **Input Resistance**: 2.7 kΩ @ 1 W

### Digital Output
- **Channels**: 16
- **Compatibility**: 5 V/TTL
- **Output Voltage**
  - Logic 0: 0.8 V max.
  - Logic 1: 2.0 V min.
- **Output Capability**
  - Sink: 24 mA @ 0.8 V
  - Source: 15 mA @ 2.0 V

### Isolated Digital Output
- **Channels**: 16
- **Output Type**: Sink type (NPN)
- **Isolation Protection**: 2,500 V<sub>DC</sub>
- **Output Voltage**: 5 – 40 V<sub>DC</sub>
- **Sink Current**: 500 mA max./channel
- **Opto-Isolator Response**: 50 μs

### General
- **Bus Type**: PCI Express V1.0
- **I/O Connectors**: 1 x DB37 female connector
  - 4 x 20-pin box header
- **Dimensions (L x H)**: 168 x 100 mm (6.6” x 3.9”)
- **Power Consumption**
  - Typical: 3.3 V @ 280 mA, 12 V @ 330 mA
  - Max.: 3.3 V @ 420 mA, 12 V @ 400 mA
- **Operating Temperature**: 0 – 60°C (32 – 140°F)
- **Storage Temperature**: -25 – 85°C (-13 – 185°F)
- **Storage Humidity**: 5 – 95% RH, non-condensing

### Ordering Information
- **PCIE-1730**: 32-ch Isolated Digital I/O PCIe Card

### Accessories
- **PCL-10120-1E**: 20-pin Flat Cable, 1 m
- **PCL-10120-2E**: 20-pin Flat Cable, 2 m
- **ADAM-3920**: 20-pin Din-rail Flat Cable Wiring Board
- **PCLD-782**: 16-ch Isolated DI Board w/ 1m 20-pin Flat Cable
- **PCLD-885**: 16-ch Power Relay Board w/ 20p & 50p Flat Cables
- **PCLD-785**: 16-ch Relay Board w/ 1m 20-pin Flat Cable
- **ADAM-3937**: DB37 Din-rail Wiring Board
- **PCL-10137-1E**: DB37 Cable, 1 m
- **PCL-10137-2E**: DB37 Cable, 2 m
- **PCL-10137-3E**: DB37 Cable, 3 m
PCIE-1751
PCIE-1753
48-ch Digital I/O and 3-ch Counter PCI Express Card
96-ch Digital I/O PCI Express Card

Introduction
PCIE-1751 is a 48-bit digital I/O card for the PCI Express bus. Its 48 channels are divided into six 8-bit I/O ports and users can configure each 4-channel per port (nibble) as input or output via software. PCIE-1751 also provides three 32-bit counters.

Specifications
Digital Input
- Channels: 48 (shared with output)
- Compatibility: 5 V/TTL
- Input Voltage: Logic 0: 0.8 V max.
  Logic 1: 2 V min.
- Interrupt Capable Ch.: 6

Digital Output
- Channels: 48 (shared with input)
- Compatibility: 5 V/TTL
- Output Voltage: Logic 0: 0.4 V max.
  Logic 1: 2.4 V min.
- Output Capability: Sink: 15 mA @ 0.8 V
  Source: 15 mA @ 2.0 V

Counter/Timer
- Channels: 3
- Resolution: 3 x 32-bit counter
- Compatibility: 5 V/TTL
- Max. Input Frequency: 10 MHz
- Reference Clock: Internal: 20K / 200K / 2M / 20MHz
  External Clock Frequency: 10 MHz
  External Voltage Range: 5 V/TTL

General
- Bus Type: Universal PCI Express
- I/O Connectors: 1 x 68-pin SCSI female connector
- Dimensions (L x H): 168 x 100 mm (6.6" x 3.9")
- Power Consumption: Typical: 3.3 V @ 850 mA
  Max.: 3.3V @ 2.63 A
  Note: The maximum power consumption includes
  power consumption for +5 V output (on pin 34 and pin
  68, with 0.5 A)
- Operating Temperature: 0~60°C (32~140°F)
- Storage Temperature: -20 to -70°C (-4~158°F)
- Storage Humidity: 5 ~ 95% RH, non-condensing

Features
- Emulates mode 0 of 8255 PPI (every port with nibble)
- Buffered circuits for higher driving capacity than the 8255
- Interrupt handling capability
- Timer/Counter interrupt capability
- Supports both dry and wet contact
- Keeps the I/O port setting and DO state after system reset
- Board/D switch
- Pattern match interrupt function for DI
- "Change of state" interrupt function for DI
- Programmable digital filter function for DI
- Output status read back

Ordering Information
- PCIE-1751: 48-ch Digital I/O and 3-ch Counter PCI Express

Accessories
- PCL-10168-1E: 68-pin SCSI Shielded Cable, 1 m
- PCL-10168-2E: 68-pin SCSI Shielded Cable, 2 m
- ADAM-3968: 68-pin DIN-rail SCSI Wiring Board
- ADAM-3968/20: 68-pin SCSI to 20-pin Box Header Board
- ADAM-3968/50: 68-pin SCSI to 50-pin Box Header Board
- PCLD-8751: 48-ch Isolated Digital Input Board
- PCLD-8761: 24-ch Replary/Isolated Digital Input Board
- PCLD-8762: 48-ch Relay Board

Pin Assignment
Introduction

The Advantech PCIE-1752, PCIE-1754 and PCIE-1756 series products offer 64 isolated digital input and output channels with 2,500 Vdc isolation protection. They feature a wide input range (10 – 30 Vdc), wide output range (5 – 40 Vdc) and high sink current (500mA/channel) can make PCIE-1752/1754/1756 series products easily used in industrial automation control systems. With the help of the latest Advantech driver - DAQNavi, users can perform the configuration and setting easily and efficiently in the programming.

Specifications

Isolated Digital Input
- Channels: PCIE-1754: 64, PCIE-1756: 32
- Input Voltage: Logic 0: 3 V max., Logic 1: 10 V min. (30 Vdc max.)
- Input Current: 10 Vdc @ 2.97 mA, 20 Vdc @ 6.35 mA, 30 Vdc @ 9.73 mA
- Interrupt Capable Ch.: PCIE-1754: 4, PCIE-1756: 2
- Isolation Protection: 2,500 Vdc
- Overvoltage Protection: 70 Vdc
- ESD Protection: 2,000 Vdc
- Opto-Isolator Response: 50 μs

Isolated Digital Output
- Channels: PCIE-1752: 64, PCIE-1756: 32
- Output Type: Sink (NPN)
- Isolation Protection: 2,500 Vdc
- Output Voltage: 5 – 40 Vdc
- Sink Current: 500 mA max./channel
- Opto-isolator Response: 50 μs

Features

PCIE-1752/1756
- Wide output range (5 – 40 Vdc)
- High sink current on isolated output channels (500mA max./ch)
- 2,000 Vdc ESD protection
- High-voltage isolation (2,500 Vdc)
- Interrupt handling capability

PCIE-1754/1756
- Wide input range (10 – 30 Vdc)
- Either +/- voltage input for DI by group
- High over-voltage protection (70 Vdc)
- High-voltage isolation (2,500 Vdc)
- Output status read-back
- Keeps the output settings and values after system hot reset
- Channel-freeze function

General
- Bus Type: PCI Express V1.0
- I/O Connectors: 1 x 100-pin SCSI female connector
- Dimensions (L x H): 168 x 100 mm (6.6” x 3.9”)
- Power Consumption
  - PCIE-1752: Typical: 3.3 V @ 485 mA, Max.: 3.3 V @ 530 mA, 12V @ 90 mA
  - PCIE-1754: Typical: 3.3 V @ 485 mA, Max.: 3.3 V @ 530 mA, 12V @ 90 mA
  - PCIE-1756: Typical: 3.3 V @ 385 mA, Max.: 3.3 V @ 430 mA, 12V @ 55 mA
- Operating Temperature: 0 – 60°C (32 – 140°F)
- Storage Temperature: -20 – 70°C (-4 – 158°F)
- Storage Humidity: 5 – 95% RH, non-condensing

Ordering Information
- PCIE-1752: 64-ch Isolated Digital Output PCI Express Card
- PCIE-1754: 64-ch Isolated Digital Input PCI Express Card
- PCIE-1756: 64-ch Isolated Digital I/O PCI Express Card

Accessories
- PCL-10250-1E: 100-pin SCSI to Two 50-pin SCSI Cable, 1 m
- PCL-10250-2E: 100-pin SCSI to Two 50-pin SCSI Cable, 2 m
- ADAM-3951: 50-pin DIN-rail Wiring Board w/LED Indicators
- PCL-101100M-3E: 100-pin SCSI to 100-pin SCSI Cable, 3 m
- ADAM-39100: 100-pin DIN-rail Wiring Board
**PCIE-1760**

8-ch Relay and 8-ch Isolated Digital Input PCI Express Card

**Features**
- 8 opto-isolated digital input channels with counter/timer function
- 8 relay actuator output channels
- 2 opto-isolated PWM outputs
- LED indicators to show activated relays
- Jumper selectable dry contact/wet contact input signals
- Up event counters for DI
- Programmable digital filter function for DI
- Pattern match interrupt function for DI
- “Change of state” interrupt function for DI
- BoardID switch

**Introduction**

PCIE-1760 relay actuator and isolated digital input card is a PC add-on card for the PCI Express bus. It meets the PCI Express standard Rev. 1.0. It provides 8 opto-isolated digital inputs with isolation protection of 2,500 Vdc for collecting digital inputs in noisy environments, 8 relay actuators that can be used as a on/off control devices or small power switches, and 2 isolated PWM (Pulse Width Modulation) outputs for custom applications.

For easy monitoring, each relay is equipped with one red LED to show its on/off status. Each isolated input supports both dry contact and wet contact so that it can easily interface with other devices when no voltage is present in the external circuit.

**Specifications**

**Isolated Digital Input**
- **Channels**: 8
- **Input Voltage**
  - Logic 0: 1.0 V max.
  - Logic 1: 4.5 V min. (12 V max.)
- **Interrupt Capable Ch.**: 8
- **Isolation Protection**: 2,500 Vdc
- **Opto-Isolator Response**: 25 μs
- **Input Resistance**: 2 kΩ 1/4 W

**Counter/Timer**
- **Channels**: 8
- **Resolution**: 16 bits
- **Compatibility**: 5 V/TTL
- **Max. Input Frequency**: 500 Hz
- **Isolation Protection**: 2,500 Vdc
- **PWM Channels**: 2
- **Digital Noise Filter**: Min. effective high input period ≥ [(2 – 65535) x 5 ms] + 5 ms
  - Min. effective low input period ≥ [(2 – 65535) x 5 ms] + 5 ms

**Relay Output**
- **Channels**: 8
- **Relay Type**: 2 x Form C, and 6 x Form A
- **Contact Rating**: 1 A @ 125 Vac, 2 A @ 30 Vdc
- **Max. Switching Power**: 125 VA, 60 W
- **Max. Switching Voltage**: 250 Vdc, 220 Vdc
- **Max. Switching Current**: 2 A
- **Operate/Release Time**: 5 / 3.5 ms max
- **Resistance**
  - Contact: 50 mΩ max.
  - Insulation: 100 MΩ min. @ 500 Vdc
- **Life Expectancy**
  - (Electrical): 3 x 10⁶ cycles min.: 2 A @ 30 Vdc, 1 A @ 125 Vdc
  - 10⁶ cycles min.: 1 A @ 30 Vdc, 0.5 A @ 125 Vdc

**General**
- **Bus Type**: PCI Express V1.0
- **I/O Connectors**: 1 x DB37 female connector
- **Dimensions (L x H)**: 168 x 100 mm (6.6” x 3.9”)
- **Power Consumption**
  - Typical: 5 V @ 450 mA
  - Max.: 5 V @ 850 mA
- **Operating Temperature**: 0 ~ 60°C (32 ~ 140°F)
- **Storage Temperature**: -20 ~ 70°C (-4 ~ 158°F)
- **Storage Humidity**: 5 ~ 95 % RH, non-condensing

**Ordering Information**
- **PCIE-1760**: 8-ch Relay/IDI PCIe Card w/ 10-ch Counter/Timer

**Accessories**
- **PCL-10137-1E**: DB37 Cable, 1 m
- **PCL-10137-2E**: DB37 Cable, 2 m
- **PCL-10137-3E**: DB37 Cable, 3 m
- **ADAM-3937**: DB37 DIN-rail Wiring Board

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**Features**

- 8 opto-isolated digital input channels with counter/timer function
- 8 relay actuator output channels
- 2 opto-isolated PWM outputs
- LED indicators to show activated relays
- Jumper selectable dry contact/wet contact input signals
- Up event counters for DI
- Programmable digital filter function for DI
- Pattern match interrupt function for DI
- “Change of state” interrupt function for DI
- BoardID switch

**Specifications**

**Isolated Digital Input**
- **Channels**: 8
- **Input Voltage**
  - Logic 0: 1.0 V max.
  - Logic 1: 4.5 V min. (12 V max.)
- **Interrupt Capable Ch.**: 8
- **Isolation Protection**: 2,500 Vdc
- **Opto-Isolator Response**: 25 μs
- **Input Resistance**: 2 kΩ 1/4 W

**Counter/Timer**
- **Channels**: 8
- **Resolution**: 16 bits
- **Compatibility**: 5 V/TTL
- **Max. Input Frequency**: 500 Hz
- **Isolation Protection**: 2,500 Vdc
- **PWM Channels**: 2
- **Digital Noise Filter**: Min. effective high input period ≥ [(2 – 65535) x 5 ms] + 5 ms
  - Min. effective low input period ≥ [(2 – 65535) x 5 ms] + 5 ms

**Relay Output**
- **Channels**: 8
- **Relay Type**: 2 x Form C, and 6 x Form A
- **Contact Rating**: 1 A @ 125 Vac, 2 A @ 30 Vdc
- **Max. Switching Power**: 125 VA, 60 W
- **Max. Switching Voltage**: 250 Vdc, 220 Vdc
- **Max. Switching Current**: 2 A
- **Operate/Release Time**: 5 / 3.5 ms max
- **Resistance**
  - Contact: 50 mΩ max.
  - Insulation: 100 MΩ min. @ 500 Vdc
- **Life Expectancy**
  - (Electrical): 3 x 10⁶ cycles min.: 2 A @ 30 Vdc, 1 A @ 125 Vdc
  - 10⁶ cycles min.: 1 A @ 30 Vdc, 0.5 A @ 125 Vdc

**General**
- **Bus Type**: PCI Express V1.0
- **I/O Connectors**: 1 x DB37 female connector
- **Dimensions (L x H)**: 168 x 100 mm (6.6” x 3.9”)
- **Power Consumption**
  - Typical: 5 V @ 450 mA
  - Max.: 5 V @ 850 mA
- **Operating Temperature**: 0 ~ 60°C (32 ~ 140°F)
- **Storage Temperature**: -20 ~ 70°C (-4 ~ 158°F)
- **Storage Humidity**: 5 ~ 95 % RH, non-condensing

**Ordering Information**
- **PCIE-1760**: 8-ch Relay/IDI PCIe Card w/ 10-ch Counter/Timer

**Accessories**
- **PCL-10137-1E**: DB37 Cable, 1 m
- **PCL-10137-2E**: DB37 Cable, 2 m
- **PCL-10137-3E**: DB37 Cable, 3 m
- **ADAM-3937**: DB37 DIN-rail Wiring Board

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**Introduction**

PCIE-1760 relay actuator and isolated digital input card is a PC add-on card for the PCI Express bus. It meets the PCI Express standard Rev. 1.0. It provides 8 opto-isolated digital inputs with isolation protection of 2,500 Vdc for collecting digital inputs in noisy environments, 8 relay actuators that can be used as a on/off control devices or small power switches, and 2 isolated PWM (Pulse Width Modulation) outputs for custom applications.

For easy monitoring, each relay is equipped with one red LED to show its on/off status. Each isolated input supports both dry contact and wet contact so that it can easily interface with other devices when no voltage is present in the external circuit.

**Specifications**

**Isolated Digital Input**
- **Channels**: 8
- **Input Voltage**
  - Logic 0: 1.0 V max.
  - Logic 1: 4.5 V min. (12 V max.)
- **Interrupt Capable Ch.**: 8
- **Isolation Protection**: 2,500 Vdc
- **Opto-Isolator Response**: 25 μs
- **Input Resistance**: 2 kΩ 1/4 W

**Counter/Timer**
- **Channels**: 8
- **Resolution**: 16 bits
- **Compatibility**: 5 V/TTL
- **Max. Input Frequency**: 500 Hz
- **Isolation Protection**: 2,500 Vdc
- **PWM Channels**: 2
- **Digital Noise Filter**: Min. effective high input period ≥ [(2 – 65535) x 5 ms] + 5 ms
  - Min. effective low input period ≥ [(2 – 65535) x 5 ms] + 5 ms

**Relay Output**
- **Channels**: 8
- **Relay Type**: 2 x Form C, and 6 x Form A
- **Contact Rating**: 1 A @ 125 Vac, 2 A @ 30 Vdc
- **Max. Switching Power**: 125 VA, 60 W
- **Max. Switching Voltage**: 250 Vdc, 220 Vdc
- **Max. Switching Current**: 2 A
- **Operate/Release Time**: 5 / 3.5 ms max
- **Resistance**
  - Contact: 50 mΩ max.
  - Insulation: 100 MΩ min. @ 500 Vdc
- **Life Expectancy**
  - (Electrical): 3 x 10⁶ cycles min.: 2 A @ 30 Vdc, 1 A @ 125 Vdc
  - 10⁶ cycles min.: 1 A @ 30 Vdc, 0.5 A @ 125 Vdc

**General**
- **Bus Type**: PCI Express V1.0
- **I/O Connectors**: 1 x DB37 female connector
- **Dimensions (L x H)**: 168 x 100 mm (6.6” x 3.9”)
- **Power Consumption**
  - Typical: 5 V @ 450 mA
  - Max.: 5 V @ 850 mA
- **Operating Temperature**: 0 ~ 60°C (32 ~ 140°F)
- **Storage Temperature**: -20 ~ 70°C (-4 ~ 158°F)
- **Storage Humidity**: 5 ~ 95 % RH, non-condensing

**Ordering Information**
- **PCIE-1760**: 8-ch Relay/IDI PCIe Card w/ 10-ch Counter/Timer

**Accessories**
- **PCL-10137-1E**: DB37 Cable, 1 m
- **PCL-10137-2E**: DB37 Cable, 2 m
- **PCL-10137-3E**: DB37 Cable, 3 m
- **ADAM-3937**: DB37 DIN-rail Wiring Board
PCIE-1810

800 kS/s, 12-bit, 16-ch PCI Express Multifunction DAQ Card

Introduction
The PCIE-1810 is a multifunction PCI Express card that includes digital I/O, analog I/O and counter functions. It also features a 800 kS/s 12-bit A/D converter and supports analog trigger for A/D data acquisition.

Specifications

Analog Input

- Channels
  - Single-ended: 16-ch
  - Differential: 8-ch
- Resolution: 12 bits
- Sample Rate
  - Single Channel: 800 kS/s max.
  - Multi-Channel: 500 kS/s max.

Note: The sampling rate for each channel will be affected by used channel number. For example, if 4 channels of PCIE-1810 are used, the sampling rate is 500k/4 = 125 kS/s per channel.

- Trigger Reference
  - Digital Trigger
  - Analog Trigger
- Trigger Mode
  - Start trigger, Delay to Start trigger
  - Stop trigger, Delay to Stop trigger
- FIFO Size: 4k samples
- Overvoltage Protection: 30 Vp-p
- Input Impedance: 1 GΩ
- Sampling Modes
  - Software and external clock
- Input Range
  - Software programmable

Gain

<table>
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<th>2</th>
<th>4</th>
<th>8</th>
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<td>0–2.5</td>
<td>0–1.25</td>
</tr>
</tbody>
</table>

| Absolute Accuracy (% of FSR)* | 0.1 | 0.1 | 0.2 | 0.2 | 0.4 |

Analog Output

- Channels: 2
- Resolution: 12 bits
- Output Rate: 500 kS/s max.
- Output Range
  - Software programmable

Internal Reference

- Unipolar
  - 0 – 5 V
  - 0 – 10 V
- Bipolar
  - -5 V – 5 V
  - -10 V – 10 V

External Reference

0 – 40 V ± V (|x| ≤ 10)

Digital I/O

- Channels: 24
- Compatibility: 5 V TTL
- Input Voltage
  - Logic 0: 0.8 V max.
  - Logic 1: 2.0 V min.
- Output Voltage
  - Logic 0: 0.8 V max.
  - Logic 1: 2.0 V min.
- Output Capability
  - Sink: 15 mA @ 0.8 V
  - Source: 15 mA @ 2.0 V

Counter

- Channels: 2
- Resolution: 32 bits
- Compatibility: 5 V TTL
- Max. Input Frequency: 10 MHz
- Pulse Generation
  - Yes
- Timebase Stability: 50 ppm

General

- Form factor: PCI Express x 1
- Triggering
  - 12 bits Analog x 2 / Digital x 2
- I/O Connector: 68-pin SCSI female connector
- Dimensions (L x W): 167 x 100 mm
- Max. Input Frequency: 10 MHz
- Pulse Generation: Yes
- Timebase Stability: 50 ppm

Operating Information

- Operating Temperature: 0 – 60°C (32 – 140°F) (refer to IEC 60068-2-1, 2)
- Storage Temperature: -40 – 70°C (-40 – 158°F)
- Storage Humidity: 5 – 95% RH non-condensing (refer to IEC 60068-2-3)

Ordering Information

- PCIE-1810
  - 800 kS/s, 12-bit Multifunction Card

Accessories

- PCL-10168-1E
  - 68-pin SCSI Shielded Cable with Noise Rejecting, 1 m
- PCL-10168-2E
  - 68-pin SCSI Shielded Cable with Noise Rejecting, 2 m
- PCL-10168-1E
  - 68-pin SCSI Shielded Cable, 1 m
- PCL-10168-2E
  - 68-pin SCSI Shielded Cable, 2 m
- ADAM-3968
  - 68-pin DIN-rail SCSI Wiring Board
Introduction

PCIE-1816/1816H is a 16-ch, up to 5 MS/s multi-function DAQ card and integrates digital I/O, analog I/O, and counter functions. The PCIE-1816/1816H also features analog and digital triggering, 2-ch 16-bit analog outputs with waveform generation capability, 24-ch programmable digital I/O lines, and two 32-bit general-purpose timer/counters.

Specifications

**Analog Input**
- **Channels**: Single-ended 16-ch, Differential 8-ch
- **Resolution**: 16 bits
- **Sample Rate**: PCIE-1816 Single Channel 1 MS/s max., Multi-Channel 500 kS/s max.
  PCIE-1816H Single Channel 5 MS/s max., Multi-Channel 1 MS/s max.

Note: The sampling rate for each channel will be affected by used channel number. For example, if 4 channels of PCIE-1816H are used, the sampling rate is 1/4 = 250 kS/s per channel.
- **Trigger Reference**: Analog Trigger, Digital Trigger
- **FIFO Size**: 4k samples
- **Overvoltage Protection**: 30 Vp-p
- **Input Impedance**: 1 GΩ
- **Sampling Mode**: Software and external clock
- **Input Range**: Software programmable

**Gain**

<table>
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<tr>
<th>Gain</th>
<th>0.5</th>
<th>1</th>
<th>2</th>
<th>4</th>
<th>8</th>
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<td>±5</td>
<td>±2.5</td>
<td>±1.25</td>
<td>±0.625</td>
</tr>
<tr>
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<td>0 ~ 10</td>
<td>0 ~ 5</td>
<td>0 ~ 2.5</td>
<td>0 ~ 1.25</td>
</tr>
</tbody>
</table>

**Absolute Accuracy (% of FSR)**

| 0.0075 | 0.0075 | 0.0075 | 0.008 | 0.008 |

**Digital I/O**
- **Channels**: 24
- **Compatibility**: 5 V/TTL
- **Input Voltage**: Logic 0: 0.8 V max.
  Logic 1: 2.0 V min.
- **Output Voltage**: Logic 0: 0.8 V max.
  Logic 1: 2.0 V min.
- **Output Capability**: Sink: 15 mA @ 0.8 V
  Source: 15 mA @ 2.0 V

**Counter**
- **Channels**: 2
- **Resolution**: 32 bits
- **Compatibility**: 5 V/TTL
- **Max. Input Frequency**: 10 MHz
- **Pulse Generation**: Yes
- **Timebase Stability**: 50 ppm

**General**
- **Form factor**: PCI Express x 1
- **Triggering**: 16 bits Analog x 2 / Digital x 2
- **I/O Connector**: 68-pin SCSI female connector
- **Dimensions (L x W)**: 167 x 100 mm
- **Power Consumption**
  | Typical | | Max. |
  |---------|-----------------|
  | 3.3 V @ 488 mA | 12 V @ 112 mA | 3.3 V @ 2.25 A |
  | 12 V @ 390 mA |
- **Operating Temperature**: 0 ~ 60°C (-32 ~ 140°F)
- **Storage Temperature**: -40 ~ 70°C (-40 ~ 158°F)
- **Storage Humidity**: 5 ~ 95% RH non-condensing

**Ordering Information**
- **PCIE-1816**: 1 MS/s, 16-bit Multifunction Card
- **PCIE-1816H**: 5 MS/s, 16-bit Multifunction Card

**Accessories**
- **PCL-10168H-1E**: 68-pin SCSI Shielded Cable with Noise Rejecting, 1 m
- **PCL-10168H-2E**: 68-pin SCSI Shielded Cable with Noise Rejecting, 2 m
- **PCL-10168-1E**: 68-pin SCSI Shielded Cable, 1 m
- **PCL-10168-2E**: 68-pin SCSI Shielded Cable, 2 m
- **ADAM-3968**: 68-pin DIN-rail SCSI Wiring Board
PCI-1710U/UL
PCI-1710HGU

100 kS/s, 12-bit, 16-ch Universal PCI Multifunction DAQ Card
100 kS/s, 12-bit, 16-ch Universal PCI Multifunction DAQ Card with High Gain

Features
- 16-ch single-ended or 8-ch differential or a combination of analog input
- 12-bit A/D converter, with up to 100 kHz sampling rate
- Programmable gain
- Automatic channel/gain scanning
- Onboard FIFO memory (4,096 samples)
- Two 12-bit analog output channels (PCI-1710U/HGU only)
- 16-ch digital input and 16-ch digital output
- Onboard programmable counter
- BoardID™ switch

Specifications

Analog Input
- Channels: 16 single-ended/8 differential (software programmable)
- Resolution: 12 bits
- FIFO Size: 4,096 samples
- Overvoltage Protection: 30Vp-p
- Input Impedance: 1 GΩ
- Sampling Modes: Software, onboard programmable pacer and external
- Input Range (V, software programmable) & Absolute Accuracy
  - PCI-1710U/UL
    - Gain: 0.5, 1, 2, 4, 8
    - Bipolar: ±10, ±5, ±2.5, ±1.25, ±0.625
    - Unipolar: N/A
    - Absolute Accuracy (% of FSR)*: 0.1, 0.1, 0.2, 0.2, 0.4
  - PCI-1710HGU
    - Gain: 0.5, 1, 5, 10, 50, 100, 500, 1000
    - Bipolar: ±10, ±5, ±2.5, ±1.25, ±0.625
    - Unipolar: N/A
    - Absolute Accuracy (% of FSR)*: 0.1, 0.1, 0.2, 0.2, 0.4, 0.4, 0.8, 0.8

  * ±1 LSB is added as the derivative for absolute accuracy

- Maximum Sampling Rate

<table>
<thead>
<tr>
<th>Model</th>
<th>Gain</th>
<th>Max. Sampling Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCI-1710U/UL</td>
<td>0.5, 1</td>
<td>100 kS/s</td>
</tr>
<tr>
<td>PCI-1710HGU</td>
<td>0.5, 1</td>
<td>100 kS/s</td>
</tr>
<tr>
<td></td>
<td>5, 10</td>
<td>35 kS/s</td>
</tr>
<tr>
<td></td>
<td>20, 100</td>
<td>7 kS/s</td>
</tr>
<tr>
<td></td>
<td>500, 1000</td>
<td>770 S/s</td>
</tr>
</tbody>
</table>

Digital Input
- Channels: 16
- Compatibility: 5 V/TTL
- Input Voltage: Logic 0: 0.8 V max.
  Logic 1: 2.0 V min.

Digital Output
- Channels: 16
- Compatibility: 5 V/TTL
- Output Voltage: Logic 0: 0.4 V max.
  Logic 1: 2.4 V min.
- Output Capability: Sink: 8.0 mA @ 0.8 V
  Source: 0.4 mA @ 2.0 V

Pacer/Counter
- Channels: 1
- Resolution: 16 bits
- Compatibility: 5 V/TTL
- Max. Input Frequency: 1 MHz

General
- Bus Type: Universal PCI V2.2
- I/O Connector: 1 x 68-pin SCSI female connector
- Dimensions (L x H): 175 x 100 mm (6.9” x 3.9”)
- Power Consumption: Typical: 5 V @ 850 mA
  Max.: 5 V @ 1.0 A
- Operating Temperature: 0 – 60°C (32 – 140°F)
- Storage Temperature: -20 – 70°C (-4 – 158°F)
- Storage Humidity: 5 – 95% RH non-condensing

Ordering Information
- PCI-1710U: 100 kS/s, 12-bit Multifunction Card
- PCI-1710UL: 100 kS/s, 12-bit Multifunction Card w/o AO
- PCI-1710HGU: 100 kS/s, 12-bit High-gain Multifunction Card

Accessories
- PCLD-8710: DIN-rail Wiring Board w/ CJC
- PCL-10168-1E: 68-pin SCSI Shielded Cable, 1 m
- PCL-10168-2E: 68-pin SCSI Shielded Cable, 2 m
- ADAM-3968: 68-pin DIN-rail SCSI Wiring Board

Analog Output (PCI-1710U/HGU only)
- Channels: 2
- Resolution: 12 bits
- Output Rate: Static update
- Output Range (V, software programmable)

<table>
<thead>
<tr>
<th>Model</th>
<th>Gain</th>
<th>Max. Sampling Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCI-1710U/UL</td>
<td>0.5, 1</td>
<td>100 kS/s</td>
</tr>
<tr>
<td>PCI-1710HGU</td>
<td>0.5, 1</td>
<td>100 kS/s</td>
</tr>
<tr>
<td></td>
<td>5, 10</td>
<td>35 kS/s</td>
</tr>
<tr>
<td></td>
<td>20, 100</td>
<td>7 kS/s</td>
</tr>
<tr>
<td></td>
<td>500, 1000</td>
<td>770 S/s</td>
</tr>
</tbody>
</table>

Note: The sampling rate for each channels will be affected by used channel number. For example, if 4 channels of PCI-1710U are used, the sampling rate is 100k/4 = 25 kS/s per channel.

- Internal Reference
  - Unipolar: 0 – 5 V
  - External Reference
    - 0 – ±x V @ –x V (10 ≤ x ≤ 10)

- Slew Rate: 10 V/μs
- Driving Capability: 3 mA
- Operation Mode: Static update
- Accuracy: INLE: ±1 LSB, DNLE: ±1 LSB
PCI-1711U/UL

100 kS/s, 12-bit, 16-ch Universal PCI Multifunction DAQ Card

Features
- 16-ch single-ended analog input
- 12-bit A/D converter, with up to 100 kHz sampling rate
- Programmable gain
- Automatic channel/gain scanning
- Onboard FIFO memory (1,024 samples)
- Two 12-bit analog output channels (PCI-1711U only)
- 16-ch digital input and 16-ch digital output
- Onboard programmable counter

Specifications

**Analog Input**
- Channels: 16 single-ended
- Resolution: 12 bits
- Max. Sampling Rate: 100 kS/s

Note: The sampling rate for each channels will be affected by used channel number. For example, if 4 channels are used, the sampling rate is 100k/4 = 25 kS/s per channel.
- FIFO Size: 1,024 samples
- Overvoltage Protection: 30 Vp-p
- Input Impedance: 2 MΩ/5 pF
- Sampling Modes: Software, onboard programmable pacer, or external

**Input Range (V, software programmable) & Absolute Accuracy**

<table>
<thead>
<tr>
<th>Absolute Accuracy (% of FSR)*</th>
<th>±10</th>
<th>±5</th>
<th>±2.5</th>
<th>±1.25</th>
<th>±0.625</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bipolar</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
<td>0.4</td>
</tr>
</tbody>
</table>

*±1 LSB is added as the derivative for absolute accuracy

**Analog Output (PCI-1711U only)**
- Channels: 2
- Resolution: 12 bits
- Output Rate: Static update
- Output Range: (Software programmable)

**Digital Output**
- Channels: 16
- Compatibility: 5 V/TTL
- Output Voltage: Logic 0: 0.8 V, Logic 1: 2.0 V
- Output Capability: Sink: 8.0 mA @ 0.8 V, Source: 0.4 mA @ 2.0 V

**Pacer/Counter**
- Channels: 1
- Resolution: 16 bits
- Compatibility: 5 V/TTL
- Max. Input Frequency: 10 MHz
- Reference Clock: Internal: 10 MHz

**General**
- Bus Type: Universal PCI V2.2
- I/O Connector: 1 x 68-pin SCSI female connector
- Dimensions (L x H): 175 x 100 mm (6.9" x 3.9")
- Power Consumption:
  - PCI-1711U: Typical: 5 V @ 700 mA, Max.: 5 V @ 1.0 A
  - PCI-1711UL: Typical: 5 V @ 850 mA, Max.: 5 V @ 1.0 A
- Operating Temperature: 0 ~ 60°C (32 ~ 140°F)
- Storage Temperature: -20 ~ 70°C (-4 ~ 158°F)
- Storage Humidity: 5 ~ 95% RH non-condensing

**Ordering Information**
- PCI-1711U: Entry-level 100 kS/s, 12-bit Multifunction Card
- PCI-1711UL: Entry-level 100 kS/s, 12-bit Multi. Card w/o AO

**Accessories**
- PCLD-8710: DIN-rail Wiring Board w/ CJC
- PCL-10168-1E: 68-pin SCSI Shielded Cable, 1 m
- PCL-10168-2E: 68-pin SCSI Shielded Cable, 2 m
- ADAM-3968: 68-pin DIN-rail SCSI Wiring Board
## PCI-1712/L

### 1 MS/s, 12-bit, 16-ch PCI Multifunction DAQ Card

#### Specifications

**Analog Input**
- **Channels**: 16 single-ended/ 8 differential (software programmable)
- **Resolution**: 12 bits
- **Max. Sampling Rate**: Multi-channel, single gain: 1 MS/s; Multi-channel, multi gain: 600 kS/s; Multi-channel, multi gain, unipolar/bipolar: 400 kS/s, 1,024 samples
- **FIFO Size**: 1,024 samples
- **Sampling Modes**: Software, onboard programmable pacer and external
- **Trigger Modes**: Pre-trigger, post-trigger, delay-trigger and about-trigger
- **Input Range (V, software programmable) & Absolute Accuracy**
<table>
<thead>
<tr>
<th>Unipolar</th>
<th>N/A</th>
<th>0</th>
<th>0.5</th>
<th>0 - 2.5</th>
<th>0 - 12.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bipolar</td>
<td>±10</td>
<td>±5</td>
<td>±2.5</td>
<td>±2.5</td>
<td>±0.625</td>
</tr>
<tr>
<td>Absolute Accuracy (% of FSR)*</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>±1 LSB is added as the derivative for absolute accuracy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Analog Output (PCI-1712 only)**
- **Channels**: 2
- **Resolution**: 12 bits
- **Output Rate**: 1 MS/s max.
- **FIFO Size**: 32,768 samples
- **Output Range**: (Software programmable)
  - **Bipolar**: ±5 V, ±10 V
  - **Unipolar**: 0 - 5 V, 0 - 10 V

#### Digital Output
- **Channels**: 16
- **Compatibility**: 5 V/TTL
- **Output Voltage**: Logic 0: 0.8 V max.
- **Output Capability**: Logic 1: 2.0 V min.

#### Pacer/Counter
- **Channels**: 3
- **Resolution**: 16 bits
- **Compatibility**: 5 V/TTL
- **Max. Input Frequency**: 10 MHz
- **Reference Clock**: Internal: 10 MHz, 1 MHz, 100 kHz, 10 kHz
  - External Frequency: 10 MHz max.

#### General
- **Bus Type**: PCI V 2.2
- **I/O Connector**: 1 x 68-pin SCSI female connector
- **Dimensions (L x H)**: 175 x 100 mm (6.9” x 3.9”)
- **Power Consumption**: Typical: 5 V @ 850 mA, 12 V @ 600 mA
  - Max.: 5 V @ 1.0 A, 12 V @ 700 mA
- **Operating Temperature**: 0 – 60°C (32 – 140°F)
- **Storage Temperature**: -20 – 85°C (-4 – 185°F)
- **Storage Humidity**: 5 – 95% RH non-condensing

#### Ordering Information
- **PCI-1712**: 1 MS/s, 12-bit High-speed Multifunction PCI Card
- **PCI-1712L**: 1 MS/s, 12-bit High-speed Multi. PCI Card w/o AO

#### Accessories
- **PCLD-8712**: DIN-rail Wiring Board for PCI-1712/L
- **PCL-10168-1E**: 68-pin SCSI Shielded Cable, 1 m
- **PCL-10168-2E**: 68-pin SCSI Shielded Cable, 2 m
- **ADAM-3968**: 68-pin DIN-rail SCSI Wiring Board

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### Features

- 16 single-ended or 8 differential or a combination of analog inputs
- 12-bit A/D converter, with up to 1 MHz sampling rate
- Programmable gain
- Automatic channel/gain scanning
- Onboard FIFO memory (AI: 1,024 samples AO: 32,768 samples)
- Two 12-bit analog output channels with continuous waveform output function (PCI-1712 only)
- 16-ch digital input and 16-ch digital output
- Three 16-bit programmable multifunction counter/timers on 10 MHz
- Auto-calibration (A/AO)
- PCI-Bus mastering data transfer
- Pre-, post-, about- and delay-trigger data acquisition modes for analog input channels
- Flexible triggering and clocking capabilities
## Specifications

### Analog Input
- **Channels**: 16 single-ended, 8 differential (software programmable)
- **Resolution**: 16 bits
- **Max. Sampling Rate**: 250 kS/s

Note: The sampling rate for each channel will be affected by the used channel number. For example, if 4 channels are used, the sampling rate is 250k/4 = 62.5 kS/s per channel.

- **FIFO Size**: 1,024 samples
- **Overvoltage Protection**: 30 Vp-p
- **Input Impedance**:
  - 100 MΩ/10 pF (off)
  - 100 MΩ/100 pF (on)
- **Sampling Modes**: Software, onboard programmable pacer, and external
- **Input Range (V, software programmable) & Absolute Accuracy**
  - **Unipolar**: N/A 0 ~ 10 0 ~ 5 0 ~ 2.5 0 ~ 1.25
  - **Bipolar**: ±10 ±5 ±2.5 ±1.25 ±0.625
  - **Absolute Accuracy (% of FSR)***: 0.05 0.03 0.03 0.05 0.1

* ±1 LSB is added as the derivative for absolute accuracy

### Analog Output (PCI-1716 only)
- **Channels**: 2
- **Resolution**: 16 bits
- **Output Rate**: Static update
- **Output Range**: (Software programmable)

<table>
<thead>
<tr>
<th>Internal Reference</th>
<th>Unipolar</th>
<th>0 ~ 5 V</th>
<th>0 ~ 10 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bipolar</td>
<td>±5 V, ±10 V</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| External Reference | 0 ~ ±x V @ ±x V (| -10 \( \leq x \leq 10 |) |
|--------------------|-----------|
| Bipolar            | ±x V, ±x V (| -10 \( \leq x \leq 10 |) |

- **Slew Rate**: 20 V/µs
- **Driving Capability**: 20 mA
- **Output Impedance**: 0.1 Ω max.
- **Operation Mode**: Static update
- **Accuracy**: INL: ±1 LSB

### Digital Input
- **Channels**: 16
- **Compatibility**: 5 V/TTL
- **Input Voltage**:
  - Logic 0: 0.8 V max.
  - Logic 1: 2.0 V min.

### Digital Output
- **Channels**: 16
- **Compatibility**: 5 V/TTL
- **Output Voltage**:
  - Logic 0: 0.4 V max.
  - Logic 1: 2.4 V min.
- **Output Capability**:
  - Sink: 0.8 mA @ 0.8 V
  - Source: 2.4 mA @ 2.0 V

### Pacer/Counter
- **Channels**: 1
- **Resolution**: 16 bits
- **Compatibility**: 5 V/TTL
- **Max. Input Frequency**: 1 MHz
- **Reference Clock**:
  - Internal: 10 MHz
  - External Clock Frequency: 10 MHz max.

### General
- **Bus Type**: PCI V2.2
- **I/O Connector**: 1 x 68-pin SCSI female connector
- **Dimensions (L x H)**: 175 x 100 mm (6.9" x 3.9")
- **Power Consumption**:
  - Typical: 5 V @ 850 mA, 12 V @ 600 mA
  - Max: 5 V @ 1 A, 12 V @ 700 mA
- **Operating Temperature**: 0 ~ 70°C (32 ~ 158°F)
- **Storage Temperature**: -20 ~ 85°C (-4 ~ 185°F)
- **Operating Humidity**: 5 ~ 85% RH non-condensing
- **Storage Humidity**: 5 ~ 95% RH non-condensing

### Ordering Information
- **PCI-1716**: 250 kS/s, 16-bit High-resolution Multi. Card
- **PCI-1716L**: 250 kS/s, 16-bit High-res. Multi. Card w/o AO

### Accessories
- **PCLD-8710**: DIN-rail Wiring Board w/ CJC
- **PCL-10168-1E**: 68-pin SCSI Shielded Cable, 1 m
- **PCL-10168-2E**: 68-pin SCSI Shielded Cable, 2 m
- **ADAM-3968**: 68-pin DIN-rail SCSI Wiring Board
Specifications

### Analog Input
- **Channels**: 16 single-ended/8 differential (software programmable)
- **Resolution**: 16 bits
- **Max. Sampling Rate**: PCI-1741U: 200 kS/s
  PCI-1742U: 16 channels (software programmable)
  - 16-bit A/D converter, with up to 200 kHz sampling rate for PCI-1741U and
  - 1 MHz sampling rate for PCI-1742U
- **Onboard FIFO Memory**: 1,024 samples
- **Auto Calibration**
- **Input Voltage**: Logic 0: 0.8 V max.
  Logic 1: 2.0 V min.
- **Output Capability**: Sink: 32 mA @ 0.8 V
  Source: 15 mA @ 2.0 V
- **Reference**: Internal: 10 Hz
  External Clock Frequency: 10 Hz
- **Power Consumption**: Typical: 5 V @ 100 mA, 12 V @ 50 mA
  Max.: 5 V @ 1 A, 12 V @ 100 mA
- **Temperature**: -20 ~ 70°C (-4 ~ 158°F)
- **Humidity**: 5 ~ 95% RH, non-condensing

### Digital Input
- **Channels**: 16
- **Compatibility**: 5 V/TTL
- **Input Voltage**: Logic 0: 0.8 V max.
  Logic 1: 2.0 V min.

### Digital Output
- **Channels**: 16
- **Compatibility**: 5 V/TTL
- **Output Voltage**: Logic 0: 0.8 V max.
  Logic 1: 2.0 V min.
- **Output Capability**: Sink: 24 mA @ 0.8 V
  Source: 15 mA @ 2.0 V

### Counter/Timer
- **Channels**: 1
- **Compatibility**: 5 V/TTL
- **Resolution**: 16 bits
- **Max. Input Frequency**: 10 MHz
- **Reference Clock**: Internal: 10 MHz
  External Clock Frequency: 10 MHz

### General
- **Bus Type**: Universal PCI V2.2
- **I/O Connector Type**: 1 x 68-pin SCSI female connector
- **Dimensions (L x H)**: 175 x 100 mm (6.9” x 3.9”)
- **Power Consumption**: Typical: 5 V @ 850 mA, 12 V @ 600 mA
  Max.: 5 V @ 1 A, 12 V @ 700 mA
- **Operating Temperature**: 0 ~ 60°C (32 ~ 140°F)
- **Storage Temperature**: -20 ~ 70°C (-4 ~ 158°F)
- **Storage Humidity**: 5 ~ 95% RH, non-condensing

### Ordering Information
- **PCI-1741U**: 200 kS/s, 16-bit, 16-ch Univ. PCI Multi. Card
- **PCI-1742U**: 1 MS/s, 16-bit, 16-ch Univ. PCI Multi. Card

### Accessories
- **PCL-10168-1E**: 68-pin SCSI Shielded Cable, 1 m
- **PCL-10168-2E**: 68-pin SCSI Shielded Cable, 2 m
- **ADAM-3968**: 68-pin DIN-rail SCSI Wiring Board
- **PCLD-8710**: DIN-rail Wiring Board w/ CJC
Introduction

PCI-1714U and PCI-1714UL are advanced high-performance data acquisition cards based on the PCI bus. With a large FIFO of 32,768 for each channel, the maximum sampling rate of PCI-1714U can get up to 30 MS/s, on each channel, with an emphasis on continuous, non-stop, high-speed, streaming data of samples to host memory. The low-cost PCI-1714UL offers 10 MS/s on each channel at a stable rate, and has also been equipped with a universal PCI interface.

Specifications

Analog Input
- **Channels**: 4 single-ended
- **Resolution**: 12 bits
- **Max. Sampling Rate**: PCI-1714U: 30 MS/s per channel, PCI-1714UL: 10 MS/s per channel
- **FIFO Size**: PCI-1714U: 32,768 samples each channel, PCI-1714UL: 8,192 samples each channel
- **Overvoltage Protection**: 30 Vp-p
- **Input Impedance**: 50 Ω/1 McΩ/Hi Z jumper selectable/100 pF
- **Sampling Modes**: Software polling, pacer
- **Trigger Modes**: Post-trigger, pre-trigger, delay-trigger, about-trigger
- **Input Range (V, software programmable) & Absolute Accuracy**

<table>
<thead>
<tr>
<th>Type</th>
<th>±5</th>
<th>±2.5</th>
<th>±1</th>
<th>±0.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bipolar</td>
<td>0.5</td>
<td>0.2</td>
<td>0.2</td>
<td>0.4</td>
</tr>
<tr>
<td>Absolute Accuracy (% of FSR)*</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
<td>0.4</td>
</tr>
</tbody>
</table>

* ±1 LSB is added as the derivative for absolute accuracy

General
- **Bus Type**: Universal PCI V2.2
- **I/O Connectors**: 4 x BNC connector (for AI), 1 x PS/2 connector (for Ext. clock and trigger)
- **Dimensions (L x H)**: 175 x 100 mm (6.9” x 3.9”)
- **Power Consumption**: Typical: 5 V @ 850 mA; 12 V @ 600 mA, Max.: 5 V @ 1 A; 12 V @ 700mA
- **Operating Temperature**: 0 – 60°C (32 – 140°F)
- **Storage Temperature**: -20 – 85°C (-4 – 185°F)
- **Storage Humidity**: 5 – 95% RH, non-condensing

Features
- 4 single-ended analog input channels
- 12-bit A/D converter, with up to 30 MHz sampling rate
- Programmable gain
- Onboard FIFO memory (PCI-1714U: 32,768 samples each channel; PCI-1714UL: 8,192 samples, each channel)
- 4 A/D converters simultaneously sampling
- Multiple A/D triggering modes
- Programmable pacer/counter
- BoardID™ switch
- Universal PCI Bus (supports 3.3 V or 5 V PCI bus signals)

Ordering Information
- **PCI-1714U**: 30 MS/s, 12-bit, Simultaneous 4-ch AI PCI Card
- **PCI-1714UL**: 10 MS/s, 12-bit, Simultaneous 4-ch AI PCI Card

Accessories
- **ADAM-3909**: DB9 DIN-rail Wiring Board
- **PCL-1010B-1E**: BNC to BNC Wiring Cable, 1 m
- **PCL-10901-1E**: DB9 to PS/2 Cable, 1 m
- **PCL-10901-3E**: DB9 to PS/2 Cable, 3 m

Pin Assignments

*Figure showing pin assignments for the PCI-1714U and PCI-1714UL data acquisition cards.*
PCI-1713U
PCI-1715U

Specifications

Analog Input
- Channels: 32 single-ended/16 differential (software programmable)
- Resolution: 12 bits
- Max. Sampling Rate:
  - PCI-1713U: 100 kS/s
  - PCI-1715U: 500 kS/s

Note: The sampling rate for each channel will be affected by used channel number. For example, if 4 channels of PCI-1713U are used, the sampling rate is 100k/4 = 25 kS/s per channel.
- FIFO Size:
  - PCI-1713U: 4,096 samples
  - PCI-1715U: 1,024 samples
- Overvoltage Protection: 30 Vp-p
- Isolation Protection: 2,500 VDC
- Input Impedance: 1 GΩ
- Sampling Modes: Software, onboard programmable pacer and external clock (TTL level)
- Input Range (V, software programmable) & Absolute Accuracy
  | Unipolar | 0 | 0.1 |
  | Bipolar  | 0.1 | 0.4 |
| Absolute Accuracy (% of FSR)* | ±0 | 0.1 | 0.2 | 0.4 |

* ±1 LSB is added as the derivative for absolute accuracy

General
- Bus Type: Universal PCI V2.2
- I/O Connector: 1 x DB37 female connector
- Dimensions (L x W x H): 175 x 100 mm (6.9" x 3.9")
- Power Consumption:
  - Typical: 5 V @ 850 mA
  - Max.: 5 V @ 1.0 A
- Operating Temperature: 0 – 60°C (32 – 140°F)
- Storage Temperature: -20 – 70°C (-4 – 158°F)
- Storage Humidity: 5 – 95% RH non-condensing

Features
- 2,500 Vp-p isolation protection
- 32-ch single-ended or 16-ch differential or a combination of analog input
- 12-bit resolution for A/D conversion
- Programmable gain for each input channel
- Onboard FIFO memory (PCI-1713U: 4,096 samples; PCI-1715U: 1,024 samples)
- Software, internal or external pacer sampling modes supported
- Universal PCI bus
- BoardID™ switch

Ordering Information
- PCI-1713U: 100 kS/s, 12-bit, 32-ch Isolated Analog Input Universal PCI Card
- PCI-1715U: 500 kS/s, 12-bit, 32-ch Isolated Analog Input Universal PCI Card

Accessories
- ADAM-3937: DB37 DIN-rail Wiring Board
- PCL-10137-1E: DB37 Cable, 1 m
- PCL-10137-2E: DB37 Cable, 2 m
- PCL-10137-3E: DB37 Cable, 3 m

Pin Assignments
Introduction

PCI-1747U is a high-resolution, high-channel-count analog input card for the PCI bus. Its sampling rate is up to 250 kS/s and 16-bit resolution provides the resolution needed for most data acquisition applications. PCI-1747U provides 64 single-ended, 32 differential analog input channels or a combination of these. It also has a built in 1,024 FIFO buffer for analog input data.

Specifications

Analog Input
- Channels: 64 single-ended, 32 differential, or combination
- Resolution: 16 bits
- Max. Sampling Rate: 250 kS/s

Note: The sampling rate for each channels will be affected by used channel number. For example, if 4 channels are used, the sampling rate is 250k/4 = 62.5 kS/s per channel.

- FIFO Size: 1,024 samples
- Overvoltage Protection: 30 Vp-p
- Input Impedance: 100 MΩ/10 pF (Off); 100 MΩ/100 pF (On)
- Sampling Modes: Software and onboard programmable pacer
- Input Range (V, software programmable) & Absolute Accuracy
  - Unipolar: 0 ~ 10, ±5, ±2.5, ±1.25, ±0.625
  - Bipolar: ±10, ±5, ±2.5, ±1.25, ±0.625
  - Absolute Accuracy (% of FSR)*: 0.03, 0.02, 0.02, 0.03, 0.04

* ±1 LSB is added as the derivative for absolute accuracy

General
- Bus Type: Universal PCI V2.2
- I/O Connector: 1 x 68-pin SCSI female connector
- Dimensions (L x H): 175 x 100 mm (6.9" x 3.9")
- Power Consumption: Typical: 5 V @ 850 mA, 12 V @ 600 mA
  Max.: 5 V @ 1 A, 12 V @ 700 mA
- Operating Temperature: 0 ~ 60°C (32 ~ 140°F)
- Storage Temperature: -20 ~ 70°C (-4 ~ 158°F)
- Storage Humidity: 5 ~ 95% RH, non-condensing

Features
- 64-ch single-ended or 32-ch differential or a combination of analog input
- 16-bit A/D converter, with up to 250 kHz sampling rate
- Auto calibration
- Onboard FIFO memory (1,024 samples)
- PCI-Bus mastering data transfer
- Universal PCI Bus (support 3.3 V or 5 V PCI bus signal)
- BoardID™ switch

Ordering Information
- PCI-1747U 250 kS/s, 16-bit, 64-ch AI Universal PCI Card

Accessories
- ADAM-3968 68-pin DIN-rail SCSI Wiring Board
- PCL-10168-1E 68-pin SCSI Shielded Cable, 1 m
- PCL-10168-2E 68-pin SCSI Shielded Cable, 2 m

Pin Assignments
**PCI-1720U**

**PCI-1724U**

---

### Specifications

#### Analog Output

- **Channels**: 4 isolated
- **Resolution**: 12 bits
- **Output Rate**: Static update
- **Output Range**
  - Bipolar (V): ±5, ±10
  - Unipolar (V): 0 – 5, 0 – 10
  - Current Loop (mA): 0 – 20, 4 – 20 (software programmable)

- **Slew Rate**: 2 V/μs
- **Isolation Protection**: 2,500 VDC
- **Driving Capability**: 5 mA
- **Operation Modes**: Software polling
- **Accuracy**
  - Relative: ±1 LSB
  - Non-linearity: ±1 LSB (monotonic)
- **Excitation Voltage**: 50 V (max.)

#### General

- **Bus Type**: Universal PCI V2.2
- **I/O Connectors**: 1 x DB37 female connector
- **Dimensions (L x H)**: 175 x 100 mm (6.9” x 3.9”)
- **Power Consumption**: 5 V @ 350 mA (typical), 500 mA (max.)
  - 12 V @ 200 mA (typical), 350 mA (max.)
- **Operating Temperature**: 0 – 60°C (32 – 140°F)
- **Storage Temperature**: -20 – 70°C (-4 – 158°F)
- **Storage Humidity**: 5 – 95% RH, non-condensing

#### Ordering Information

- **PCI-1720U**: 12-bit, 4-ch Isolated Analog Output Universal PCI Card
- **PCI-1724U**: 14-bit, 32-ch Isolated Analog Output Universal PCI Card

---

#### Analog Output

- **Channels**: 32 isolated
- **Resolution**: 14 bits
- **Output Rate**: Static update
- **Output Range**
  - Bipolar (V): ±10
  - Current Loop (mA): 0 – 20, 4 – 20 (software programmable)

- **Isolation Protection**: 1,500 VDC system isolation
- **Output Impedance**: 0.1 Ω max.
- **Operation Modes**: Software polling, synchronized output
- **Accuracy**
  - Relative: ±4 LSB
  - Differential Non-linearity: ±2 LSB (monotonic)
- **Driving Capacity**: 10 mA

#### General

- **Bus Type**: Universal PCI V2.2
- **I/O Connectors**: 1 x DB62 female connector
- **Dimensions (L x H)**: 175 x 100 mm (6.9” x 3.9”)
- **Power Consumption**: 5 V @ 400 mA, 12 V @ 270 mA max.
- **Operating Temperature**: 0 – 60°C (32 – 140°F)
- **Storage Temperature**: -20 – 70°C (-4 – 158°F)
- **Storage Humidity**: 5 – 95% RH, non-condensing

#### Ordering Information

- **PCI-1724U**: 14-bit, 32-ch Isolated AO Universal PCI Card

#### Accessories

- **PCL-10162-1E**: DB62 Cable, 1 m
- **PCL-10162-3E**: DB62 Cable, 3 m
- **ADAM-3962**: DB62 DIN-rail Wiring Board
# PCI-1721

## Introduction

PCI-1721 is an advanced high-speed analog output card for the PCI bus, and each of analog output channels are equipped with a 12-bit, double-buffered DAC. It features many powerful and unique functions, like a waveform output function with 10 MHz maximum update rate, auto-calibration and a BoardID switch. PCI-1721 is an ideal solution for industrial applications where high-speed continuous analog output or real-time waveform output functions are required.

## Specifications

### Analog Output

- **Channels**: 4
- **Resolution**: 12 bits
- **FIFO Size**: 1,024 samples
- **Output Rate**: 10 MHz or static update
- **Reference Clock**: Internal: 10 MHz
  - External Clock Frequency: 10 MHz max.
  - External Voltage Range: 0.8 V max., 2 V min.

#### Output Range

<table>
<thead>
<tr>
<th>Internal Reference</th>
<th>Unipolar</th>
<th>Bipolar</th>
<th>Current Loop</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 ~ 5 V, 0 ~ 10 V</td>
<td>±5 V, ±10 V</td>
<td>0 ~ 20 mA, 4 ~ 20 mA (software programmable)</td>
</tr>
<tr>
<td>External Reference</td>
<td>0 ~ ±x V @ ±x V (-10 ≤ x ≤ 10)</td>
<td>-x ~ ±x V @ ±x V (-10 ≤ x ≤ 10)</td>
<td></td>
</tr>
</tbody>
</table>

- **Slew Rate**: 10 V/μs
- **Driving Capability**: 10 mA max.
- **Output Impedance**: 0.1 Ω max.
- **Operation Modes**: Single/continuous/waveform/synchronized output
- **Accuracy**: Relative: ±1 LSB
  - Differential Non-linearity: ±1 LSB (monotonic)

### Counter/Timer

- **Channels**: 1
- **Resolution**: 16 bits
- **Compatibility**: 5 V/TTL
- **Max. Input Frequency**: 10 MHz
- **Reference Clock**: Internal: 10 MHz
  - External Clock Frequency: 10 MHz max.
  - External Voltage Range: 0.8 V max., 2 V min.

### General

- **Bus Type**: PCI V2.2
- **I/O Connectors**: 1 x 68-pin SCSI female connector
- **Dimensions (L x H)**: 175 x 100 mm (6.9” x 3.9”)
- **Power Consumption**:
  - Typical: 5 V @ 850 mA, 12 V @ 600 mA
  - Max.: 5 V @ 1 A, 12 V @ 700 mA
- **Operating Temperature**: 0 ~ 60°C (32 ~ 140°F)
- **Storage Temperature**: -20 ~ 85°C (-4 ~ 185°F)
- **Storage Humidity**: 5 ~ 95% RH, non-condensing

### Ordering Information

- **PCI-1721**: 12-bit, 4-ch Advanced PCI Analog Output Card

### Accessories

- **PCL-10168-1E**: 68-pin SCSI Shielded Cable, 1 m
- **PCL-10168-2E**: 68-pin SCSI Shielded Cable, 2 m
- **ADAM-3968**: 68-pin DIN-rail SCSI Wiring Board

---

## Features

- 10 MHz maximum digital update rate
- Auto calibration function
- Four analog output channels with 1,024 samples FIFO buffer
- A 12-bit DAC is equipped for each of analog output channels
- Real-time waveform output function with internal/external pacer
- Synchronized output function
- Flexible output types and range settings
- Keeps the output settings and values after system hot reset
- 16-ch DIO and one 10 MHz 16-bit resolution counter
- BoardID™ switch
## PCI-1723
### Specifications

#### Analog Output
- **Channels**: 8
- **Resolution**: 16 bits
- **Output Rate**: Static update
- **Output Range**
  |
  | Bipolar (V) | ±10 |
  | Current Loop (mA) | 0 – 20, 4 – 20 (software programmable) |
  |
  - **Driving Capability**: 5 mA
  - **Output Impedance**: 0.1 Ω max.
  - **Operation Modes**: Software polling, synchronized output
  - **Accuracy**: Relative: ±6 LSB, Differential Non-linearity: ±6 LSB (monotonic)

#### Digital Input/Output
- **Channels**: 16 (shared by input/output)
- **Compatibility**: 5 V/TTL
- **Input Voltage**: Logic 0: 0.8 V max., Logic 1: 2.0 V min.
- **Input Loading**: Sink: 0.5 V @ 24 mA, Source: 2.0 V @ 15 mA

#### General
- **Bus Type**: PCI V2.2
- **I/O Connectors**: 1 x 68-pin SCSI female connector
- **Dimensions (L x H)**: 175 x 100 mm (6.9” x 3.9”)
- **Power Consumption**: Typical: 5 V @ 850 mA, 12 V @ 600 mA, Max.: 5 V @ 1 A, 12 V @ 700 mA
- **Operating Temperature**: 0 – 60°C (32 – 158°F)
- **Storage Temperature**: -20 – 65°C (-4 – 185°F)
- **Storage Humidity**: 5 – 95% RH non-condensing

#### Ordering Information
- **PCI-1723**: 16-bit, 8-ch Non-Isolated Analog Output PCI Card

### Accessories
- **PCL-10168-1E**: 68-pin SCSI Shielded Cable, 1 m
- **PCL-10168-2E**: 68-pin SCSI Shielded Cable, 2 m
- **ADAM-3968**: 68-pin DIN-rail SCSI Wiring Board

## PCI-1727U
### Specifications

#### Analog Output
- **Channels**: 12
- **Resolution**: 14 bits
- **Output Rate**: Static update
- **Output Range**
  |
  | Bipolar (V) | ±10 |
  | Unipolar (V) | 0 – 5, 0 ~ 10 |
  | Current Loop (mA) | 0 – 20 |
  |
  - **Slew Rate**: 0.7 V/μs
  - **Driving Capability**: 15 mA
  - **Operation Modes**: Software polling, synchronized output
  - **Current Loop Excitation**: 8 – 36 V

#### Digital Input
- **Channels**: 16
- **Compatibility**: 5 V/TTL
- **Input Voltage**: Logic 0: 0.8 V max., Logic 1: 2.0 V min.
- **Input Loading**: Sink: 0.5 V @ 8 mA, Source: 2.4 V @ 0.4 mA

#### Digital Output
- **Channels**: 16
- **Compatibility**: 5 V/TTL
- **Output Voltage**: Logic 0: 0.5 V, Logic 1: 2.4 V
- **Output Capability**: Sink: 0.5 V @ 8 mA, Source: 2.4 V @ 0.4 mA

#### General
- **Bus Type**: Universal PCI V2.2
- **I/O Connectors**: 1 x 37-pin D-type female connector, 2 x 20-pin box header
- **Power Consumption**: 5 V @ 460 mA typical, 500 mA max, 12 V @ 150 mA typical, 100 mA max
- **Dimensions (L x H)**: 175 x 100 mm (6.9” x 3.9”)
- **Operating Temperature**: 0 – 50°C (32 – 122°F)
- **Storing Temperature**: -20 – 65°C (-4 – 149°F)
- **Storing Humidity**: 5 – 95% RH, non-condensing

#### Ordering Information
- **PCI-1727U**: 14-bit, 12-ch Universal Analog Output Card

### Accessories
- **PCL-10120-1E**: 20-pin flat cable, 1 m
- **PCL-10137-1E**: DB37 cable assembly, 1 m
- **ADAM-3937**: DB37 wiring terminal for DIN-rail mounting

---

**RoHS COMPLIANT 2002/95/EC**
### Features

- ISA-Compatible with PCL-720+ (PCI-1735U), PCL-724 (PCI-1737U) and PCL-731 (PCI-1739U)
- TTL-level digital input and output compatibility
- Emulates mode 0 of 8255 PPI (PCI-1737U and PCI-1739U)
- Interrupt handling capability (PCI-1737U and PCI-1739U)
- Output status readback (PCI-1737U and PCI-1739U)
- 3 programmable counter/timer channels and User configurable clock source (PCI-1735U)
- Breadboard area for custom circuits (PCI-1735U and PCI-1739U)
- PCI universal card

### Specifications

#### Digital Input
- **Channels**
  - PCI-1735U: 32
  - PCI-1737U: 24 (shared with output)
  - PCI-1739U: 48 (shared with output)
- **Compatibility** 5 V/TTL
- **Input Voltage**
  - Logic 0: 0.8 V max.
  - Logic 1: 2.0 V min.
- **Interrupt Capable Ch.**
  - PCI-1737U: 1
  - PCI-1739U: 2

#### Digital Output
- **Channels**
  - PCI-1735U: 32
  - PCI-1737U: 24 (shared with input)
  - PCI-1739U: 48 (shared with input)
- **Compatibility** 5 V/TTL
- **Output Voltage**
  - PCI-1735U: Logic 0: 0.5 V max.
  - Logic 1: 2.0 V max.
  - PCI-1737U/1739U: Logic 0: 0.4 V max.
  - Logic 1: 2.4 V max.
- **Output Capability**
  - PCI-1735U: Sink: 0.5 V @ 24 mA
  - Source: 2.0 V @ 15 mA
  - PCI-1737U/1739U: Sink: 0.4 V @ 24 mA
  - Source: 2.4 V @ 15 mA

#### Counter/Timer (PCI-1735U)
- **Channels** 3
- **Resolution** 16 bits
- **Compatibility** 5 V/TTL
- **Max. Input Frequency** 1 MHz
- **Re. Clock Internal** Selectable 1 MHz, 100 kHz, or 10 kHz base clock
- **Ext. Clock Frequency** Jumper selectable divider: x2, x1, x0.5, and x0.25
- **Prog. Counter Modes** 6

### General
- **Bus Type** Universal PCI V2.2
- **I/O Connectors**
  - PCI-1735U: 5 x 20-pin box header
  - PCI-1737U: 2 x 20-pin & 1 x 50-pin box header
  - PCI-1739U: 2 x 50-pin box header
- **Dimensions (L x H)** 175 x 100 mm (6.9” x 3.9”)
- **Power Consumption**
  - PCI-1735U: 5 V @ 98.8 mA (max.)
  - PCI-1737U/1739U: 5 V @ 294.9 mA (max.)
- **Operating Temperature** 0 ~ 65°C (32 ~ 149°F)
- **Storage Temperature** -25 ~ 80°C (-13 ~ 176°F)
- **Storage Humidity** 5 ~ 95% RH, non-condensing

### Ordering Information
- **PCI-1735U** 64-ch Digital I/O and Counter Card
- **PCI-1737U** 24-ch Digital I/O Universal PCI Card
- **PCI-1739U** 48-ch Digital I/O Universal PCI Card

### Accessories
- **PCL-10120-1E** IDC-20 Flat Cable, 1 m
- **PCL-10120-2E** IDC-20 Flat Cable, 2 m
- **PCL-10150-1.2E** 50-pin Flat Cable, 1.2 m
- **ADAM-3920** 20-Pin Flat Cable Terminal, DIN-rail Mount
- **ADAM-3950** 50-pin DIN-rail Flat Cable Wiring Board
Introduction

PCI-1751 is a 48-bit digital I/O card for the PCI bus. Its 48 bits are divided into six 8-bit I/O ports and users can configure each port as input or output via software. PCI-1751 also provides one event counter and two 16-bit counters, which can be cascaded to become a 32-bit timer.

Specifications

**Digital Input**
- **Channels**: 48 (shared with output)
- **Compatibility**: 5 V/TTL
- **Input Voltage**
  - Logic 0: 0.8 V max.
  - Logic 1: 2 V min.
- **Interrupt Capable Ch.**: 4

**Digital Output**
- **Channels**: 48 (shared with input)
- **Compatibility**: 5 V/TTL
- **Output Voltage**
  - Logic 0: 0.4 V max.
  - Logic 1: 2.4 V min.
- **Output Capability**
  - Sink: 0.4 V @ 24 mA
  - Source: 2.4 V @ 15 mA

**Counter/Timer**
- **Channels**: 3
- **Resolution**
  - 2 x 16-bit counters, or 1 x 32-bit counter (jumper selectable)
  - 1 x 16-bit event counter
- **Compatibility**: 5 V/TTL
- **Max. Input Frequency**: 10 MHz
- **Reference Clock**
  - Internal: 10 MHz
  - External Clock Frequency: 10 MHz
  - External Voltage Range: 5 V/TTL

**General**
- **Bus Type**: Universal PCI V2.2
- **I/O Connectors**: 1 x 68-pin SCSI female connector
- **Dimensions (L x H)**: 175 x 100 mm (6.9" x 3.9")
- **Power Consumption**
  - Typical: 5 V @ 850 mA
  - Max.: 5 V @ 1.0 A
- **Operating Temperature**: 0 ~ 70°C (32 ~ 158°F)
- **Storage Temperature**: -20 ~ 80°C (-4 ~ 176°F)
- **Storage Humidity**: 5 ~ 95% RH, non-condensing

Features

- 48 TTL digital I/O lines
- Emulates mode 0 of 8255 PPI
- Buffers circuits for higher driving capacity than the 8255
- Interrupt handling capability
- Timer/Counter interrupt capability
- Supports both dry and wet contact
- Keeps the I/O port setting and DO state after system reset
- BoardID switch

Ordering Information

- **PCI-1751**: 48-ch Digital I/O and Counter PCI Card

<table>
<thead>
<tr>
<th>Accessories</th>
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<tbody>
<tr>
<td>PCI-10168-1E</td>
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<td>ADAM-3968</td>
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<tr>
<td>ADAM-3968/20</td>
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<tr>
<td>ADAM-3968/50</td>
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<tr>
<td>PCLD-8751</td>
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<tr>
<td>PCLD-8761</td>
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<tr>
<td>PCLD-8762</td>
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Pin Assignments

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<tr>
<td>VCC</td>
<td>34</td>
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<td>VCC</td>
</tr>
</tbody>
</table>
Introduction
PCI-1753 is a 96-bit digital I/O card for the PCI bus, which can be extended to 192 digital I/O channels by connecting its extension board - PCI-1753E. The card emulates mode 0 of the 8255 PPI chip, but the buffered circuits offer a higher driving capability than the 8255. The 96 I/O lines are divided into twelve 8-bit I/O ports: A0, B0, C0, A1, B1, C1, A2, B2, C2, A3, B3 and C3. You can configure each port as input or output via software.

Specifications
Digital Input/Output
- Channels: 96 digital I/O lines for PCI-1753, 192 digital I/O lines if extending with PCI-1753E
- Programming Mode: 8255 PPI mode 0
- Compatibility: 5 V/TTL
- Input Voltage: Logic 0: 0.8 V max., Logic 1: 2.0 V min.
- Output Voltage: Logic 0: 0.44 V max., Logic 1: 3.76 V min.
- Output Capability: Sink: 0.44 V @ 24 mA, Source: 3.76 V @ 24 mA

General
- Bus Type: PCI V2.2
- I/O Connector: 1 x 100-pin SCSI female connector
- Dimensions (L x H): 175 x 100 mm (6.9" x 3.9")
- Power Consumption: Typical: 5 V @ 400 mA, Max.: 5 V @ 2.7 A
- Operating Temperature: 0 – 60°C (32 – 140°F)
- Storage Temperature: -20 – 70°C (-4 – 158°F)
- Storage Humidity: 5 – 95% RH, non-condensing

Ordering Information
- PCI-1753: 96-ch Digital I/O PCI Card
- PCI-1753E: Extension Board for PCI-1753

Accessories
- ADAM-3968: 68-pin DIN-rail SCSI Wiring Board
- ADAM-3968/20: 68-pin SCSI to 3 20-pin Box Header Board
- ADAM-3968/S0: 68-pin SCSI to 2 50-pin Box Header Board
- PCLDL-8751: 48-ch Isolated Digital Input Board
- PCLDL-8761: 24-ch Replai/Isolated Digital Input Board
- PCLDL-8762: 48-ch Relay Board
- PCL-10268-2E: 100-pin to Two 68-pin SCSI Cables, 1 m and 2 m

Features
- Up to 96 TTL digital I/O lines
- Emulates mode 0 of 8255 PPI
- Buffered circuits for higher driving capacity than the 8255
- Multiple-source interrupt handling capability
- Interrupt output pin for simultaneously triggering external devices with the interrupt
- Output status read-back
- “Pattern match” and “Change of state” interrupt functions for critical I/O monitoring
- Keeps the output settings and values after system hot reset
- Supports both dry and wet contact
- High-density 100-pin SCSI connector
Introduction
The PCI-1755 supports PCI-bus mastering DMA for high-speed data transfer. By setting aside a block of memory in the PC, the PCI-1755 performs bus-mastering data transfers without CPU intervention, setting the CPU free to perform other more urgent tasks such as data analysis and graphic manipulation. The function allows users to run all I/O functions simultaneously at full speed without losing data.

Specifications

Digital Input
- Channels
  General: 8 (shared with output)
  High speed: 32 (shared with output)
- Compatibility
  5V/3.3V
- Input Voltage
  Logic 0: 0.8 V max.
  Logic 1: 2.0 V min.
- Interrupt Capable Ch.
  DI00–DI07

Digital Output
- Channels
  General: 8 (shared with input)
  High speed: 32 (shared with input)
- Compatibility
  5V/3.3V
- Output Voltage
  Logic 0: 0.5 V max.
  Logic 1: 2.7 V min.
- Output Capacity
  Sink: 0.5 V @ 48 mA
  Source: 2.4 V @ 15 mA

Transfer Characteristics
- Onboard FIFO
  16 KB for DI & 16 KB DO channels
- Data Transfer Mode
  Bus Mastering DMA with Scatter-Gather
- Data Transfer Bus Width
  8/16/32 bits (programmable)
- Max. Transfer Rate
  DI: 80 M bytes/sec, 32-bit @ 20 MHz
  DO: 80 MBytes/sec, 32-bit @ 20 MHz
- Operation Mode
  Handshaking

Features
- Bus-mastering DMA data transfer with scatter gather technology
- 32/16/8-bit pattern I/O with start and stop trigger function, 2 modes
- Handshaking I/O Interrupt handling capability
- Onboard active terminators for high speed and long distance transfer
- Pattern match and change state detection interrupt function
- General-purpose 8-ch digital I/O

General
- Bus Type
  PCI V2.2
- I/O Connectors
  1 x 100-pin SCSI female connector
- Dimensions (L x H)
  175 x 100 mm (6.9” x 3.9”)
- Power Consumption
  Typical: 5 V @ 1 A
  Max.: 5 V @ 1 A
- Operating Temperature
  0 ~ 60°C (32 ~ 140°F)
- Storage Temperature
  -20 ~ 85°C (-4 ~ 185°F)
- Storage Humidity
  5 ~ 95% RH, non-condensing

Ordering Information
- PCI-1755
  80 MB/s, 32-ch Digital I/O PCI Card

Accessories
- ADAM-39100
  100-pin DIN-rail SCSI Wiring Board
- PCL-101100-1E
  100-pin SCSI High-Speed Cable, 1 m
PCI-1757UP

24-ch Digital I/O Low Profile Universal PCI Card

Introduction

PCI-1757UP is a 24-channel digital I/O low profile PCI card that meets the PCI standard REV.2.2 (universal PCI expansion card). The card also works with 3.3 V and 5 V PCI slots, and provides you with 24 parallel digital input/output channels that emulate mode 0 of the 8255 PPI chip. However, the buffered circuits offer a higher driving capability than the 8255.

Specifications

Digital Input
- Channels: 24 (shared with output)
- Compatibility: 5 V/TTL
- Input Voltage:
  - Logic 0: 0.8 V @ -0.2 mA
  - Logic 1: 2.0 V @ 20 mA
- Interrupt Capable Ch.: 2

Digital Output
- Channels: 24 (shared with input)
- Compatibility: 5 V/TTL
- Output Voltage:
  - Logic 0: 0.5 V max.
  - Logic 1: 3.7 V min.
- Output Capability:
  - Sink: 0.5 V @ 24 mA
  - Source: 3.7 V @ 24 mA

General
- Bus Type: Universal PCI V2.2
- I/O Connectors: 1 x DB25 female connector
- Dimensions (L x H): 120 x 64 mm (4.7” x 2.5”) Low profile MD1
- Power Consumption:
  - Typical: 5 V @ 140 mA
  - Max.: 5 V @ 200 mA
- Operating Temperature: 0 – 70°C (32 – 158°F)
- Storage Temperature: -20 – 80°C (-4 – 176°F)
- Storage Humidity: 5 – 95% non-condensing

Features
- Low profile PCI form factor
- Universal PCI bus
- 24 TTL level digital I/O channels
- Emulates mode 0 of 8255 PPI
- Buffered circuits provide higher driving capability
- Interrupt handling capability
- Output status read-back
- I/O configurable by software or on board DIP switch
- Keeps the output settings and values after system hot reset
- BoardID™ switch
- Convenient DB25 connector
- Supports both dry and wet contact

Ordering Information
- PCI-1757UP: 24-ch Digital I/O Low Profile Universal PCI Card

Accessories
- ADAM-3925: DB25 DIN-rail Wiring Board
- PCL-10125-1E: DB25 Cable, 1 m
- PCL-10125-3E: DB25 Cable, 3 m

Pin Assignments
Introduction

PCI-1730U, PCI-1733, and PCI-1734 offer isolated digital input channels as well as isolated digital output channels with isolation protection up to 2,500 VDC, which makes them ideal for industrial applications where high-voltage isolation is required. There are also 32 TTL digital I/O channels on PCI-1730U.

Specifications

Digital Input (PCI-1730U only)
- Channels: 16
- Compatibility: 5 V/TTL
- Input Voltage: Logic 0: 0.8 V max.
  Logic 1: 2.0 V min.
- Interrupt Capable Ch.: 2 (DI0, DI1)

Isolated Digital Input (PCI-1730U/ PCI-1733)
- Channels: 16
- Input Voltage: Logic 0: 1 V max. (2 V max.)
  Logic 1: 5V min. (30 V max.)
- Interrupt Capable Ch.: 2 (DI0, DI1)
- Isolation Protection: 2,500 VDC
- Opto-Isolator Response: 25 μs
- Input Resistance: 2.7 kΩ @ 1 W

Digital Output (PCI-1730U only)
- Channels: 16
- Compatibility: 5 V/TTL
- Output Voltage: Logic 0: 0.8 V max.
  Logic 1: 2.0 V min.
- Output Capability: Sink: 0.8 V @ 24 mA
  Source: 2.0 V @ 15 mA

Isolated Digital Output (PCI-1730U/ PCI-1734)
- Channels: 16
- Output Type: Sink type (NPN)
- Isolation Protection: 2,500 VDC
- Output Voltage: 5 – 40 VDC
- Sink Current: PCI-1730U: 300 mA max./channel
  PCI-1734: 200 mA max./channel
- Opto-Isolator Response: 25 μs

General
- Bus Type: PCI V2.2 (Universal PCI V2.2 for PCI-1730U)
- I/O Connectors: 1 x DB37 female connector
- Power Consumption: Typical: 5 V @ 250 mA, 12 V @ 35 mA
  Max.: 5 V @ 400 mA, 12 V @ 60 mA
- Dimensions (L x H): 175 x 100 mm (6.9” x 3.9”)
- Operating Temperature: 0 ~ 60°C (32 ~ 140°F)
- Storage Temperature: -25 ~ 85°C (-13 ~ 185°F)
- Storage Humidity: 5 ~ 95% RH, non-condensing

Ordering Information
- PCI-1730U: 32-ch Isolated Digital I/O Univ. PCI Card
- PCI-1733: 32-ch Isolated Digital Input PCI Card
- PCI-1734: 32-ch Isolated Digital Output PCI Card

Accessories
- PCL-10120-1E: 20-pin Flat Cable, 1 m
- PCL-10120-2E: 20-pin Flat Cable, 2 m
- ADAM-3920: 20-pin DIN-rail Flat Cable Wiring Board
- PCLD-782: 16-ch Isolated DI Board w/ 1m 20-pin Flat Cable
- PCLD-885: 16-ch Power Relay Board w/ 20p & 50p Flat Cables
- PCLD-785: 16-ch Relay Board w/ One 1m 20-pin Flat Cable
- ADAM-3937: DB37 DIN-rail Wiring Board
- PCL-10137-1E: DB37 Cable, 1 m
- PCL-10137-2E: DB37 Cable, 2 m
- PCL-10137-3E: DB37 Cable, 3 m
PCI-1750

32-ch Isolated Digital I/O and 1-ch Counter PCI Card

**Introduction**

PCI-1750 offers 16 isolated digital input channels, 16 isolated digital output channels, and one isolated counter/timer for the PCI bus. With isolation protection of 2,500 V_{DC}, and dry contact support, PCI-1750 is ideal for industrial applications where high-voltage protection is required. Each I/O channel of the PCI-1750 corresponds to a bit in a PC I/O port. This makes PCI-1750 very easy to program. This card also offers a counter or timer interrupt and two digital input interrupt lines to a PC, so you can then easily configure the card with software.

**Specifications**

<table>
<thead>
<tr>
<th><strong>Isolated Digital Input</strong></th>
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</thead>
<tbody>
<tr>
<td>Channels</td>
<td>16</td>
</tr>
</tbody>
</table>
| Input Voltage             | Logic 0: 2 V max.  
                           | Logic 1: 5 V min. (30 V_{DC} max.) or dry contact |
| Interrupt Capable Ch.     | 2        |
| Isolation Protection      | 2,500 V_{DC} |
| Opto-Isolator Response    | 100 μs   |

<table>
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<tr>
<th><strong>Isolated Digital Output</strong></th>
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<tbody>
<tr>
<td>Channels</td>
<td>16</td>
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<tr>
<td>Output Type</td>
<td>Sink (NPN)</td>
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<tr>
<td>Isolation Protection</td>
<td>2,500 V_{DC}</td>
</tr>
<tr>
<td>Output Voltage</td>
<td>5 – 40 V_{DC}</td>
</tr>
<tr>
<td>Sink Current</td>
<td>200 mA max. per channel</td>
</tr>
<tr>
<td>Opto-Isolator Response</td>
<td>100 μs</td>
</tr>
</tbody>
</table>

<table>
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<th><strong>Counter/Timer</strong></th>
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<tr>
<td>Channels</td>
<td>1</td>
</tr>
<tr>
<td>Resolution</td>
<td>1 x 16-bit isolated counter</td>
</tr>
</tbody>
</table>
| Input Voltage     | Logic 0: 2 V max.  
                           | Logic 1: 5 V min. (30 V_{DC} max.) |
| Max. Input Frequency | 1 MHz   |
| Isolation Protection | 2,500 V_{DC} |

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Bus Type</td>
<td>PCI V2.2</td>
</tr>
</tbody>
</table>
| I/O Connectors | 1 x DB37 female connector  
                      | 1 x 2-pin terminal block for extended ground |
| Dimensions (L x H) | 175 x 100 mm (6.9” x 3.9”) |
| Power Consumption | Typical: 5 V @ 850 mA  
                        | Max.: 5 V @ 1.0 A  |
| Operating Temperature | 0 – 70°C (32 – 158°F) |
| Storage Temperature | -20 – 80°C (-4 – 176°F) |
| Storage Humidity | 5 – 95% RH, non-condensing |

<table>
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<td>PCI-1750</td>
<td>32-ch Isolated Digital I/O and Counter PCI Card</td>
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<td>PCL-10137-1E</td>
<td>DB37 Cable, 1 m</td>
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<tr>
<td>PCL-10137-2E</td>
<td>DB37 Cable, 2 m</td>
</tr>
<tr>
<td>PCL-10137-3E</td>
<td>DB37 Cable, 3 m</td>
</tr>
<tr>
<td>ADAM-3937</td>
<td>DB37 DIN-rail Wiring Board</td>
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</table>

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<tr>
<th><strong>Pin Assignments</strong></th>
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</tbody>
</table>

**Features**

- 16 isolated DI and 16 isolated DO channels
- High voltage isolation on all isolated channels (2,500 V_{DC})
- High sink current on isolated output channels (200 mA/channel)
- Supports dry contact or 5 – 50 V_{DC} isolated inputs
- Interrupt handling capability
- Timer/counter interrupt capability
# Specifications

## Isolated Digital Output
- Channels: 64 (16-ch/group)
- Output Type: Sink (NPN)
- Isolation Protection: 2,500 V<sub>oc</sub>
- Output Voltage: 5 - 40 V<sub>dc</sub>
- Sink Current: 200 mA max./channel
- Opto-isolator Response: 25 μs

## General
- Bus Type: Universal PCI V2.2
- I/O Connectors: 1 x 100-pin SCSI female connector
- Dimensions (L x H): 175 x 100mm (6.9" x 3.9")
- Power Consumption: Typical: 5 V @ 250 mA
- Max.: 5 V @ 500 mA
- Operating Temperature: 0 - 60°C (32 - 140°F)
- Storage Temperature: -20 - 70°C (-4 - 158°F)
- Storage Humidity: 5 - 95%, RH non-condensing

## Ordering Information
- PCI-1752U: 64-ch Isolated Digital Output Universal PCI Card
- Accessories:
  - PCL-10250-1E: 100-pin SCSI to Two 50-pin SCSI Cable, 1 m
  - ADAM-3951: 50-pin DIN-rail Wiring Board w/ LED Indicators

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# Specifications

## Isolated Digital Input
- Channels: 64 (16-ch/group)
- Input Voltage: Logic 0: 3 V max.  
  Logic 1: 10 V min. (50 V max.)
- Input Current (Typical): 10 V<sub>dc</sub> @ 1.7 mA,  
  12 V<sub>dc</sub> @ 2.1 mA,  
  24 V<sub>dc</sub> @ 4.4 mA,  
  48 V<sub>dc</sub> @ 9.0 mA,  
  50 V<sub>dc</sub> @ 9.4 mA
- Opto-isolator Response: 25 μs

## General
- Bus Type: PCI V2.2
- I/O Connectors: 1 x 100-pin SCSI female connector
- Dimensions (L x H): 175 x 100mm (6.9" x 3.9")
- Power Consumption: Typical: 5 V @ 340 mA
- Max.: 5 V @ 450 mA
- Operating Temperature: 0 - 60°C (32 - 140°F)
- Storage Temperature: -20 - 70°C (-4 - 158°F)
- Storage Humidity: 5 - 95%, RH non-condensing

## Ordering Information
- PCI-1754: 64-ch Isolated Digital Input PCI Card
- Accessories:
  - PCL-10250-1E: 100-pin SCSI to Two 50-pin SCSI Cable, 1 m
  - ADAM-3951: 50-pin DIN-rail Wiring Board w/ LED Indicators

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# Specifications

## Isolated Digital Input
- Channels: 32 (16-ch/group)
- Input Voltage: Logic 0: 3 V max.  
  Logic 1: 10 V min. (50 V max.)
- Interrupt Capable Ch.: 2 (IDI0, IDI16)
- Isolation Protection: 2,500 V<sub>oc</sub>
- Overvoltage Protection: 70 V<sub>dc</sub>
- ESD: 2,000 V<sub>dc</sub>
- Opto-isolator Response: 25 μs
- Input Current: 10 V<sub>dc</sub> @ 1.7 mA,  
  12 V<sub>dc</sub> @ 2.1 mA,  
  24 V<sub>dc</sub> @ 4.4 mA,  
  48 V<sub>dc</sub> @ 9.0 mA,  
  50 V<sub>dc</sub> @ 9.4 mA

## General
- Bus Type: PCI V2.2
- I/O Connectors: 1 x 100-pin SCSI female connector
- Dimensions (L x H): 175 x 100mm (6.9" x 3.9")
- Power Consumption: Typical: 5 V @ 250 mA
- Max.: 5 V @ 450 mA
- Operating Temperature: 0 - 60°C (32 - 140°F)
- Storage Temperature: -20 - 70°C (-4 - 158°F)
- Storage Humidity: 5 - 95%, RH non-condensing

## Ordering Information
- PCI-1756: 64-ch Isolated Digital I/O PCI Card
- Accessories:
  - PCL-10250-1E: 100-pin SCSI to Two 50-pin SCSI Cable, 1 m
  - ADAM-3951: 50-pin DIN-rail Wiring Board w/ LED Indicators
PCI-1758UDI  128-ch Isolated Digital Input
PCI-1758UDO  Universal PCI Card
PCI-1758UDIO  128-ch Isolated Digital Output
Universal PCI Card
128-ch Isolated Digital I/O Universal PCI Card

Specifications

Isolated Digital Input
- Channels  PCI-1758UDI: 128
  PCI-1758UDO: 64
- Input Voltage  Logic 0: 2.5 V max.
  Logic 1: 5 V min. (25 V max.)
- Interrupt Capable Ch.  PCI-1758UDI: 128
  PCI-1758UDO: 64
- Isolation Protection  2,500 Vrms
- Opto-Isolator Response  20 µs
- Input Resistance  3 kΩ

Isolated Digital Output
- Channels  PCI-1758UDI: 128
  PCI-1758UDO: 64
- Output Type  Sink (NPN)
- Isolation Protection  2,500 Vrms
- Output Voltage  5 – 40 VDC
- Sink Current  90 mA max./channel
- Opto-isolator Response  20 µs

General
- Bus Type  Universal PCI V2.2
- I/O Connectors  1 x mini-SCSI HDRA-E100 female connector
- Dimensions (L x H)  175 x 100 mm (6.9” x 3.9”)
- Power Consumption
<table>
<thead>
<tr>
<th>PCI-1758UDI</th>
<th>PCI-1758UDO</th>
<th>PCI-1758UDIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical</td>
<td>Max.</td>
<td></td>
</tr>
<tr>
<td>5 V@0.3 A</td>
<td>5 V@1.2 A</td>
<td></td>
</tr>
<tr>
<td>5 V@0.6 A</td>
<td>5 V@1.8 A</td>
<td></td>
</tr>
</tbody>
</table>

- Operating Temperature  0 – 60°C (32 – 140°F) (IEC 68-2-1-2)
- Storage Temperature  -20 – 70°C (-4 – 158°F)
- Storage Humidity  5 – 95% non-condensing

Ordering Information
- PCI-1758UDI  128-ch Isolated DI Universal PCI Card
- PCI-1758UDO  128-ch Isolated DI Universal PCI Card
- PCI-1758UDIO  128-ch Isolated Digital I/O Universal PCI Card

Accessories
- PCL-101100S-1E  100-pin Mini-SCSI Cable, 1 m
- PCL-101100S-2E  100-pin Mini-SCSI Cable, 2 m
- ADAM-39100  100-pin DIN-rail SCSI Wiring Board

Feature Details

Interrupt Function (PCI-1758UDI/PCI-1758UDO)
PCI-1758UDI and PCI-1758UDO provide an interrupt function for every digital input channel. You can disable/enable the interrupt functions, and select trigger type by setting the Rising Edge Interrupt Registers or Falling Edge Interrupt Registers of the card. When the interrupt request signals occur, software will service these interrupt requests by ISR. The multiple interrupt sources provide the card with more flexibility.

Digital Filter Function (PCI-1758UDI/PCI-1758UDO)
The digital filter function is used to eliminate glitches on input data and reduce the number of changes to examine and process. The filter blocks pulses that are shorter than the specified timing interval and passes pulses that are twice as long as the specified interval. Intermediate-length pulses that are longer than half of the interval, but less than the interval, may or may not pass the filter.

Pin Assignments
Introduction

PCI-1760U relay actuator and isolated digital input card is a PC add-on card for the PCI bus. It meets the PCI standard Rev. 2.2 (Universal PCI expansion card), and works with both 3.3 V and 5 V PCI slots. It provides 8 opto-isolated digital inputs with isolation protection of 2,500 Vdc for collecting digital inputs in noisy environments, 8 relay actuators that can be used as a on/off control devices or small power switches, and 2 isolated PWM (Pulse Width Modulation) outputs for custom applications.

For easy monitoring, each relay is equipped with one red LED to show its on/off status. Each isolated input supports both dry contact and wet contact so that it can easily interface with other devices when no voltage is present in the external circuit.

Specifications

**Isolated Digital Input**
- Channels: 8 (Sink)
- Input Voltage: Logic 0: 1.0 V max.  
  Logic 1: 4.5 V min. (12 V max.)
- Interrupt Capable Ch.: 8 (IDI0 ~ IDI7)
- Isolation Protection: 2,500 Vdc
- Opto-Isolator Response: 100 μs
- Input Resistance: 2 kΩ ± 1/4 W

**Counter/Timer**
- Channels: 8
- Resolution: 16 bits
- Compatibility: 5 V/TTL
- Max. Input Frequency: 500 Hz
- Isolation Protection: 2,500 Vdc
- PWM Channels: 2
- Digital Noise Filter: Min. effective high input period ≥ [(2 – 65535) x 5 ms] + 5 ms  
  Min. effective low input period ≥ [(2 – 65535) x 5 ms] + 5 ms

**Relay Output**
- Channels: 8
- Relay Type: 2 x Form C, and 6 x Form A
- Contact Rating: 1 A @ 125 Vdc, 2 A @ 30 Vdc
- Max. Switching Power: 125 VA, 60 W
- Max. Switching Voltage: 250 Vdc, 220 Vdc
- Max. Switching Current: 2 A
- Operate/Release Time: max. 5 / 3.5 ms

**Features**
- Universal PCI card, for 3.3 V and 5 V PCI slot
- 8 opto-isolated digital input channels
- 8 relay actuator output channels
- 2 opto-isolated PWM outputs
- LED indicators to show activated relays
- Jumper selectable dry contact/wet contact input signals
- Up event counters for DI
- Programmable digital filter function for DI
- Pattern match interrupt function for DI
- “Change of state” interrupt function for DI
- Universal PCI and BoardID switch

**Resistance**
- Contact: 50 mΩ max.
- Insulation: 100 MΩ min. @ 500 Vdc

**Life Expectancy**
- (Electrical) 3 x 10⁶ cycles min.: 2 A @ 30 Vdc, 1 A @ 125 Vdc  
  10⁶ cycles min.: 1 A @ 30 Vdc, 0.5 A @ 125 Vdc

**General**
- Bus Type: Universal PCI V2.2
- I/O Connectors: 1 x DB37 female connector
- Dimensions (L x H): 175 x 100 mm (6.9” x 3.9”)
- Power Consumption: Typical: 5 V @ 450 mA  
  Max.: 5 V @ 850 mA
- Operating Temperature: 0 – 60°C (32 – 140°F)
- Storage Temperature: -20 – 70°C (-4 – 158°F)
- Storage Humidity: 5 – 95 % RH, non-condensing

**Ordering Information**
- PCI-1760U: 8-ch Relay/IDI PCI Card w/ 10-ch Counter/Timer

**Accessories**
- PCL-10137-1E: DB37 Cable, 1 m
- PCL-10137-2E: DB37 Cable, 2 m
- PCL-10137-3E: DB37 Cable, 3 m
- ADAM-3937: DB37 DIN-rail Wiring Board
PCI-1780U
8-ch, 16-bit Counter/Timer Universal
PCI Card

Features
- 8 independent 16-bit counters
- 8 programmable clock source
- 8 digital TTL outputs and 8 digital TTL inputs
- Up to 20 MHz input frequency
- Multiple counter clock source selectable
- Counter output programmable
- Counter gate function
- Flexible interrupt source select
- BoardID™ switch

Introduction
PCI-1780U is a general purpose multi-channel counter/timer card for the PCI bus. It targets the AM9513 to implement the counter/timer function by CPLD. It provides eight 16-bit counter channels, 8 digital outputs and 8 digital inputs. Its powerful counter functions cater to a broad range of industrial and laboratory applications.

The card features 12 programmable counter modes, to provide one shot output, PWM output, periodic interrupt output, time-delay output, and to measure the frequency and the pulse width. The PCL-10168 shielded cable works well with PCI-1780U to reduce noise. Its wires are all twisted pairs, and the input signals and output signals are separately shielded, providing minimal cross talk between signals and the best protection against EMI/EMC problems.

Specifications

Digital Input
- Channels 8
- Compatibility 5 V/TTL
- Input Voltage Logic 0: 0.8 V max., Logic 1: 2.0 V min.
- Interrupt Capable Ch. Ch. 0

Digital Output
- Channels 8
- Compatibility 5 V/TTL
- Output Voltage Logic 0: 0.8 V, Logic 1: 2.0 V
- Output Capability Sink: 0.8 V @ 24 mA, Source: 2.0 V @ 15 mA

Counter/Timer
- Channels 8 (independent)
- Resolution 16 bits
- Compatibility 5 V/TTL
- Max. Input Frequency 20 MHz
- Reference Clock Internal: 20 MHz, External clock: 20 MHz max.
- Counter Modes 12 (programmable)
- Interrupt Capable Ch. 8
- PWM Channels 8

General
- Bus Type Universal PCI V2.2
- I/O Connectors 1 x 68-pin SCSI female connector
- Dimensions (L x H) 175 x 100 mm (6.9” x 3.9”)
- Power Consumption Typical: 5 V @ 900 mA, Max.: 5 V @ 1.2 A
- Operating Temperature 0 – 60°C (32 – 140°F)
- Storage Temperature -20 – 70°C (-4 – 158°F)
- Storage Humidity 5 – 95% RH, non-condensing

Ordering Information
- PCI-1780U 8-ch, 16-bit Counter/Timer Universal PCI Card

Accessories
- PCL-10168-1E 68-pin SCSI Shielded Cable, 1 m
- PCL-10168-2E 68-pin SCSI Shielded Cable, 2 m
- ADAM-3968 68-pin DIN-rail SCSI Wiring Board
PCI-1784U

4-axis Quadrature Encoder and 4-ch Counter
Universal PCI Card with 8-ch Isolated Digital I/O

Introduction
PCI-1784U is a 4-axis quadrature encoder and counter add-on card for PCI bus. The card includes four 32-bit quadruple A/B phase encoder counters, 8-bit timer with multi range time-base selector and 4 isolated digital inputs as well as 4 isolated digital outputs. Its flexible interrupt sources are suitable for motor control and position monitoring.

Specifications

Encoder Input
- Number of Axes: 4 (independent)
- Resolution: 32-bit
- Max. Quadrature Input: 1.0 MHz with digital filter
  2.0 MHz without digital filter
- Digital Filter: 4 stage
- Drive Type: Single-ended or differential
- Counter Modes: Quadrature, up/down, pulse/direction
- Isolation Protection: 2,500 VDC
- Max. Input Pulse Freq.: x 1, x 2, x 4
- Sample Clock Freq.: 8, 4, 2, or 1 MHz

Input Range
- Single Ended Configuration: Logic 0: 0.8 V max.
  Logic 1: 2.8 V min. (12 V max.)
- Differential Configuration: Logic 0: -0.2 V max.
  Logic 1: 0.2 V min. (±12 V max.)

Isolated Digital Input
- Channels: 4
- Input Voltage: Logic 0: 3 V max.
  Logic 1: 10 V min. (30 V max.)
- Interrupt Capable Ch.: DI0 – DI3
- Isolation Protection: 2,500 VDC
- Opto-Isolator Response: 100 μs
- Overvoltage Protection: 70 VDC

Isolated Digital Output
- Channels: 4
- Compatibility: 5V
- Isolation Protection: 2,500 VDC
- Output Voltage: Logic 0: 0.8 V min.
  Logic 1: 2.0 max.
- Sink/Source Current: 50 mA max./channel
- Opto-Isolator Response: 2 μs

Counter/Timer
- Channels: 4
- Resolution: 32 bits
- Compatibility: 5 V/TTL
- Max. Input Frequency: 8 MHz
- Counter Modes: Quadrature, pulse/direction
- Interrupt Capable Ch.: Counter0 – Counter3
- Digital Noise Filter: 4 stage

General
- Bus Type: Universal PCI V2.2
- Connectors: 37-pin D-sub female connector
- Dimensions (L x H): 175 x 100 mm (6.9” x 3.9”)
- Power Consumption:
  Typical: +5 V @ 200 mA
  Max.: +5 V @ 450 mA
- Operating Temperature: 0 – 60°C (32 – 140°F)
- Storage Temperature: -20 – 70°C (-4 – 158°F)
- Storage Humidity: 5 – 95% RH, non-condensing (refer to IEC 68-2-3)
- Certification: CE

Ordering Information
- PCI-1784U: 4-axis Quadrature Encoder and Counter Card
- PCL-10137H-3E: High-speed DB37 Cable, 3 m
- ADAM-3937: DB37 DIN-rail Wiring Board
Introduction
The PCI-1671UP IEEE-488 interface converts any PCI bus personal computer into an instrumentation control and data acquisition system. Connect up to 14 instruments using standard IEEE-488 cables such as the PCL-10488-2, 2 meter IEEE-488 interface cable. The PCI-1671UP transfers data over the GPIB at rates in excess of 1.5 million bytes per second using the maximum IEEE-488 specification cable length (2 meters times the # of devices). A 1,024-word FIFO buffer and the advanced REP-INSW ISR data transfer method provide the horsepower required to then transfer the data between the GPIB board and the host computer. The high-speed state machine also provides byte-to-word packing and unpacking, and because words carry twice the information that bytes do, packed data requires fewer bus cycles to transfer the same GPIB information.

The PCI-1671UP adheres to ANSI/IEEE Standard 488-1978. Often referred to as the IEEE-488.2 bus, GPIB bus or HP-IB bus, the GPIB (General Purpose Interface Bus) is a standard for instrumentation communication and control for instruments from manufacturers the world over. The GPIB provides handshaking and interface communications over an 8-bit data bus employing 5 control and 3 handshake signals. Equipped with PCI-1671UP, a personal computer can control GPIB instruments, gather data from GPIB test equipment, or become a data acquisition station in a GPIB system.

Specifications

<table>
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<th>GPIB</th>
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<td>IEEE 488.1, 488.2</td>
</tr>
<tr>
<td>GPIB Transfer Rate</td>
<td>1.5 MB/s</td>
</tr>
<tr>
<td>OS Support</td>
<td>Windows® 2000/XP/Vista and Win 7</td>
</tr>
<tr>
<td>Max. GPIB Connections</td>
<td>15 (14 Listener)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>General</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus Type</td>
<td>Universal PCI V2.2</td>
</tr>
<tr>
<td>I/O Connectors</td>
<td>1 x 24-pin IEEE 488</td>
</tr>
<tr>
<td>Dimensions (L x H)</td>
<td>120 x 64 mm (Low profile MD1)</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>5 V, @ 375 mA</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0 – 60°C (32 – 158°F)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40 – 100°C (-40 – 212°F)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>0 – 90% RH, non-condensing</td>
</tr>
</tbody>
</table>

Ordering Information

- **PCI-1671UP**: High-perform. IEEE-488.2 Interface PCI Card
- **PCL-10488-2**: IEEE-488 Cable, 2 m
PCM-3810I
PCM-3813I

Specifications

Analog Input
- Channels: 16 single-ended or 8 differential or combination
- Resolution: 12 bits
- Max. Sampling Rate: 250 kS/s
- Ring Buffer Size: 4,096 samples

Input Range and Gain List

<table>
<thead>
<tr>
<th>Gain</th>
<th>Unipolar</th>
<th>Bipolar</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N/A</td>
<td>±10</td>
</tr>
<tr>
<td>0–5</td>
<td>0–10</td>
<td>±5</td>
</tr>
<tr>
<td>0–2.5</td>
<td>0–2.5</td>
<td>±2.5</td>
</tr>
<tr>
<td>0–1.25</td>
<td>0–1.25</td>
<td>±1.25</td>
</tr>
</tbody>
</table>

- Input Protection: 30 Vp-p
- Sampling Mode: Polling, pacer, double-clock, or external clock
- Trigger Mode: Pre-trigger, post-trigger, delay-trigger, abort-trigger

Analog Output
- Channels: 2
- Output Range: Internal Reference (V):
  - 0–10 V
  - 0–5 V
  - 0–2.5 V
  - 0–1.25 V
- External Reference:
  - 0–±10 V
  - 0–±5 V
  - 0–±2.5 V
  - 0–±1.25 V
- Resolution: 12 bits
- Output Rate: 250 kS/s
- Ring Buffer Size: 4,096 samples
- Slew Rate: 20 V/μs
- Operation Mode: Software polling, continuous output

Digital Input/Output
- Channels: 16
- Compatibility: 5V/TTL

Counter/Timer
- Channels: 3 (independent)
- Resolution: 24 bits
- Compatibility: 5V/TTL
- Max. Input Frequency: 10 MHz
- Counter Modes: 12 (programmable)
- Interrupt Capable Ch.: 3
- PWM Channels: 3

General
- Bus Type: PCI-104
- I/O Connectors: 1 x 26-pin, 1 x 50-pin box header
- Dimensions (L x H): 96 x 90 mm (3.8" x 3.5")
- Operating Temperature: 0–60°C (32–140°F)
- Storage Temperature: -20–70°C (-4–158°F)

Ordering Information
- PCM-3810I: 250 kS/s, 12-bit Multi. PCI-104 Module
- PCM-3813I: 100 kS/s, 12-bit Isolated AI PCI-104 Module

Accessories
- PCL-10150-1.2E: 50-pin Flat Cable, 1.2 m
- ADAM-3950: 50-pin DIN-rail Flat Cable Wiring Board

Features

- Compact size with robust design
- 32 single-ended or 16 differential analog inputs
- Programmable gain for each input channel
- Automatic channel/gain/SD scanning
- Onboard ring buffer (1,024 samples)
- Isolation protection (2,500 VDC)
**Data Acquisition Boards**

**PCL-10120-2E**
- Keep digital output values after system reset
- Interrupt handling capability
- High output driving capacity
- Keep digital output values after system reset

**ADAM-3920**
- Source: 2.4 V @ 15 mA
- Sink: 0.4 V @ 24 mA

**PCM-3730I**
- Compact size with robust design
- Supports dry/wet contact
- Keeps the last output value after system hot reset
- Interrupt handling capacity
- “Pattern match” and “change of state” interrupt functions
- Output status read-back
- Interrupt output pin for simultaneously triggering external devices

**Specifications**

**Isolated Digital Input**
- **Channels**: 16
- **Input Voltage**: Logic 0: 3 V max. Logic 1: 5 V min.
- **Input Current**: 2.5 mA @ 5 V
- **Input Resistance**: 2 kΩ
- **Isolation Voltage**: 2,500 VDC
- **Over Voltage Protection**: 70 VDC
- **Opto-isolator Response Time**: 25 μs
- **Interrupt Capable**: All channels

**Isolated Digital Output**
- **Channels**: 16
- **Open Collector**: 5 – 30 VDC
- **Output Sink Current**: 250 mA max.
- **Over Current Protection**: 1.6 A per 8 channels
- **Opto-isolator Response Time**: 25 μs

**General**
- **Bus Type**: PCl-104
- **I/O Connectors**: 2 x 20-pin box header
- **Dimensions (L x H)**: 96 x 90 mm (3.8” x 3.5”)
- **Operating Temperature**: -20 – 70°C (-4 – 158°F)
- **Storage Temperature**: -50 – 120°C (-58 – 248°F)

**Ordering Information**
- **PCM-3730I**
  - 32-ch Isolated Digital I/O PCI-104 Module
- **PCM-3753I**
  - 96-ch Digital I/O PCI-104 Module
- **PCM-3761I**
  - 8-ch Relay and 8-ch Isolated Digital Input PCI-104 Module

**Ordering Information**
- **PCM-3730I**
  - 32-ch Isolated Digital I/O PCI-104 Module
- **PCM-3753I**
  - 96-ch Digital I/O PCI-104 Module
- **PCM-3761I**
  - 8-ch Relay and 8-ch Isolated Digital Input PCI-104 Module

**Accessories**
- **PCL-10120-1E**
  - 20-pin Flat Cable, 1 m
- **PCL-10120-2E**
  - 20-pin Flat Cable, 2 m
- **ADAM-3920**
- **ADAM-3950**
- **PCLD-782B**
- **PCLD-785B**
- **PCL-10150-1.2E**
  - 30 V max.
- **PCL-10150-2E**
  - 5 V min., 30 V max.
- **PCL-10150-1E**
  - 10 mA @ 12 V
  - 2 x 10⁻⁴ cycles typ.: 2000 mA @ 30 V
- **ADAM-3920**
- **ADAM-3950**
- **PCL-10150-1.2E**
  - 2 A @ 30 V

**Relay Output**
- **Channels**: 8
- **Relay Type**: DPDT, Form C
- **Contact Rating**: 0.25 A @ 250 VDC
- **Max. Switching Power**: 62.5 VA, 60 W
- **Max. Switching Voltage**: 250 VDC, 220 VAC
- **Max. Switching Current**: 5 A
- **Min. Switching Voltage**: 100 µV
- **Operate/Release Time**: typ. 3 / 2 ms, max. 5 / 4 ms
- **Contact life**: 50 mΩ max.
- **Insulation**: 1 GΩ min., 500 VDC
- **Contact: 50 mΩ max.**
- **Operate/Release Time**: typ. 3 / 2 ms, max. 5 / 4 ms
- **Contact life**: 50 mΩ max.
- **Insulation**: 1 GΩ min., 500 VDC
- **Contact: 50 mΩ max.**

**Ordering Information**
- **PCM-3761I**
  - 8-ch Relay/Isolated Digital Input PCI-104 Module
## PCM-3718H/HG/HO

### PCM-3724

100 kS/s, 12-bit, 16-ch Multifunction PC/104 Module
48-ch Digital I/O PC/104 Module

### Specifications

#### Analog Input
- **Channels**: 16 single-ended / 8 differential
- **Resolution**: 12 bits
- **Max. Sampling Rate**: 100 KHz* (DMA transfer)
  
  *80 kHz on P4-based (or upper) system
- **Input Impedance**: 10 MΩ
- **Sampling Modes**: Software, pacer or external
- **Input Range**:
  - PCM-3718H and PCM-3718HO
    - Bipolar: ±10, ±5, ±2.5, ±1.25, ±0.625
    - Unipolar: 0 – 10, 0 – 5, 0 – 2.5, 0 – 1.25, 0 – 0.625
  - PCM-3718HG
    - Bipolar: ±10, ±5, ±1, ±0.5, ±0.1, ±0.05, ±0.01, ±0.005
    - Unipolar: 0 – 10, 0 – 1, 0 – 0.5, 0 – 0.1, 0 – 0.01

#### Analog Output (PCM-3718HO only)
- **Channels**: 1 (12 bits)
- **Output Range**:
  - Internal Reference
    - Bipolar: ±10, ±5, ±2.5, ±1.25, ±0.625
    - Unipolar: 0 – 10, 0 – 5, 0 – 2.5, 0 – 1.25
  - External Reference (V)
    - Bipolar: ±10, ±5, ±1, ±0.5, ±0.1, ±0.05, ±0.01, ±0.005
    - Unipolar: 0 – 10, 0 – 5, 0 – 2.5, 0 – 1.25

#### Digital Input/Output
- **Channels**: 48 (shared with output)
- **Compatibility**: 5 V/TTL
- **Input Voltage**:
  - Logic 0: 0.8 V max.
  - Logic 1: 2.0 V min.
- **Output Voltage**:
  - Logic 0: 0.5 V max. @ 6 mA
  - Logic 1: 2.0 V min. @ 6 mA

#### General
- **Bus Type**: PC/104
- **I/O Connectors**: 2 x 20-pin box header
- **Dimensions (L x H)**: 96 x 90 mm (3.8” x 3.5”)
- **Power Consumption**:
  - Typical: 5 V @ 180 mA
  - Max.: 5 V @ 400 mA
- **Operating Temperature**: 0 – 60°C (32 – 140°F)
- **Storage Temperature**: -40 – 85°C (-40 – 185°F)
- **Storage Humidity**: 0 – 90% RH, non-condensing

### Ordering Information
- **PCM-3718H**: 100 kS/s, 12-bit Multi. PC/104 Module
- **PCM-3718HG**: 100 kS/s, 12-bit High-gain Multi. PC/104 Module
- **PCM-3718HO**: 100 kS/s, 12-bit Multi. PC/104 Module w/ AO
- **ADAM-3920**: 20-pin DIN-rail Flat Cable Wiring Board
- **PCL-10120-1E**: 20-pin Flat Cable, 1 m
- **PCL-10120-2E**: 20-pin Flat Cable, 2 m

---

### Features

- Compact size with robust design
- 48 TTL digital I/O lines
- Output status read-back
- Channels simulate 8255 PPI mode 0
- Interrupt triggering, rising/falling edge

### Specifications

#### Digital Input
- **Channels**: 48 (shared with output)
- **Compatibility**: 5 V/TTL
- **Input Voltage**:
  - Logic 0: 0.8 V max.
  - Logic 1: 2.0 V min.
- **Interrupt Capable Ch.**: 2

#### Digital Output
- **Channels**: 48 (shared with input)
- **Compatibility**: 5 V/TTL
- **Output Voltage**:
  - Logic 0: 0.5 V max. @ 6 mA
  - Logic 1: 2.0 V min. @ 6 mA

### General
- **Bus Type**: PC/104
- **I/O Connectors**: 2 x 50-pin box header
- **Dimensions (L x H)**: 96 x 90 mm (3.8” x 3.5”)
- **Power Consumption**: 5 V @ 90 mA
- **Operating Temperature**: 0 – 60°C (32 – 140°F)
- **Storage Temperature**: -40 – 85°C (-40 – 185°F)
- **Storage Humidity**: 0 – 90% RH, non-condensing

### Ordering Information
- **PCM-3724**: 48-ch Digital I/O PC/104 Module w/ 50-pin Cable
- **ADAM-3950**: 50-pin DIN-rail Flat Cable Wiring Board
- **PCLD-782B**: 24-ch IDI Board w/ 20-pin & 50-pin Flat Cables
- **PCLD-785B**: 24-ch Relay Board w/ 20-pin & 50-pin Flat Cables
- **PCL-10150-1.2E**: 50-pin Flat Cable, 1.2 m
### Specifications

#### Isolated Digital Input
- **Channels**: 8
- **Input Voltage**: Logic 0: 3 V
  Logic 1: 10 V (50 V max.)
- **Isolation Protection**: 2500 VAC
- **Overvoltage Protection**: 70 VAC
- **Opto-Isolator Response**: 25 μs
- **Input Resistance**: 4.7 kΩ

#### Relay Output
- **Channels**: 8
- **Relay Type**: SPDT (Form C)
- **Contact Rating**: 30 VAC @ 1.5 A
- **Relay on Time**: 4 ms
- **Relay off Time**: 4 ms
- **Life Span**: 100,000 min @ 2 A/30 V
- **Insulation**: 1 GΩ @ 500 VAC
- **Contact**: 100 mA max./channel
- **Isolation Protection**: 2,500 VDC

#### General
- **Bus Type**: PC/104
- **I/O Connectors**: 3 x 20-pin box header
- **Dimensions (L x H)**: 96 x 90 mm (3.8" x 3.5")
- **Power Consumption**: Typical: 5 V @ 280 mA
  Max.: 5 V @ 320 mA
- **Operating Temperature**: -20 ~ 70°C (-4 ~ 158°F)
- **Storage Temperature**: -20 ~ 70°C (-4 ~ 158°F)
- **Storage Humidity**: 5 ~ 95% RH, non-cond.

#### Ordering Information
- **PCM-3725**: 8-ch Relay/Isolated Digital Input PC/104 Module
- **PCM-3730**: 16-ch Isolated Digital I/O PC/104 Module
- **PCM-3780**: 2-ch Counter/Timer with 24-ch Digital I/O PC/104 Module

### Accessories
- **PCL-10120-1E**: 20-pin Flat Cable, 1 m
- **PCL-10120-2E**: 20-pin Flat Cable, 2 m
- **PCL-10150-1.2E**: 50-pin Flat Cable, 1.2 m
- **ADAM-3920**: 20-pin DIN-rail Flat Cable Wiring Board
- **ADAM-3950**: 50-pin DIN-rail Flat Cable Wiring Board

### Data Acquisition Boards

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**PCM-3725**
- FCC
- CE

**PCM-3730**
- FCC
- CE

**PCM-3780**
- FCC
- CE

---

8-ch Relay and Isolated Digital Input PC/104 Module
16-ch Isolated Digital I/O PC/104 Module
2-ch Counter/Timer with 24-ch Digital I/O PC/104 Module
## Signal Conditioning Modules and Terminal Boards

### Isolated Signal Conditioning Modules

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<tr>
<th>Series</th>
<th>Module Description</th>
<th>Page</th>
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<tbody>
<tr>
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<td>Isolated Signal Conditioning Modules</td>
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<tr>
<td>ADAM-3011</td>
<td>Isolated Thermocouple Input Module</td>
<td>20-4</td>
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<tr>
<td>ADAM-3013</td>
<td>Isolated RTD Input Module</td>
<td></td>
</tr>
<tr>
<td>ADAM-3014</td>
<td>Isolated DC Input/Output Module</td>
<td></td>
</tr>
<tr>
<td>ADAM-3016</td>
<td>Isolated Strain Gauge Input Module</td>
<td>20-5</td>
</tr>
<tr>
<td>ADAM-3112</td>
<td>Isolated AC Voltage Input Module</td>
<td></td>
</tr>
<tr>
<td>ADAM-3114</td>
<td>Isolated AC Current Input Module</td>
<td></td>
</tr>
</tbody>
</table>

### Terminal Board Selection Guide

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<tr>
<th>Module</th>
<th>Description</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>ADAM-3854</td>
<td>4-ch Power Relay Module</td>
<td>20-6</td>
</tr>
<tr>
<td>ADAM-3864</td>
<td>4-ch Solid State Digital I/O Module Carrier Backplane</td>
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</tr>
</tbody>
</table>

### I/O Wiring Terminal Boards

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<tr>
<th>Module</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCLD-782/B</td>
<td>16/24-ch Opto-Isolated Digital Input Board</td>
<td>20-9</td>
</tr>
<tr>
<td>PCLD-785/B</td>
<td>16/24-ch Relay Board</td>
<td></td>
</tr>
<tr>
<td>PCLD-985</td>
<td>16-ch Power Relay Board</td>
<td></td>
</tr>
<tr>
<td>PCLD-8751</td>
<td>48-ch Opto-Isolated Digital Input Board</td>
<td>20-10</td>
</tr>
<tr>
<td>PCLD-8761</td>
<td>24-ch Opto-Isolated DI and 24-ch Relay Output Board</td>
<td></td>
</tr>
<tr>
<td>PCLD-8762</td>
<td>48-ch Relay Output Board</td>
<td></td>
</tr>
<tr>
<td>PCLD-786</td>
<td>8-ch SSR I/O Module Carrier Board</td>
<td>20-11</td>
</tr>
<tr>
<td>PCLD-7216</td>
<td>16-ch SSR I/O Module Carrier Board</td>
<td></td>
</tr>
<tr>
<td>PCLD-8710</td>
<td>DIN-rail Wiring Terminal Board with CJC Circuit</td>
<td>20-12</td>
</tr>
<tr>
<td>PCLD-8712</td>
<td>DIN-rail Wiring Terminal for PCI-1712/L</td>
<td></td>
</tr>
<tr>
<td>PCLD-788</td>
<td>16-ch Relay Multiplexer Board</td>
<td>20-13</td>
</tr>
<tr>
<td>PCLD-789D</td>
<td>Amplifier and Multiplexer Board</td>
<td>20-14</td>
</tr>
</tbody>
</table>

To view all of Advantech’s Signal Conditioning Modules and Terminal Boards, please visit www.advantech.com/products.
ADAM-3000 Series

Introduction
The ADAM-3000 Series consist of the most cost-efficient, field configurable, isolation-based, signal conditioners on the market today. The modules are easily installed to protect your instruments and process signals from the harmful effects of ground loops, motor noise, and other electrical interferences.

Affordable Signal Isolation Solution
Featuring optical isolation technology, the ADAM-3000 modules provide three-way (input/output/power) 1,000 VDC isolation. Optical isolation provides pin-point accuracy and stability over a wide range of operations at minimal power consumption.

Flexible Analog Data Conversion
The input/output range for the ADAM-3000 modules can be configured through switches located inside the module. The modules accept voltage, current, thermocouple or RTD as input, and pass voltage or current as output. Thermocouple input is handled by the built-in input thermocouple linearization circuitry and a cold junction compensation function. These ensure accurate temperature measurement and accurate conversion of this information to the voltage or current output.

Configuration
The ADAM-3000 modules use 24 VDC power. This electrical power wiring can be acquired from adjacent modules, which greatly simplifies wiring and maintenance. The I/O configuration switches are located inside the modules. To reach the switches, simply remove the modules from the DIN-rail bracket by sliding the modules downward.

Modular Industrial Design
The ADAM-3000 modules can be easily mounted on a DIN-rail, and signal wires can be connected through screw terminals. The screw terminals and input/output configuration switches are built inside the industrial grade plastic casing. With simple two-wire input/output cables, wiring is easy and reliable in harsh industrial environments.

Applications
- Signal isolation
- Signal transmitters
- Thermocouple/RTD/strain gauge measurements
- Signal amplifiers
- Noise filter

Features
- 1,000 VDC three-way isolation
- Easy input/output range configuration
- Flexible DIN-rail mounting
- Linearized thermocouple/RTD measurement
- Low power consumption
- Wide input bandwidth

Common Specifications
- Isolation: 1,000 VDC
- Indicators: Power LED indicator
- Power Requirement: 24 VDC, ± 10%
- Case: ABS
- Screw Terminal: Accepts 0.5 mm² ~ 2.5 mm² 1-#12 or 2-#14 ~ #22 AWG
- Operating Temperature: 0 ~ 70°C (32 ~ 158°F) (ADAM-3011: 0 ~ 50°C (32 ~ 122°F))
- Storage Temperature: -25 ~ 85°C (-13 ~ 185°F)
Isolated Signal Conditioning Modules

**Block Diagram**

Block Diagram of ADAM-3014

**Dimensions**

ADAM-3000 Series Modules

---

**Three-way Signal Isolation**

Three-way (input/output/power) 1,000 VDC isolation.

**Field Configurable I/O Range**

The I/O range can be configured on site with switches inside the module.

**Easy Daisy Chain Power Wiring**

Power can be connected conveniently from adjacent modules.

**Interfacing to DAQ Cards**

A wiring adapter can connect modules to a data acquisition card.
Specifications

**Thermocouple Input**
- **Common Mode Rejection**: 115 dB min
- **Input Type**

<table>
<thead>
<tr>
<th>T/C type</th>
<th>Temperature Range (°C)</th>
<th>Accuracy at 25°C (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
<td>-40 ~ 760</td>
<td>±2</td>
</tr>
<tr>
<td>K</td>
<td>0 ~ 1,000</td>
<td>±2</td>
</tr>
<tr>
<td>T</td>
<td>-100 ~ 400</td>
<td>±2</td>
</tr>
<tr>
<td>S</td>
<td>0 ~ 1,000</td>
<td>±4</td>
</tr>
<tr>
<td>R</td>
<td>500 ~ 1,750</td>
<td>±4</td>
</tr>
<tr>
<td>B</td>
<td>500 ~ 1,800</td>
<td>±4</td>
</tr>
</tbody>
</table>

- **Isolation**: 1,000 VDC (Three-way)
- **Output Impedance**: 0.5 Ω
- **Stability**
  - (Temperature Drift): ±2°C
- **Voltage Output**: 0 ~ 10 V

**General**
- **Connectors**: Screw terminal
- **Enclosure**: ABS
- **Indicators**: Power LED indicator
- **Isolation**: 1,000 V<sub>oc</sub>
- **Power Consumption**: 1.4 W
- **Power Input**: 24 V<sub>oc</sub> ±10%
- **Operating Temperature**: 0 ~ 50°C (32 ~ 122°F)
- **Storage Temperature**: -25 ~ 85°C (-13 ~ 185°F)

**Ordering Information**
- **ADAM-3011**: Isolated Thermocouple Input Module

---

Specifications

**RTD Input**
- **Accuracy**: ± 0.1% of full range (voltage) or +/- 0.15°C (voltage)
- **Common Mode Rejection**: >100 dB @ 50 Hz/60 Hz
- **Input CMR at DC**: 92 dB min.
- **Input Connections**: 2, 3 or 4 wires
- **Input Type**

<table>
<thead>
<tr>
<th>RTD type</th>
<th>Temperature Range (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pt 0.00385</td>
<td>-100 ~ 100</td>
</tr>
<tr>
<td>Pt 0.00385</td>
<td>0 ~ 100</td>
</tr>
<tr>
<td>Pt 0.00385</td>
<td>0 ~ 200</td>
</tr>
<tr>
<td>Pt 0.00385</td>
<td>0 ~ 600</td>
</tr>
<tr>
<td>Pt 0.00385</td>
<td>-100 ~ 0</td>
</tr>
<tr>
<td>Pt 0.00385</td>
<td>-100 ~ 200</td>
</tr>
<tr>
<td>Pt 0.00385</td>
<td>-50 ~ 50</td>
</tr>
<tr>
<td>Pt 0.00385</td>
<td>-50 ~ 150</td>
</tr>
<tr>
<td>Pt 0.00392</td>
<td>-100 ~ 100</td>
</tr>
<tr>
<td>Pt 0.00392</td>
<td>0 ~ 100</td>
</tr>
<tr>
<td>Pt 0.00392</td>
<td>0 ~ 200</td>
</tr>
<tr>
<td>Pt 0.00392</td>
<td>0 ~ 600</td>
</tr>
<tr>
<td>Ni N/A</td>
<td>0 ~ 100</td>
</tr>
<tr>
<td>Ni N/A</td>
<td>-85 ~ 100</td>
</tr>
</tbody>
</table>

- **Bandwidth**: 4 Hz
- **Input CMR at DC**: 92 dB min.
- **Input Connections**: 2, 3 or 4 wires
- **Input Type**

- **Output Range**: 0 ~ 5 V, 0 ~ 10 V, 0 ~ 20 mA
- **Output Resistance**: < 5 Ω
- **Temperature Drift**: ± 30 ppm of full range

**General**
- **Connectors**: Screw terminal
- **Enclosure**: ABS
- **Indicators**: Power LED indicator
- **Isolation**: 1,000 V<sub>oc</sub>
- **Power Consumption**: < 0.95 W (voltage output)
- **Power Input**: 24 V<sub>dc</sub> ±10%
- **Operating Temperature**: 0 ~ 70°C (32 ~ 158°F)
- **Storage Temperature**: -25 ~ 85°C (-13 ~ 185°F)

**Ordering Information**
- **ADAM-3013**: Isolated RTD Input Module

---

Specifications

**I/O**
- **Accuracy**: ±0.1% of full range (typical)
- **Common Mode Rejection**: > 100 dB @ 50 Hz/60 Hz
- **Current Input**: Bipolar: ±20 mA
  - Unipolar: 0 ~ 20 mA
- **Input Impedance**: 250 Ω
- **Input Type**

- **Output Range**: ±10 mV, ±50 mV, ±100 mV, ±0.5 V, ±1.0 V, ±5 V, ±10 V
- **Output Resistance**: < 50 Ω
- **Temperature Drift**: ± 30 ppm of full range

**General**
- **Connectors**: Screw terminal
- **Enclosure**: ABS
- **Indicators**: Power LED indicator
- **Isolation**: 1,000 V<sub>oc</sub>
- **Power Consumption**: 0.85 W (voltage output)
- **Power Input**: 1.2 W (current output)
- **Operating Temperature**: -10 ~ 70°C (14 ~ 158°F)
- **Storage Temperature**: -25 ~ 85°C (-13 ~ 185°F)

**Ordering Information**
- **ADAM-3014**: Isolated DC Input/Output Module

---

ADAM-3011
ADAM-3013
ADAM-3014

*Signal Conditioning Modules and Terminal Boards*
Specifications

I/O
- Accuracy: ±0.1% of full range
- Bandwidth: 2.4 kHz (typical)
- Isolation Mode: >100 dB @ 50 Hz/60 Hz
- Current Output: Current: 0 – 20 mA
  Current load resistor: 0 – 500 Ω (Source)
- Stability (Temperature Drift): 150 ppm (typical)
- Voltage Specifications: Electrical input: ±10 mV, ±20 mV, ±30 mV, ±100 mV
  Excitation voltage: 1 – 10 VDC (60 mA max)
- Voltage Output: Bipolar: ±5 V, ±10 V
  Unipolar: 0 – 10 V
  Impedance: < 50 Ω

General
- Connectors: Screw terminal
- Enclosure: ABS
- Indicators: Power LED indicator
- Isolation: 1,000 VDC (Three-way)
- Power Consumption: ≤ 1.85 W (voltage output)
  ≤ 2.15 W (current output)
- Power Input: 24 VDC ±10%
- Operating Temperature: -10 – 70°C (14 – 158°F)
- Storage Temperature: -25 – 85°C (-13 – 185°F)

Ordering Information
- ADAM-3016: Isolated Strain Gauge Input Module
- ADAM-3112: Isolated AC Voltage Input Module
- ADAM-3114: Isolated AC Current Input Module

Specifications

Voltage Input

<table>
<thead>
<tr>
<th>Full Range Mode</th>
<th>400 V</th>
<th>250 V</th>
<th>120 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage</td>
<td>0 – 400</td>
<td>0 – 250</td>
<td>0 – 120</td>
</tr>
<tr>
<td>DC (V)</td>
<td>0 – 400</td>
<td>0 – 250</td>
<td>0 – 120</td>
</tr>
<tr>
<td>Input Impedance</td>
<td>48 k</td>
<td>30 k</td>
<td>14.4 k</td>
</tr>
</tbody>
</table>

Voltage Output
- Output Signal: 0 – 5 VDC
- Accuracy: < ±1.0 % for full range
- Output Impedance: < 10 Ω @ operating frequency <60 Hz
- Load: > 10 kΩ
- Ripple: < 120 mVp-p
- Temperature Coefficient: 400 ppm/°C
- Input Bandwidth: 6 kHz

Power Consumption
- Supply Voltage: 24 VDC ± 10 %
- Current Consumption: 40 mA

General
- Isolation Protection: 1,000 VDC (output to power)
  2,500 VAC (input to output, input to power)
- Operating Temperature: 0 – 60°C (32 – 140°F)
- Storage Temperature: -20 – 70°C (-4 – 158°F)
- Storage Humidity: 5 – 95 %

Ordering Information
- ADAM-3114: Isolated AC Current Input Module

Isolated Strain Gauge Input Module
Isolated AC Voltage Input Module
Isolated AC Current Input Module
Terminal Board Selection Guide

Recommended Cables, I/O Wiring Terminal Boards and Isolated Digital I/O Terminals for Connecting to PCI & USB Data Acquisition (DAQ) Products

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<th>I/O Wiring Terminal Board</th>
<th>Cable</th>
<th>Digital I/O Terminal</th>
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<td>PCL-10120 PCL-10121</td>
<td>ADAM-3920</td>
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<td>PCI-1711U/1711UL</td>
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<td>PCI-1712/1712L</td>
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<td>PCI-1718HDU/HGU</td>
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<td>ADAM-3937 PCLD-880</td>
<td>PCLD-8712</td>
<td>PCL-785</td>
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<tr>
<td>PCI-1727U PCI-1730U PCI-1739</td>
<td>PCL-10137 ADAM-3937 PCLD-880</td>
<td>PCL-10502+ PCL-10120 PCL-10121</td>
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<td>PCI-1733</td>
<td>PCL-10268</td>
<td>PCLD-8751 PCLD-8761 PCLD-8762</td>
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<td>PCI-1731U, PCI-1715U</td>
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<td>PCL-10250</td>
<td>ADAM-39100</td>
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<td>PCI-1724U, PCI-1762</td>
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<td>PCI-1737U PCI-1739U USB-4751/L</td>
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<td>ADAM-3950 PCLD-782B PCLD-785B PCLD-885 PCLD-7216</td>
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<td>PCL-785</td>
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<td>ADAM-3909</td>
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<td>ADAM-3968</td>
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<td>PCLD-7216</td>
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# Recommended Cables, I/O Wiring Terminal Boards and Isolated Digital I/O Terminals for Connecting to PC/104 & PCI-104 Data Acquisition (DAQ) Products

## PC/104 & PCI-104 Product

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<th>Product</th>
<th>Cable</th>
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<th>Digital I/O Terminal</th>
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<td>ADAM-3920, PCLD-7828, PCLD-785B, PCLD-885, PCLD-7216</td>
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<td>PCM-3724</td>
<td>PCL-10120</td>
<td>ADAM-3920</td>
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<tr>
<td>PCM-3753I</td>
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<td>PCM-3761I</td>
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<td>PCM-3810I</td>
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<td>PCM-3813I</td>
<td>PCL-10141</td>
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<td>PCM-3730I</td>
<td>PCL-10120</td>
<td>ADAM-3920</td>
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## Cable Accessories

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<th>Description</th>
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<tbody>
<tr>
<td>PCL-1010B-1E</td>
<td>BNC to BNC Wiring Cable, 1 m</td>
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<tr>
<td>PCL-10100-1E</td>
<td>100-pin SCSI High-Speed Cable, 1 m</td>
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<tr>
<td>PCL-101105-1E</td>
<td>100-pin Mini-SCSI Cable, 1 m</td>
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<tr>
<td>PCL-101105S-2E</td>
<td>100-pin Mini-SCSI Cable, 2 m</td>
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<tr>
<td>PCL-101105S-3E</td>
<td>100-pin Mini-SCSI Cable, 3 m</td>
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<tr>
<td>PCL-101105M-3E</td>
<td>100-pin SCSI Shielded Cable, 3 m</td>
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<tr>
<td>PCL-10120-0.4E</td>
<td>20-pin Flat Cable, 0.4 m</td>
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<tr>
<td>PCL-10120-1E</td>
<td>20-pin Flat Cable, 1 m</td>
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<tr>
<td>PCL-10120-2E</td>
<td>20-pin Flat Cable, 2 m</td>
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<tr>
<td>PCL-10121-2E</td>
<td>20-pin Shielded Cable, 2 m</td>
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<tr>
<td>PCL-10125-1E</td>
<td>DB25 Cable, 1 m</td>
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<tr>
<td>PCL-10125S-3E</td>
<td>DB25 Cable, 3 m</td>
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<tr>
<td>PCL-10126-0.2E</td>
<td>IDE#2 26-pin to DB25(F) Flat CABLE, 0.2m</td>
</tr>
<tr>
<td>PCL-10137-1E</td>
<td>DB37 Cable, 1 m</td>
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<tr>
<td>PCL-10137-2E</td>
<td>DB37 Cable, 2 m</td>
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<tr>
<td>PCL-10137-3E</td>
<td>DB37 Cable, 3 m</td>
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<tr>
<td>PCL-10137H-1E</td>
<td>DB37 High-Speed Cable, 1 m</td>
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</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
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<tbody>
<tr>
<td>PCL-10137H-3E</td>
<td>DB37 High-Speed Cable, 3 m</td>
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<tr>
<td>PCL-10141-0.2E</td>
<td>IDE#2 40-pin to DB37(F) Flat CABLE, 0.2m</td>
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<tr>
<td>PCL-10150-1.2E</td>
<td>50-pin Flat Cable, 1.2 m</td>
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<tr>
<td>PCL-10162-1E</td>
<td>DB62 Cable, 1 m</td>
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<tr>
<td>PCL-10162-3E</td>
<td>DB62 Cable, 3 m</td>
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<tr>
<td>PCL-10168-1E</td>
<td>68-pin SCSI Shielded Cable, 1 m</td>
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<tr>
<td>PCL-10168-2E</td>
<td>68-pin SCSI Shielded Cable, 2 m</td>
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<tr>
<td>PCL-10168H-1E</td>
<td>68-pin SCSI Shielded Cable with Noise Rejecting, 1m</td>
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<tr>
<td>PCL-10168H-2E</td>
<td>68-pin SCSI Shielded Cable with Noise Rejecting, 2m</td>
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<td>PCL-10250-1E</td>
<td>100-pin SCSI to Two 50-pin SCSI Cable, 1 m</td>
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<tr>
<td>PCL-10250-2E</td>
<td>100-pin SCSI to Two 50-pin SCSI Cable, 2 m</td>
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<tr>
<td>PCL-10268-1E</td>
<td>100-pin SCSI to Two 68-pin SCSI Cables, 1 m</td>
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<tr>
<td>PCL-10268-2E</td>
<td>100-pin SCSI to Two 68-pin SCSI Cables, 2 m</td>
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<tr>
<td>PCL-10488-2</td>
<td>IEEE-488 Cable, 2 m</td>
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<tr>
<td>PCL-10502-AE</td>
<td>Extender, Extend Dual 20-pin to PC Slot-Plate</td>
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<tr>
<td>PCL-10503-AE</td>
<td>Adapter Dual 20-pin to DB37</td>
</tr>
<tr>
<td>PCL-10901-3E</td>
<td>DB9 to PS/2 Cable, 3 m</td>
</tr>
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</table>
ADAM-3854
ADAM-3864

4-ch Power Relay Module
4-ch Solid State Digital I/O Module
Carrier Backplane

Features
- High power relays can handle up to 5 A @ 250 VAC and 5 A @ 30 VDC
- 4 single-pole double-throw (SPDT) relays
- Industrial screw terminals for easy output wiring
- LED status indicators
- Onboard varistor protects relay contact points
- DIN-rail mounting

Specifications

I/O
- Channels: 4
- Contact Rating: 250 VAC @ 5 A, 30 VDC @ 5 A
- Contact Resistance: 100 mΩ
- Operation Time: 15 ms max.
- Relay Type: SPDT (Form C)
- Release Time: 5 ms max.
- Life Expectancy: 1.7 x 10⁵ at rated load

Varistor
- Clamping Voltage: 760 V (10 A)
- Max. Applied Voltage: 300 VDC
- Max. Peak Current: 1.200 A for 8 ms
- Varistor Voltage: 470 V (current = 1 mA)

General
- Connectors: Screw terminals
- Dimensions (L x W x H): 112.5 x 118.4 x 46 mm (4.43” x 4.66” x 1.81”)
- LED Indicators: Status displayed for each relay
- Mounting: DIN-rail
- Power Consumption: 2.2 W
- Power Input: 24 VDC

Ordering Information
- ADAM-3854: 4-ch DIN-rail Power Relay Module
- ADAM-3864: 4-ch Solid State Digital I/O Module Carrier Backplane
**PCLD-782/B**  
**PCLD-785/B**  
**PCLD-885**  

**Features**  
- Compatible with all PC-LabCard™ products with DI channels on either 20-pin flat cable or 50-pin Opto-22 compatible connectors  
- 16 or 24 optically-isolated digital input channels  
- Built-in screw terminals for easy input wiring  
- LEDs indicate input logic status  
- Inputs buffered with voltage comparators

**Specifications**  
**Isolated Digital Input**  
- Channels: PCLD-782: 16, PCLD-782B: 24  
- Input Range: 0 ~ 24 VDC  
- Input Resistance: 500 Ω  
- Isolation Voltages: 1,500 VDC min.  
- Threshold Voltage: 1.5 VDC (VR adjustable)  

**General**  
- DI Connectors: Screw terminals (#12 ~ 22 AWG)  
- Controller Connector: PCLD-782: 1 x 20-pin box header (CN1), PCLD-782B: 1 x 20-pin box header (CN1) and 1 x 50-pin box header (CN2)  
- Dimensions (L x W): PCLD-782: 337 ~ 205 x 114 mm (8.1" x 4.5")  
- Led Indicators: Indicate input logic status  
- Mounting: 4 x screw holes for flat surface mounting

**Ordering Information**  
- PCLD-782: 16-ch Isolated DI Board w/ 1m 20-pin Flat Cable  
- PCLD-782B: 24-ch DI Board w/ 20-pin & 50-pin Flat Cables  
- Accessories: PCL-10120-1E: 20-pin Flat Cable, 1 m, PCL-10120-2E: 20-pin Flat Cable, 2 m, PCL-10150-1.2E: 50-pin Flat Cable, 1.2 m

**Features**  
- Compatible with PC-LabCard™ products with 20-pin digital output connector and 50-pin Opto-22 digital output connector (PCL-785B only)  
- Automatic selection of control logic (PCLD-785B only). Negative logic for the 20-pin flat cable connector  
- Positive logic for the Opto-22 connector  
- Screw terminals for easy output wiring  
- LED status indicators  
- 5 V/ 12 V power/status LED indicator

**Specifications**  
**Relay**  
- Channels: PCLD-785: 16 (CN1, 20-pin conn.), PCLD-785B: 16 (CN1, 20-pin conn.), 24 (CN2, 50-pin conn.)  
- Contact Ratings: 120 VDC @ 0.5 A, 30 VDC @ 1 A  
- Contact Resistance: < 100 mΩ  
- Operation Time: 5 ms max.  
- Insulation Resistance: 100 MΩ  
- Life Expectancy: >60 years (at rated load)  
- Relay On Time: 6 ms max.  
- Relay Off Time: 3 ms max.  
- Relay Type: SPST (Form A), normally open

**Varistor**  
- Clamping Voltage: 760 V (10 A)  
- Max. Peak Current: 1,200 A for 1 msec.  
- Max. Applied Voltage: 300 Vrms AC continuous  
- Varistor Voltage: 470 V (current = 1 mA)

**General**  
- Power Consumption: 12 V @ 22 mA for each relay, 352 mA if all relays energized  
- Connectors: 5 V/ 200 mA max. Input: 20-pin flat cable or 50-pin Opto-22 compatible Output: Barrier strip screw terminal

**Ordering Information**  
- PCLD-785: 16-relay relay board w/ 20-pin & 50-pin Flat Cables  
- Accessories: PCL-10120-1E: 20-pin Flat Cable, 1 m, PCL-10120-2E: 20-pin Flat Cable, 2 m, PCL-10150-1.2E: 50-pin Flat Cable, 1.2 m

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**PCLD-885**  

**Features**  
- Accepts 20-pin or 50-pin (Opto-22 compatible) connectors  
- 16 single-pole single-throw (SPST) relays  
- High-power relay handles up to 6 A @ 250 VDC  
- Onboard varistors protect all relay contact points  
- Industrial screw terminals for ease of wiring  
- LED status indicators  
- 5 V/ 12 V power/status LED indicator

**Specifications**  
**Relay**  
- Channels: 16  
- Contact Rating: 250 VDC @ 6 A  
- Contact Resistance: 30 mΩ max.  
- Insulation Resista.: 1,000 MΩ @ 500 VDC  
- Life Expectancy: >100,000 cycles at rated load  
- Relay On Time: 6 ms max.  
- Relay Off Time: 3 ms max.  
- Relay Type: SPST (Form A), normally open

**Varistor**  
- Clamping Voltage: 760 V (10 A)  
- Max. Peak Current: 1,200 A for 1 msec.  
- Max. Applied Voltage: 300 Vrms AC continuous  
- Varistor Voltage: 470 V (current = 1 mA)

**General**  
- Power Consumption: 12 V @ 22 mA for each relay, 352 mA if all relays energized  
- Connectors: 5 V/ 200 mA max. Input: 20-pin flat cable or 50-pin Opto-22 compatible Output: Barrier strip screw terminal

**Ordering Information**  
- PCLD-885: 16-relay relay board w/ 20-pin & 50-pin Flat Cables  
- Accessories: PCL-10120-1E: 20-pin Flat Cable, 1 m, PCL-10120-2E: 20-pin Flat Cable, 2 m, PCL-10150-1.2E: 50-pin Flat Cable, 1.2 m
### PCLD-8751
#### Features
- 48 optically-isolated digital input channels
- Built-in plug-in screw terminals for easier wiring
- LEDs indicate input logic status
- Input buffered with voltage comparators
- Wet/Dry contact set by DIP switches
- Input logic set by jumper
- Wide input range from 5 to 30 V

#### Specifications
- **Digital Input**
  - **Channels**: 48 isolated digital inputs
  - **Contact Mode**: Wet contact and dry contact (set by switch)
  - **Isolation Voltage**: 3,500 V
  - **Logic Modes**: Positive Logic, Negative Logic (set by jumper)
  - **Signal Voltage**: 0 – 30 V
- **Certification**: CE, FCC
- **Connectors**: Cable: SCSI-68 pin
- **Dimensions**: 255 x 121 mm (10.04" x 4.76")
- **LED Indicators**: One for each channel to indicate logic status
- **Mounting**: DIN-rail

#### Ordering Information
- **PCLD-8751**: 48-ch Opto-isolated Digital Input Board

### PCLD-8761
#### Features
- Built-in plug-in screw terminals for easier wiring
- LED status indicators for DI and relay output
- Digital inputs buffered with voltage comparators
- Wet/Dry contact set by DIP switches for DI/I
- Wide input range from 5 to 30 V
- INT/EXT Power selection by jumper

#### Specifications
- **Digital Input**
  - **Channels**: 24 IDI with LED
  - **Contact Mode**: Wet contact and dry contact (set by switch)
  - **Isolation Voltage**: 3,500 V (Isolated DI), 1,500 V (Relay)
  - **Logic Mode**: Positive Logic, Negative Logic (set by jumper)
- **Relay Output**
  - **Channels**: 24 SPDT (Form C)
  - **Contact Rating**: 30 VDC @ 1 A, 120 VAC @ 0.5 A
  - **Contact Resistance**: 100 mΩ
  - **Electrical Endurance**: 5 x 10⁷ times at 12 V/10 mA
  - **Mechanical Endurance**: 10⁶ times
  - **Operation Time**: 5 ms Max
  - **Release Time**: 6 ms Max
- **Certification**: CE, FCC
- **Connectors**: Cable: SCSI-68 pin
- **Dimensions**: 285 x 121 mm (11.22" x 4.76")
- **Mounting**: DIN-rail
- **Power Input**: Unregulated 7 ~ 30 V
- **Power Consumption**:
  - +5 V: ≤ 380 mA, +50*n (mA) (+*n indicate the number of relays)
  - +12 V: ≤ 240 mA, +70*n (mA)
  - PCI Bus or External power (7 ~ 30 V) by jumper

#### Ordering Information
- **PCLD-8761**: 24-ch Opto-isolated DI and 24-ch Relay (SPDT) Output Board

### PCLD-8762
#### Features
- Built-in plug-in screw terminals for easier wiring
- LED status indicators for Relay output
- DIN-rail mounting
- Onboard relay driver circuits

#### Specifications
- **Relay Output**
  - **Channels**: 48 SPDT (Form C)
  - **Contact Rating**: 30 VDC @ 1 A, 120 VAC @ 0.5 A
  - **Contact Resistance**: 100 mΩ
  - **Electrical Endurance**: 5 x 10⁷ times at 12 V/10 mA
  - **Mechanical Endurance**: 10⁸ times
  - **Operation Time**: 5 ms Max
  - **Release Time**: 6 ms Max
- **Certification**: CE, FCC
- **Connectors**: Cable: SCSI-68 pin
- **Dimensions**: 285 x 117 mm (11.22" x 4.61")
- **Mounting**: DIN-rail
- **Power Consumption**:
  - +5 V @ ≤ 380 mA, +50*n (mA) (+*n indicate the number of relays)
  - +12 V @ ≤ 240 mA, +70*n (mA)
  - Power selection by jumper

#### Ordering Information
- **PCLD-8762**: 48-ch Relay (SPDT) Output Board
Features
- Up to eight AC or DC solid state relay modules
- Photo-coupler isolated operation
- Eight external relay drivers
- LED status indicators

Specifications

AC Solid State Relays
- 1 Cycle Surge: 40 A
- Blocking Voltage: ≥600 V min.
- Off Leakage Current: 8 mA max.
- On-state Voltage: 1.6 V max.
- Output Rating: 24 – 280 VAC @ 3.0 A
- Turn On: zero volts
- Turn On/Off Time: < ½ cycle
- Type: PCLM-OAC5A

DC Solid State Relays
- 1 Second Surge: 5 A
- OFF Leakage Current: 1 mA max.
- ON-state Voltage: 1.4 V max.
- Output Rating: 5 – 60 VDC @ 3.0 A
- Turn On/Off Time: 750 µs max.
- Type: PCLM-ODC5

External Relay Drivers
- Channels: 8
- Coil Driving Voltage: 5 V, 12 V from PC or external source
- Driver Type: ULN2003, open collector type
- Max. Driving Current: 125 mA each channel

General
- Dimensions (L x W): 205 x 114 mm (8.1” x 4.5”)

Ordering Information
- PCLD-786: 8-ch SSR I/O Module Carrier Board w/ 20-pin Flat Cable
- Note: PCLD-786 does not include SSRs. They must be ordered by selecting single piece SSR modules according to your requirements.
- PCLM-OAC5A: Single Piece AC SSR Module (280 VAC, 3 A)
- PCLM-ODC5: Single Piece DC SSR Module (60 VDC, 3 A)

Features
- Channel status reflected by onboard LED for easy monitoring
- Onboard fuse protection

Specifications

Module Type | Field Side Voltage | Logic Side Voltage |
--- | --- | --- |
Output Modules | Part No. | Output Voltage Rating | Output Current Rating | Input Logic and SSR Status |
AC Output | PCLM-OAC5A | 24 – 280 VAC | 3.0 A | TTL low (0V) |
| DC Output | PCLM-ODC5 | 5 – 60 VDC | 3.0 A | TTL high (5V) |

Input Modules
- Input Voltage: 1.8 ~ 28 VDC
- Input Current: 5 mA max.
- Supply Voltage: 4 – 6 V
- Supply Current: 12 mA max.

Output Modules
- Current Rating: 3 A max. (@ 25°C)
- Contact Voltage Drop: 1.6 V max.
- Turn On/Off Time: 100 µsec/750 µsec. max.

Logic Side:
- Input Resistance: 220 Ω
- Supply Voltage: 4 – 6 V
- Supply Current: 12 mA max.

General
- Logic Side Connectors: 50-pin edge connector, Opto-22 compatible
- Dimensions (L x W x H): 367 x 111 x 56 mm (14.4” x 4.4” x 2.2”)

Ordering Information
- PCLD-7216: 16-ch SSR I/O Module Carrier Board
- Note: PCLD-7216 does not include SSRs. They must be ordered by selecting single piece SSR modules according to your requirements.
Introduction

The PCLD-8710 is designed to match multifunction cards with 68-pin SCSI-II connectors, such as the PCI-1710U/UL, PCI-1710HGU, PCI-1711U/UL, PCI-1716/L cards. This screw-terminal board also includes cold junction sensing circuitry that allows direct measurements from thermocouple transducers. Together with software compensation and linearization, every thermocouple type can be accommodated. The PCLD-8712 Screw-terminal Board provides convenient and reliable signal wiring for the PCI-1712/L of which has a 68-pin SCSI-II connector.

Due to its special PCB layout you can install passive components to construct your own signal-conditioning circuits. The user can easily construct a low-pass filter, attenuator or current shunt converter by adding resistors and capacitors on board’s circuit pads.

Applications

Field wiring for analog and digital I/O channels of PC-LabCard™ products.

Signal conditioning circuits can be implemented as illustrated in the following examples:

a) Straight-through connection (factory setting)

\[ \text{RAn} = 0 \, \Omega \text{ (short)} \]
\[ \text{RBn} = \text{none} \]
\[ \text{Cn} = \text{none} \]

b) 1.6 kHz (3 dB) low pass filter

\[ \text{RAn} = 10 \, \text{K}\Omega \]
\[ \text{RBn} = \text{none} \]
\[ \text{Cn} = 0.01 \, \mu\text{F} \]

\[ f_{\text{3dB}} = \frac{1}{2 \pi R\text{An} C\text{n}} \]

\[ f_{\text{3dB}} = \text{RAn} + \text{RBn} \]

\[ \text{RAn} = \frac{\text{RBn}}{\text{RAn} + \text{RBn}} \]

(3 dB) attenuation

\[ \text{RAn} = 0 \, \Omega \text{ (short)} \]
\[ \text{RBn} = 250 \, \Omega \text{ (0.1\% precision resistor)} \]
\[ \text{Cn} = \text{none} \]

\[ \text{Ordering Information} \]

\[ \text{PCLD-8710} \]
DIN-rail Wiring Terminal Board with CJC Circuit

\[ \text{PCLD-8712} \]
DIN-rail Wiring Terminal for PCI-1712/L

\[ \text{PCL-10120-1E} \]
20-pin Flat Cable, 1 m

\[ \text{PCL-10120-2E} \]
20-pin Flat Cable, 2 m

\[ \text{PCL-10168-1E} \]
68-pin SCSI Shielded Cable, 1 m

\[ \text{PCL-10168-2E} \]
68-pin SCSI Shielded Cable, 2 m
PCLD-788

16-ch Relay Multiplexer Board

Introduction

PCLD-788 multiplexes 16 channels into a single I/O channel of an A/D converter, voltmeter or IEEE-488-based instrument. Up to 16 PCLD-788s can be cascaded for a total of 256 fully-isolated differential channels. The PCLD-788 can be controlled by any PC-LabCard™ product via a 16-bit 20-pin digital output port, found on cards such as the PCL-711B, PCL-812PG or the PCL-818 series. Channel selection (0-15) and board selection (0-15) are done by programming the high-order four bits and low order four bits of a digital output byte from the main I/O card in use.

Specifications

I/O

- **Channel Closed Signal**: TTL-level pulse
- **Cold-junction Sensor**: 24.4 mV/°C, 0 V at 0°C Output
- **Contact Rating**: Break-before-make with 3 msec. minimum break time
- **Contact Resistance**: 200 mΩ max.
- **Input Channels**: 16 isolated differential inputs
- **Programming**: DO bit 0, 1, 2 and 3 for channel selection, DO bit 4, 5, 6 and 7 for board selection. Onboard DIP switches for board-address setting
- **Max. Input Voltage**: 100 VDC or 100 V peak AC
- **Max. Switching Current**: 0.5 A
- **Max. Switching Power**: 10 VA
- **Operating Time**: 1 ms max.
- **Relay Life Expectancy**: 100 million cycles min. at 10 VDC and 1 mA
- **Release Time**: 1 msec. max.

General

- **Connectors**
  - Controller: 2 x 20-pin box header, second connector in parallel for daisy chaining
  - I/O: Screw terminals
- **Dimensions (L x W)**: 205 x 114 mm (8” x 4.5”)
- **Mounting**: 4 x screw holes for flat surface mounting
- **Power Consumption**: 5 V @ 380 mA max.

Features

- 16 to 1 channel expansion
- Differential and fully isolated multiplexing
- Break-before-make relay control
- "Channel closed" signal for precise A/D triggering
- Up to 16 PCLD-788s can be cascaded for 256 channels
- Easy wiring for large channel count configuration
- Onboard cold-junction circuitry for thermocouple measurement

Pin Assignments

<table>
<thead>
<tr>
<th>CN2 &amp; CN3</th>
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<tr>
<td>C0</td>
</tr>
<tr>
<td>C2</td>
</tr>
<tr>
<td>C4</td>
</tr>
<tr>
<td>C6</td>
</tr>
<tr>
<td>9</td>
</tr>
<tr>
<td>11</td>
</tr>
<tr>
<td>13</td>
</tr>
<tr>
<td>15</td>
</tr>
<tr>
<td>GND</td>
</tr>
<tr>
<td>+5V</td>
</tr>
</tbody>
</table>

Ordering Information

- **PCLD-788**: 16-ch Relay MUX Board w/ Two 20-pin Flat Cables
- **PCL-10120-1E**: 20-pin Flat Cable, 1 m
- **PCL-10120-2E**: 20-pin Flat Cable, 2 m
**Introduction**

PCLD-789D is a front-end signal conditioning and channel multiplexing daughterboard for use with PC-LabCard™ product’s analog input ports. It multiplexes 16 differential input channels into a single A/D converter input channel. You can cascade up to ten PCLD-789Ds, allowing a single data acquisition card to access 160 analog input channels.

PCLD-789D has DB37 and 20-pin flat cable connectors and lets your PCL-818L or PCL-818HD access up to 128 channels without using an additional digital output cable to select channels. The PCLD-789D uses a high-grade instrumentation amplifier that provides switch-selectable gains of 1, 2, 10, 50, 100, 200 and 1,000. This amplifier lets you accurately measure low-level signals with your PC-LabCard™ product. The board also contains a cold-junction sensing circuit that allows direct temperature measurement from thermocouple transducers. A wide variety of thermocouples are supported with software compensation and linearization.

**Specifications**

- **Cold-junction Compensation**: 24.4 mV/°C, 0 V at 0°C
- **Input Channels**: 16 differential
- **Input Conditions**

<table>
<thead>
<tr>
<th>Gains</th>
<th>CMRR</th>
<th>Nonlinearity</th>
<th>Setting Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000</td>
<td>125 dB</td>
<td>0.005% FSR</td>
<td>75 µsec.</td>
</tr>
<tr>
<td>100</td>
<td>115 dB</td>
<td>0.005% FSR</td>
<td>15 µsec.</td>
</tr>
<tr>
<td>10</td>
<td>105 dB</td>
<td>0.007% FSR</td>
<td>15 µsec.</td>
</tr>
<tr>
<td>1</td>
<td>85 dB</td>
<td>0.015% FSR</td>
<td>15 µsec.</td>
</tr>
</tbody>
</table>

- **Input Range**: ±10 V max. depending on the selected gain
- **Output Range**: ±10 V max.
- **Overvoltage Protection**: ±30 V continuous

**General**

- **Connectors**
  - Controller: 1 x DB37 male connector
  - I/O: 2 x 20-pin box header for daisy chaining
  - Dimensions (L x W): 205 x 114 mm (8.1” x 4.5”)
  - Mounting: 4 x screw holes for flat surface mounting
  - Power Consumption: 5 V @ 30 mA max, 12 V @ 80 mA max.

**Ordering Information**

- **PCLD-789D** Amplifier and Multiplexer Board w/ 1m DB37 Cable
- **PCL-10131-1E** DB37 Cable, 1 m
- **PCL-10131-2E** DB37 Cable, 2 m
- **PCL-10131-3E** DB37 Cable, 3 m
- **PCL-10129-1E** 20-pin Flat Cable, 1 m
- **PCL-10129-2E** 20-pin Flat Cable, 2 m
# Industrial USB I/O Modules

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<td>10 kS/s, 12-bit, 8-ch Multifunction DAQ USB Module</td>
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<tr>
<td>USB-4704</td>
<td>48 kS/s, 14-bit, 8-ch Multifunction DAQ USB Module</td>
</tr>
<tr>
<td>USB-4711A</td>
<td>150 kS/s, 12-bit, 16-ch Multifunction DAQ USB Module</td>
</tr>
<tr>
<td>USB-4716</td>
<td>200 kS/s, 16-bit, 16-ch Multifunction DAQ USB Module</td>
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<tr>
<td>USB-4718</td>
<td>8-ch Thermocouple Input USB Module with 8-ch Isolated Digital Input</td>
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<td>USB-4750</td>
<td>32-ch Isolated Digital I/O USB Module</td>
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<td>USB-4751</td>
<td>48-ch Digital I/O USB Module</td>
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<td>USB-4751L</td>
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<tr>
<td>USB-4671</td>
<td>GPIB USB Module</td>
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</table>

To view all of Advantech’s Industrial USB I/O Modules, please visit [www.advantech.com/products](http://www.advantech.com/products).
Introduction
USB data acquisition products are becoming very popular in the field. Many customers in Asia have utilized our plug-in data acquisition, motion control and communication cards to develop machines, and then distribute them to China, Thailand, Vietnam ... and beyond. So far the machine builders needed to bring many tools and spare parts to the end-customer for after service work.

Now we offer a better solution, engineers can just use a notebook and a USB data acquisition module to do the job. Because all the specifications are the same, engineers can directly evaluate the program and troubleshoot on their notebooks.

Besides, the embedded controller is well proved by several industrial applications, and now can provide faster fanless low-power CPU with USB 2.0 interface. The idea is coming to separate computing platform and data acquisition interface into two parts.

The technology of computing platform is always changing. People can enjoy high-stability and high-performance computing platform by leverage those latest embedded technology, also to save the maintenance cost and system upgrade effort.

On the other hand, the data acquisition and control interface technology is not changing frequently. Most of the time those interfaces come together with cable and terminal board, engineers intend to keep the same configuration to provide the stable and reliable data acquisition and control system. That means its life cycle is longer than computing platform, and engineers can reduce the effort by maintain two parts separately.

The transmission rate of USB 2.0 is 480 Mb/s, which can provide the same performance as general purpose PCI-bus data acquisition and control cards. With Advantech’s innovative designed on the screw-type USB connection cable, the Advantech USB-based data acquisition and control modules are the next generation solution for industrial test and measurement applications.

Portable, Easy to Install & Use
The Key Benefits of USB DAQ Modules Are:

- **Plug & Play**
  Advantech USB data acquisition series features the plug & play function that users can install/setup the devices and ready to go within seconds.

- **Single Cable Connection with PC**
  The USB series connects to the user’s host system via a shielded USB cable and are powered through this cable, which saves users from the annoying wiring and extra accessory costs.

- **Best Companion for Notebook**
  The bus-powered design and compact size make Advantech USB data acquisition series the best mate for the notebook.

Features
- USB 2.0 Hub and data acquisition & control modules
- Full family extend compatible with PCI-bus data acquisition & control cards
- Versatile mounting methods – wall, panel, DIN-rail, and VESA
- Palm sized and bus-powered
- Detachable screw terminal on modules
- Ready-to-Use software and drivers

- 480 Mb/s Transmission Rates
  High speed data transmission realizes the high-performance and high-accuracy on the USB data acquisition.

Design Concepts
- **Efficient**
  Advantech USB data acquisition series needs no external power source and can get rid of the power cord and adapters, give users the most convenience on the field side applications.

- **Portable**
  The palm-sized and light-weight USB data acquisition series is suitable for hand carry when you travel to exhibitions or business shows.

- **Speedy**
  480Mbps data transmission rate is 20,000 times faster than traditional RS-485 based I/O, making the USB series possible to achieve heavy-loaded tasks.

- **Integrated**
  All the analog input, analog output, digital input, and digital output functions are integrated into the USB series. Users can get multiple functions by getting only module on hand.

- **Convenient**
  The built-in wiring terminals facilitate the operations without using any wiring cables or terminal boards.

Extending Benefits to PCI Card Users
Our concept is to keep the same specification as our existed PCI data acquisition cards.

- The same specifications and drivers as PCI cards
- For R&D, easy to develop and diagnose the system
  - The same H/W and S/W between development and run-time
  - Save time and effort on simulation and troubleshooting

<table>
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<tr>
<th>USB Module</th>
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<th>Functions</th>
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<td>PCI-1716</td>
<td>200 kS/s, 16-bit Multifunction</td>
</tr>
<tr>
<td>USB-4750</td>
<td>PCI-1750</td>
<td>32-ch Isolated Digital I/O</td>
</tr>
<tr>
<td>USB-4751</td>
<td>PCI-1751</td>
<td>48-ch Digital I/O</td>
</tr>
<tr>
<td>USB-4761</td>
<td>PCI-1761</td>
<td>8-ch Relay and 8-ch Isolated Digital Input</td>
</tr>
<tr>
<td>USB-4671</td>
<td>PCI-1671UP</td>
<td>GPIB Device</td>
</tr>
</tbody>
</table>

*Note: For more detailed specifications, please refer to the respective product pages.
Mounting Scheme of USB DAQ Modules
Advantech provides versatile mounting methods to fit the demand in the field.

- **DIN-rail Mount**
  
  Advantech's USB DAQ modules come with a bracket that facilitates the DIN-rail mounting onto some streamlined system with Industry standards.

- **Wall/Panel Mount**
  
  The wallmount kit can help users hang their modules on the wall or other flat surfaces.

- **VESA Mount**
  
  The VESA bracket can mount the USB data acquisition module to the VESA-ready appliances, such as Advantech's touch panel computers (TPC series) and the flat panel monitors (FPM series).

Software Support for the USB DAQ Series
Advantech provides several software solutions for USB-based data acquisition and control modules.

- **DAQNavi Driver**
  
  DAQNavi is Advantech latest next-generation driver package which delivers higher performance, compatibility and reliability by brand new driver and SDK architecture. Programmers can find all necessary software components including easy-to-use utility, component-based libraries, example codes, and documentation (include manual and tutorial video) to efficiently complete their development. DAQNavi supports many popular operating systems (OS) such as Windows 8, Windows 7, Windows XP, Windows Server, Linux and Windows CE. It also supports many different programming languages and environments, such as C/C++, VB, Delphi, BCB, LabVIEW, C#, VB .NET, Java and Qt.

- **Advantech Data Logger**
  
  Advantech Data Logger is a ready-to-use application program that engineers can use it to acquire data from Advantech data acquisition devices like USB modules without programming. User can manage several acquisition tasks with an intuitive configuration wizard for related parameters setting. Acquired data can be displayed with zoom observation in real-time monitoring as well as saved to local disk. The stored data can be recalled and display after acquisition has been completed.

- **LabVIEW Support**
  
  Advantech supports graphical programming language LabVIEW with specific drivers in the form of Express VI and Polymorphic VIs. DAQNavi Express VI can help to build a LabVIEW data acquisition application in short time, by an interactive DAQNavi wizard to perform corresponding configuration. DAQNavi Polymorphic VIs deliver more flexibility and advance functionality for advance LabVIEW data acquisition programming.

Lockable USB Connector*

The standard USB cable is designed for easy plug and remove, but it’s not suitable in industrial application. However the USB 2.0 is one of the high-speed and high-reliable extension interface. Advantech invests R&D effort to provide screw-type USB connection cable. With this innovative cable, the USB-based data acquisition module can be connected firmly.

* Note: USB-4702 and USB-4704 do not support this feature.

Robust & Anti-vibration (P/N: USB-LOCKCABLE-AE)

Advantech also provides another innovated accessory for making the other end of USB cable can be connected to UNO and TPC’s USB port firmly. We provide the complete embedded data acquisition and control solution.

Lockable Casing for Type A USB Connector
# USB I/O Module Selection Guide

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<th>Analog Input</th>
</tr>
</thead>
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<td></td>
<td>USB</td>
</tr>
<tr>
<td>Model</td>
<td>USB-4702</td>
<td>USB-4704</td>
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<td>USB-4711A</td>
<td>USB-4716</td>
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<td></td>
<td>USB-4718</td>
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</tr>
<tr>
<td>General Spec.</td>
<td></td>
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</tr>
<tr>
<td>Resolution</td>
<td>12 bits</td>
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<tr>
<td></td>
<td>12 bits</td>
<td>16 bits</td>
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<tr>
<td></td>
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</tr>
<tr>
<td>Channels</td>
<td>8 S.E./4 Diff.</td>
<td>8 S.E./4 Diff.</td>
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<tr>
<td></td>
<td>16 S.E./8 Diff.</td>
<td>16 S.E./8 Diff.</td>
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<tr>
<td></td>
<td>8 Diff.</td>
<td></td>
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<tr>
<td>Onboard FIFO</td>
<td>512 samples</td>
<td>512 samples</td>
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<tr>
<td></td>
<td>1,024 samples</td>
<td>1,024 samples</td>
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</tr>
<tr>
<td>Sampling Rate</td>
<td>10 kS/s</td>
<td>48 kS/s</td>
</tr>
<tr>
<td></td>
<td>150 kS/s</td>
<td>200 kS/s</td>
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<tr>
<td></td>
<td>10 S/s (shared)</td>
<td></td>
</tr>
<tr>
<td>Analog Input</td>
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<tr>
<td>Input Ranges</td>
<td>S.E.: ± 10</td>
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<tr>
<td></td>
<td>±1, ±1.25, ±2, ±1, ±1.25, ±2, ±2.5, ±4, ±5, ±10, ±2.5, ±4, ±5, ±10, ±20</td>
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<tr>
<td></td>
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<td>±0 ~ 5, ± 0 ~ 5, ± 0 ~ 2.5, ± 0 ~ 1.25</td>
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<td>-</td>
<td>JK, T, E, R, S, B types</td>
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<td>Trigger Modes</td>
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<td>8 (isolated)</td>
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<td>BoardID Switch</td>
<td>Software</td>
<td>Software</td>
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<td>Dimensions (mm)</td>
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<td>21-7</td>
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<td>21-8</td>
<td>21-9</td>
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## Selection Guide

<table>
<thead>
<tr>
<th>Category</th>
<th>Non-Isolated Digital I/O</th>
<th>Isolated Digital I/O</th>
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<tr>
<td><strong>Bus</strong></td>
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<td><strong>Output Range</strong></td>
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<td><strong>Max. Sink Current</strong></td>
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<td><strong>Timer/Counter</strong></td>
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<td><strong>Resolution</strong></td>
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<td><strong>Advanced Function</strong></td>
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<td><strong>Isolation Voltage</strong></td>
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<td><strong>BoardID Switch</strong></td>
<td>Software</td>
<td>Software</td>
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<tr>
<td><strong>Dimensions (mm)</strong></td>
<td>132 x 80 x 32</td>
<td>132 x 80 x 32</td>
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<td><strong>Connector</strong></td>
<td>2 x opto-22 compatible box header</td>
<td>1 x opto-22 compatible box header</td>
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<td><strong>Legacy Driver</strong></td>
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<td><strong>Linux</strong></td>
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<td><strong>WinCE</strong></td>
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<td><strong>Linux</strong></td>
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<tr>
<td><strong>LabVIEW Driver</strong></td>
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<td><strong>Page</strong></td>
<td>21-12</td>
<td>21-12</td>
</tr>
</tbody>
</table>
## USB-4620

**Features**
- 5 downstream USB 2.0 ports
- Compatible with USB 2.0 Full-speed
- 3,000 V<sub>DC</sub> voltage isolation for each downstream port
- Suitable for DIN-rail mounting
- One lockable USB cable included
- 10 – 30 V<sub>DC</sub> power input (power adapter not included*)

### Specifications

<table>
<thead>
<tr>
<th>Connectivity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ports</td>
<td>Upstream x 1 (Type B) Downstream x 5 (Type A)</td>
</tr>
<tr>
<td>Compatibility</td>
<td>USB 2.0 Full-speed</td>
</tr>
<tr>
<td>Transfer Speed</td>
<td>12 Mbps</td>
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<tr>
<td>Supply Current</td>
<td>500 mA max. per channel</td>
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</table>

<table>
<thead>
<tr>
<th>General</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td>Plastic (ABS+PC)</td>
</tr>
<tr>
<td>Dimensions (L x W x H)</td>
<td>132 x 80 x 32 mm (5.2” x 3.15” x 1.26”)</td>
</tr>
<tr>
<td>DC Input</td>
<td>10 – 30 V&lt;sub&gt;DC&lt;/sub&gt;</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>24 V @ 36 mA</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0 – 60°C (32 – 140°F)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-20 – 70°C (-4 – 158°F)</td>
</tr>
<tr>
<td>Storage Humidity</td>
<td>5 – 95% RH non-condensing</td>
</tr>
</tbody>
</table>

### Ordering Information
- **USB-4620-AE** 5-port Full-speed Isolated USB 2.0 Hub

### Accessories
- **PWR-242-AE** DIN-rail Power Supply
- **1960004544** Wallmount Bracket
- **1960005788** VESA Mount Bracket
- **USB-LOCKCABLE-AE** 1.8 M Lockable USB 2.0 Cable with Screw Kit

---

## USB-4622

**Features**
- 5 downstream USB 2.0 ports
- Compatible with USB 2.0 High-speed, USB 2.0 Full-speed, USB 1.0
- 480 Mbps high-speed data transfer
- LED indicator
- Suitable for DIN-rail mounting
- One lockable USB cable included
- 10 – 30 V<sub>DC</sub> power input (power adapter not included*)

### Specifications

<table>
<thead>
<tr>
<th>Connectivity</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Ports</td>
<td>Upstream x 1 (Type B) Downstream x 5 (Type A)</td>
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<tr>
<td>Compatibility</td>
<td>USB 2.0 High-speed, USB 2.0 Full-speed, USB 1.0</td>
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<tr>
<td>Transfer Speed</td>
<td>480 Mbps/12 Mbps/1.5 Mbps</td>
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<td>Supply Current</td>
<td>500 mA max. per channel</td>
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<tbody>
<tr>
<td>Housing</td>
<td>Plastic (ABS+PC)</td>
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<tr>
<td>Dimensions (L x W x H)</td>
<td>132 x 80 x 32 mm (5.2” x 3.15” x 1.26”)</td>
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<tr>
<td>DC Input</td>
<td>10 – 30 V&lt;sub&gt;DC&lt;/sub&gt;</td>
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<td>Power Consumption</td>
<td>24 V @ 36 mA</td>
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<td>Operating Temperature</td>
<td>0 – 60°C (32 – 140°F)</td>
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<td>Storage Temperature</td>
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<tr>
<td>Storage Humidity</td>
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</tr>
</tbody>
</table>

### Ordering Information
- **USB-4622-BE** 5-port High-speed USB 2.0 Hub

### Accessories
- **PWR-242-AE** DIN-rail Power Supply
- **1960004544** Wallmount Bracket
- **1960005788** VESA Mount Bracket
- **USB-LOCKCABLE-AE** 1.8 M Lockable USB 2.0 Cable with Screw Kit

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*RoHS COMPLIANT 2002/95/EC*
Introduction

USB-4702/4704 are low-cost USB data acquisition modules. You no longer need to open the chassis to install DAQ modules. Just plug in the module, then get the data. It’s easy and efficient. Reliable and rugged enough for industrial applications, yet inexpensive enough for home projects, USB-4702/4704 are the perfect way to add measurement and control capability to any USB capable computer. It obtains all required power from the USB port, so no external power connection is ever required. With the features of USB-4702/4704, they are your most cost effective choice of lab or production line test & measurement tool.

Features
- Supports USB 2.0
- Portable
- Bus-powered
- 8 analog input channels
- 12-bit (USB-4702), 14-bit (USB-4704) resolution AI
- Sampling rates up to 10 kS/s (USB-4702), 48 kS/s (USB-4704)
- 8-ch DI/8-ch DO, 2-ch AO and one 32-bit counter

Specifications

Analog Input
- Channels: 8 single-ended/4 differential (software programmable)
- Resolution: USB-4702: Single-ended: 11 bits
- Differential: 12 bits
- Sub-4704: Single-ended: 13 bits
- Differential: 14 bits
- Max. Sampling Rate: USB-4702: 10 kS/s max.
- USB-4704: 48 kS/s max.

Note: The sampling rate for each channel will be affected by the number of channels used. For example, if 4 channels of USB-4702 are used, the sampling rate is 10k/4 = 2.5 kS/s per channel.

- FIFO Size: 512 samples
- Overvoltage Protection: 30 Vp-p
- Input Impedance: 127 kΩ
- Input Range (V, software programmable) & Absolute Accuracy:
  - USB-4702:
    - Single-ended: ±10 N/A N/A N/A N/A N/A N/A N/A N/A
    - Differential: ±10 N/A N/A N/A N/A N/A N/A N/A N/A
  - USB-4704:
    - Single-ended: ±15 N/A N/A N/A N/A N/A N/A N/A N/A
    - Differential: ±15 N/A N/A N/A N/A N/A N/A N/A N/A

- Absolute Accuracy (% of FSR)*
  - USB-4702:
    - Single-ended: 0.2 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15
    - Differential: 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25
  - USB-4704:
    - Single-ended: 0.15 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1
    - Differential: 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15

- *: ±1 LSB is added as the derivative for absolute accuracy

Analog Output
- Channels: 2
- Resolution: 12 bits
- Output Rate: Static update
- Output Range (V, software programmable): 0–5
- Slew Rate: 0.7 V/μs
- Driving Capability: 5 mA
- Operation Mode: Single output
- Accuracy: Relative: ±12 LSB
- Differential non-linearity: ±5 LSB

Digital Input
- Channels: 8
- Compatibility: 3.3 V/5 V/3.3 V TTL
- Input Voltage: Logic 0: 0.6 V max.
- Logic 1: 2.0 V min.

Digital Output
- Channels: 8
- Compatibility: 3.3 V/5 V/3.3 V TTL
- Output Voltage: Logic 0: 0.4 V max. @ 4 mA (sink)
- Logic 1: 3.5 V min. @ 4 mA (source)

Counter
- Channels: 1
- Resolution: 32 bits
- Compatibility: 3.3 V/5 V/3.3 V TTL
- Max. Input Frequency: 5 MHz

General
- Bus Type: USB 2.0
- I/O Connector: USB-4702: 1 x DB37 female connector
- USB-4704: Onboard screw terminal
- Dimensions (L x W): USB-4702: 70 x 70 mm (2.76” x 2.76”)
- USB-4704: 132 x 80 x 32 mm (5.2” x 3.15” x 1.26”)
- Power Consumption:
  - Typical: 5 V @ 100 mA
  - Max.: 5 V @ 500 mA
- Operating Temperature: 0 – 55°C (32 – 131°F)
- Storage Temperature: -20 – 70°C (-4 – 158°F)
- Storage Humidity: 5 – 95% RH non-condensing

Ordering Information
- USB-4702-AE: 10 kS/s, 12-bit, 8-ch Multi. USB Module
- USB-4704-AE: 48 kS/s, 14-bit, 8-ch Multi. USB Module

Accessories
- PCL-10137-1E: DB37 Cable, 1 m
- PCL-10137-2E: DB37 Cable, 2 m
- PCL-10137-3E: DB37 Cable, 3 m
- ADAM-3937-BE: DB37 DIN-rail Wiring Board
- 1960004544: Wallmount Bracket
- 1960005788: VESA Mount Bracket
### Introduction

The USB-4700 series consists of true plug & play data acquisition modules. You no longer need to open the chassis to install DAQ modules. Just plug in the module, then get the data. It's easy and efficient. Reliable and rugged enough for industrial applications, yet inexpensive enough for home projects, the USB-4700 series module is the perfect way to add measurement and control capability to any USB capable computer. The USB-4700 series is fully plug & play and with onboard terminal block for easy usage. It obtains all required power from the USB port, so no external power connection is ever required. USB-4711A is a multifunction module, with 16-ch Analog Input, 2-ch Analog Output, 16-ch Digital I/O and counter channel which is able to output a constant frequency square wave. With the features of USB-4700 series; USB-4711A is your most cost effective choice of lab or production line test & measurement tool.

### Specifications

#### Analog Input
- **Channels**: 16 single-ended/8 differential (software programmable)
- **Resolution**: 12 bits
- **Max. Sampling Rate**: 150 kS/s max.
  
  Note: The sampling rate for each channels will be affected by used channel number. For example, if 4 channels are used, the sampling rate is $150k/4 = 37.5$ kS/s per channel.
- **FIFO Size**: 1,024 samples
- **Overvoltage Protection**: 30 Vp-p
- **Input Impedance**: 1 GΩ
- **Sampling Modes**: Software, onboard programmable pacer, and external

<table>
<thead>
<tr>
<th>Input Range (V, software programmable) &amp; Absolute Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bipolar</td>
</tr>
<tr>
<td>Absolute Accuracy (% of FSR)*</td>
</tr>
</tbody>
</table>

*: ±1 LSB is added as the derivative for absolute accuracy

#### Analog Output
- **Channels**: 2
- **Resolution**: 12 bits
- **Output Rate**: Static update
- **Output Range**: (V, software programmable)

<table>
<thead>
<tr>
<th>Internal Reference</th>
<th>Unipolar</th>
<th>0 – 5.0 – 10</th>
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</thead>
<tbody>
<tr>
<td>Bipolar</td>
<td>±5, ±10</td>
<td></td>
</tr>
</tbody>
</table>

| Slew Rate          | 0.125 (manual) |
| Driving Capability | 5 mA (manual)  |
| Output Impedance   | 0.1 Ω (manual) |
| Operation Mode     | Single output  |
| Accuracy           | Relative: ±1 LSB, Differential non-linearity: ±1 LSB |

#### Digital Input
- **Channels**: 8
- **Compatibility**: 3.3 V/5 V/TTL
- **Input Voltage**: Logic 0: 0.8 V max., Logic 1: 2.0 V min.

#### Digital Output
- **Channels**: 8
- **Compatibility**: 3.3 V/TTL
- **Output Voltage**: Logic 0: 0.8 V max., Logic 1: 2.0 V min.

#### Event Counter
- **Channels**: 1
- **Compatibility**: 3.3 V/TTL
- **Max. Input Frequency**: 1 kHz

#### General
- **Bus Type**: USB 2.0
- **I/O Connector**: Onboard screw terminal
- **Dimensions (L x W x H)**: 132 x 80 x 32 mm (5.2” x 3.15” x 1.26”)
- **Power Consumption**: Typical: 5 V @ 360 mA (manual), Max.: 5 V @ 450 mA (manual)
- **Operating Temperature**: 0 – 60°C (32 – 140°F)
- **Storage Temperature**: -20 – 70°C (-4 – 158°F)
- **Storage Humidity**: 5 – 95% RH non-condensing

### Ordering Information
- **USB-4711A-AS**: 150 kS/s, 12-bit, 16-ch Multifunction USB Module

#### Accessories
- **1960004544**: Wallmount Bracket
- **1960005788**: VESA Mount Bracket

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**USB-4711A**

150 kS/s, 12-bit, 16-ch Multifunction DAQ USB Module
USB-4716

200 kS/s, 16-bit, 16-ch Multifunction DAQ USB Module

Introduction

The USB-4700 series consists of true plug & play data acquisition devices. No more opening up your computer chassis to install boards just plug in the module, then get the data. It's easy and efficient. USB-4716 offers 16 single-ended/ 8 differential inputs with 16-bit resolution, up to 200 kS/s throughput, 16 digital I/O lines and 1 user counter, plus two 16-bit analog outputs. The high performance makes USB-4716 your best choice for test & measurement applications in the production line or in the lab.

Reliable and rugged enough for industrial applications, yet inexpensive enough for home projects, the USB-4716 is the perfect way to add measurement and control capability to any USB capable computer. The USB-4700 series is fully plug & play and easy to use. It obtains all required power from the USB port, so no external power connection is ever required.

Features

- Supports USB 2.0
- Portable
- Bus-powered
- 16 analog input channels
- 16-bit resolution AI
- Sampling rate up to 200 kS/s
- 8-ch DI/8-ch DO, 2-ch AO and one 32-bit counter
- Detachable screw terminal on modules
- Suitable for DIN-rail mounting
- One lockable USB cable for secure connection included

Specifications

Analog Input

- Channels: 16 single-ended/ 8 differential (software programmable)
- Resolution: 16 bits
- Max. Sampling Rate: 200 kS/s (for USB 2.0)
- FIFO Size: 1,024 samples
- Overvoltage Protection: 30 Vp-p
- Input Impedance: 1 GΩ
- Sampling Modes: Software, onboard programmable pacer, or external
- Input Range (V, software programmable) & Absolute Accuracy

Analog Output

- Channels: 2
- Resolution: 16 bits
- Output Rate: Static update
- Output Range (V, software programmable)

Digital Input

- Channels: 8
- Compatibility: 3.3 V/5 V/TTL
- Input Voltage: Logic 0: 1.0 V max.
- Logic 1: 2.0 V min.

Digital Output

- Channels: 8
- Compatibility: 3.3 V/TTL
- Output Voltage: Logic 0: 0.4 V max.
- Logic 1: 2.4 V min.
- Output Capability
  - Sink: 6 mA (sink)
  - Source: 6 mA (source)

Event Counter

- Channels: 1
- Compatibility: 3.3V/TTL
- Max. Input Frequency: 1 kHz

General

- Bus Type: USB 2.0
- I/O Connector: Onboard screw terminal
- Dimensions (L x W x H): 132 x 80 x 32 mm (5.2” x 3.15” x 1.26”)
- Power Consumption: Typical: 5 V @ 360 mA
- Max.: 5 V @ 450 mA
- Operating Temperature: 0 ~ 60°C (32 ~ 158°F)
- Storage Temperature: -20 ~ 70°C (-4 ~ 158°F)
- Operating Humidity: 5 ~ 85% RH non-condensing
- Storage Humidity: 5 ~ 95% RH non-condensing

Ordering Information

- USB-4716-AE: 200 kS/s, 16-bit, 16-ch Multi. USB Module

Accessories

- 1960004544: Wallmount Bracket
- 1960005788: VESA Mount Bracket
**USB-4718**

**8-ch Thermocouple Input USB Module with 8-ch Isolated Digital Input**

### Features
- Supports USB 2.0
- Supports voltage, current, and thermocouple inputs
- Bus-powered
- 8 thermocouple input channels
- 2,500 V<sub>DC</sub> isolation
- Supports 4 – 20 mA current input
- Detachable screw terminal on modules
- 8-ch isolated DI and 8-ch isolated DO
- Suitable for DIN-rail mounting
- One lockable USB cable for secure connection included

### Introduction
The USB-4700 series consists of true plug & play data acquisition devices. No more opening up your computer chassis to install boards just plug in the module, then get the data. It’s easy and efficient. USB-4718 offers 8 thermocouple inputs with 16-bit resolution, up to 0.1% input range accuracy. Portable design makes the USB-4718 suitable for field research. Also, the input channels can be set separately making handling multiple type of sensors with just one USB-4718 module possible.

Reliable and rugged enough for industrial applications, yet inexpensive enough for home projects, the USB-4718 is the perfect way to add measurement and control capability to any USB capable computer. The USB-4700 series is fully plug and play and easy to use. It obtains all required power from the USB port, so no external power connection is ever required.

### Specifications

#### Analog Input
- **Accuracy:** ±0.1% for voltage input
- **Bandwidth:** 13.1 Hz @ 50 Hz, 15.72 Hz @ 60 Hz
- **Channels:** 8 differential
- **Ch. Independent Conf.:** Yes
- **CMR @ 50/60 Hz:** 92 dB min.
- **Resolution:** 16 bits
- **Input Impedance:** 1.8 MΩ
- **Input Range:** 0 – 15 mV, 0 – 50 mV, 0 – 100 mV, 0 – 500 mV, 0 – 1 V, 0 – 2.5 V, 0 – 20 mA, 4 – 20 mA
- **Input Types:** Thermocouple, mV, V, mA
- **Sampling Rate:** 10 S/s (shared for all channels)

Note: The sampling rate for each channel is fixed due to the hardware design. It is 10/8 = 1.25 S/s per channel no matter how many channels you use.

- **Span Drift:** ±25 ppm/°C
- **T/C Type and Temperature Ranges**
  - J: 0 – 180°C
  - K: 0 – 1300°C
  - T: -100 – 400°C
  - E: 0 – 1000°C
- **TVS/ESD Protection:** Built-in
- **Zero Drift:** ±0.3 μV/°C

#### Isolated Digital Input
- **Channels:** 8
- **Input Voltage:** Logic 0: 3 V max. (manual)
  - Logic 1: 5 V min. (30 V max.)
- **Isolation Protection:** 2,500 V<sub>DC</sub>
- **Opto-isolator Response:** 25 μs

#### Isolated Digital Output
- **Channels:** 8
- **Output Type:** Sink (NPN)
- **Isolation Protection:** 2,500 V<sub>DC</sub>
- **Output Voltage:** 5 – 30 V<sub>DC</sub>, 1.1 A max./ total
- **Sink Current:** 200 mA max./channel
- **Opto-isolator Response:** 25 μs

#### General
- **Bus Type:** USB 2.0
- **I/O Connector:** Onboard screw terminal
- **Dimensions (L x W x H):** 132 x 80 x 32 mm (5.2” x 3.15” x 1.26”)
- **Power Consumption:** 100 mA @ 5 V
- **Watchdog Timer:** 1.6 sec. (system)
- **Operating Temperature:** 0 – 60°C (32 – 140°F)
- **Storage Temperature:** -20 – 70°C (-4 – 158°F)
- **Storage Humidity:** 5 – 95% RH non-condensing

### Ordering Information
- **USB-4718-AE** 8-ch Thermocouple Input USB Module

#### Accessories
- **1960004544** Wallmount Bracket
- **1960005788** VESA Mount Bracket

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Introduction
The USB-4700 series consists of true plug & play data acquisition devices. No more opening up your computer chassis to install boards-just plug in the module, then get the data. It's easy and efficient. USB-4750 is a 32-channel isolated digital I/O module. With isolation protection of 2,500 Vdc, and dry contact support, USB-4750 is ideal for industrial applications where high-voltage protection is required. Each I/O channel of the USB-4750 corresponds to a bit in an I/O port. This makes USB-4750 very easy to program. This module also offers a counter or timer and one digital input interrupt lines to a PC. So users can then easily do configurations by software.

Reliable and rugged enough for industrial applications, yet inexpensive enough for home projects, the USB-4750 is the perfect way to add measurement and control capability to any USB capable computer. The USB-4750 is fully USB plug & play and easy to use. It obtains all required power from the USB port, so no external power connection is ever required.

Specifications

Isolated Digital Input
- Channels: 16
- Input Voltage:
  - Logic 0: 5 V max. (manual)
  - Logic 1: 5 V min. (60 V max.) or dry contact
- Interrupt Capable Ch.: 2
- Isolation Protection: 2,500 Vdc

Isolated Digital Output
- Channels: 16
- Output Type: Sink (NPN)
- Isolation Protection: 2,500 Vdc
- Output Voltage: 5 – 40 Vdc
- Sink Current: 100 mA max. per channel, Total 1.1 A max.

Isolated Counter
- Channels: 2
- Resolution: 32-bit
- Max. Input Frequency: 8 MHz (manual)
- Isolation Protection: 2,500 Vdc

General
- Bus Type: USB 1.1/2.0
- I/O Connector: Onboard screw terminal
- Dimensions (L x W x H): 132 x 80 x 32 mm (5.2” x 3.15” x 1.26”)
- Power Consumption:
  - Typical: 5 V @ 200 mA
  - Max.: 5 V @ 350 mA (manual)
- Operating Temperature: 0 – 60°C (32 – 140°F)
- Storage Temperature: -20 – 70°C (-4 – 158°F)
- Storage Humidity: 5 – 95% RH, non-condensing

Ordering Information
- USB-4750-AE: 32-ch Isolated Digital I/O USB Module

Accessories
- 1960004544: Wallmount Bracket
- 1960005788: VESA Mount Bracket

Features
- Compatible with USB 1.1/2.0
- Bus-powered
- 16 isolated DI and 16 isolated DO channels
- High voltage isolation on all channels (2,500 Vdc)
- High sink current on isolated output channels (100 mA/Channels)
- Supports 5 – 60 Vdc isolated input channels
- Interrupt handling capability
- Timer/counter capability
- Suitable for DIN-rail mounting
- One lockable USB cable for secure connection included
**Introduction**

The USB-4700 series consists of true plug & play data acquisition devices. No more opening up your computer chassis to install boards just plug in the module, then get the data. It's easy and efficient. USB-4751/4751L is a 48/24-bit digital I/O module with USB interface. Its 48/24 bits are divided into six/three 8-bit I/O ports and users can configure each port as input or output via software. USB-4751/USB-4751L also provides one event counter and three 16-bit timers, which can be cascaded to become a 32-bit timer.

**Specifications**

**Digital Input**
- **Channels**: USB-4751: 48 (shared with output), USB-4751L: 24 (shared with output)
- **Compatibility**: 5 V/TTL
- **Input Voltage**
  - Logic 0: 0.8 V max.
  - Logic 1: 2 V min.

**Digital Output**
- **Channels**: USB-4751: 48 (shared with input), USB-4751L: 24 (shared with input)
- **Compatibility**: 5 V/TTL
- **Output Voltage**
  - Logic 0: 0.5 V max.
  - Logic 1: 3.8 V min.
- **Output Capability**
  - Sink: 12 mA @ 0.5 V
  - Source: 12 mA @ 3.8 V for single channels
  - 5 mA @ 3.8 V for all channels in high status

**Counter/Timer**
- **Channels**: 2
- **Resolution**: 32-bit
- **Max. Input Frequency**: 8 MHz (manual)

**General**
- **Bus Type**: USB 1.1/2.0
- **I/O Connector**: 50-pin box headers, pin assignments are fully compatible with Opto-22 I/O module racks
- **Dimensions (L x W x H)**: 132 x 80 x 32 mm (5.2" x 3.15" x 1.26")
- **Power Consumption**
  - Typical: 5 V @ 200 mA
  - Max.: 5 V @ 500 mA
- **Operating Temperature**: 0 ~ 60°C (32 ~ 140°F)
- **Storage Temperature**: -20 ~ 70°C (-4 ~ 158°F)
- **Storage Humidity**: 5 ~ 95% RH, non-condensing

**Ordering Information**
- **USB-4751-AE**: 48-ch Digital I/O USB Module
- **USB-4751L-AE**: 24-ch Digital I/O USB Module

**Accessories**
- **1960004544**: Wallmount Bracket
- **1960005788**: VESA Mount Bracket
- **PCL-10150-1.2E**: 50-pin Flat Cable, 1.2 m
- **ADAM-3950-AE**: 50-pin DIN-rail Flat Cable Wiring Board
- **PCLD-782B-AE**: 24-ch IDI Board w/ 20-pin & 50-pin Flat Cables
- **PCLD-785B-AE**: 24-ch Relay Board w/ 20- pin & 50-pin Flat Cables
USB-4761

8-ch Relay and 8-ch Isolated Digital Input USB Module

Features
- Compatible with USB 1.1/2.0
- Portable
- Bus-powered
- 8 relay output channels and 8 isolated digital input channels
- LED indicators to show activated relays
- 8 Form C type relay output channels
- High-voltage isolation on input channels (2,500 V<sub>dc</sub>)
- High ESD protection (2,000 V<sub>dc</sub>)
- Wide input range (5 ~ 30 V<sub>dc</sub>)
- Interrupt handling capability
- Detachable screw terminal on modules
- Suitable for DIN-rail mounting
- One lockable USB cable for secure connection included

Introduction
The USB-4761 is a relay actuator and isolated digital input module with USB interface. It provides 8 optically-isolated digital inputs with isolation protection of 2,500 V<sub>dc</sub> for collecting digital signals in noisy environments and 8 relay actuators for serving as on/off control devices or small power switches. For easy monitoring, each relay is equipped with one green LED to show its on/off status.

Rugged Protection
The USB-4761’s digital input channels feature a rugged isolation protection for industrial, lab and machinery automation applications. They durably withstand voltages up to 2,500 V<sub>dc</sub>, protecting your host system from any incidental harms. If connected to an external input source with surge-protection, the USB-4761 can offer up to a maximum of 2,000 V<sub>dc</sub> ESD (Electrostatic Discharge) protection.

Specifications

Isolated Digital Input
- Channels 8
- Input Voltage Logic 0: 2 V max.
  Logic 1: 5 V min. (30 V max.)
- Isolation Protection 2,500 V<sub>dc</sub>
- Opto-Isolator Response 25 μs

 Relay Output
- Contact Rating 0.25 A @ 250 V<sub>ac</sub>, 2 A @ 30 V<sub>dc</sub>
- Max. Switching Power 62.5 VA, 60 W
- Max. Switching Voltage 250 V<sub>ac</sub>, 220 V<sub>dc</sub>
- Max. Switching Current 5 A
- Min. Switching Voltage 100 μV
- Operate/Release Time typ. 3 / 2 ms, max. 5 / 4 ms
- Resistance Contact: 50 mΩ max. @ 10 mA/20 mV
  Insulation: 1 GΩ min. @ 500 V<sub>dc</sub>
- Life Expectancy (Electrical) 5 x 10<sup>7</sup> cycles typ. @ 10 mA/12 V
  2 x 10<sup>9</sup> cycles typ. @ 2000 mA/30 V

General
- Bus Type USB 1.1/2.0
- I/O Connector Onboard screw terminal
- Dimensions (L x W x H) 132 x 80 x 32 mm (5.2” x 3.15” x 1.26”)
- Power Consumption Typical: 5 V @ 60 mA
  Max.: 5 V @ 400 mA
- Operating Temperature 0 ~ 60°C (32 ~ 140°F)
- Storage Temperature -20 ~ 70°C (-4 ~ 158°F)
- Storage Humidity 5 ~ 95 % RH, non-condensing

Ordering Information
- USB-4761-AE 8-ch Relay/Isolated Digital Input USB Module

Accessories
- 1960004544 Wallmount Bracket
- 1960005788 VESA Mount Bracket
USB-4671

Introduction
USB-4671 is a high-performance USB Module with a GPIB interface. The module is fully compatible with IEEE 488.1 and 488.2 standards with USB 2.0 bus specification. With two driver control modes: controller mode and slave mode; USB-4671 can perform basic IEEE 488 talker, listener and controller functions required by IEEE 488.2. You can also connect up to 15 GPIB instruments. Therefore, USB-4671 is especially suitable for instrument measurements and control.

Furthermore, USB-4671 also offers powerful testing features and a configuration utility that allows users to easily access and control instruments. USB-4671 offers a comprehensive supplementary controller driver database and provides standard IEEE-488 commands to help users develop applications. Users can use an interactive GPIB window interface to control devices directly without any need of programming.

Specifications

- **Compatibility**: IEEE 488.1 & IEEE 488.2
- **GPIB Transfer Rate**: 1.8 MB/s
- **OS Support**: Windows 2000/XP/Vista and Win 7
- **Max. GPIB Connections**: 15

General
- **Bus Type**: USB 2.0
- **I/O Connector**: 1 x 24-pin IEEE 488
- **Storage Temperature**: -20 ~ 70°C (-4 ~ 158°F)
- **Operating Humidity**: 10 – 90% RH, non-condensing
- **Dimensions (L x W x H)**: 107 x 66 x 26 mm (4.21” x 2.6” x 1.02”)

Features
- Supports USB 2.0
- Convenient portable design
- Bus-powered
- Complete IEEE 488.1 & 488.2 compatibility
- Full driver, library, and example support, including: Visual C++, Visual C#, Visual Basic, Visual Basic .NET, Delphi, and LabView
- Provides powerful and easy-to-use configuration utility
- No GPIB cable required for instrument connection
- Plug & Play installation and configuration

Ordering Information

- **USB-4671-A**
  - GPIB USB Module

Accessories

- **PCL-10488-2**
  - IEEE-488 Cable, 2 m
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