Class I, Division 2 Certification Overview

Class I, Division 2 Certified Product Selection Guide

ADAM-4011 1-ch Thermocouple Input Module
ADAM-4012 1-ch Analog Input Module
ADAM-4013 1-ch RTD Input Module

ADAM-4016 1-ch Analog Input/Output Module
ADAM-4017 8-ch Analog Input Module

ADAM-4018 8-ch Thermocouple Input Module
ADAM-4021 1-ch Analog Output Module

ADAM-4058 15-ch Digital I/O Module
ADAM-4052 8-ch Isolated Digital Input Module
ADAM-4053 16-ch Digital Input Module

ADAM-4066 4-ch Relay Output Module
ADAM-4080 2-ch Counter/Frequency Module

ADAM-4510 RS-422/485 Repeater
ADAM-4520 Isolated RS-232 to RS-422/485 Converter

ADAM-4521 Addressable RS-422/485 to RS-232 Converter
ADAM-4541 Multi-mode Fiber Optic to RS-232/422/485 Converter

ADAM-3011 Isolated Thermocouple Input Module
ADAM-3014 Isolated DC Input/Output Module

FPM-8151H 15" XGA Industrial Monitor with Resistive Touchscreen

UNO-1140FH Class I, Division 2 Certified 486SX-grade SoC DIN-rail PC with 1 x LAN, 8 x Isolated COM

UNO-1150GH/GHE Class I, Division 2 Certified AMD Geode LX800 DIN-rail PCs with 2 x LAN, 3 x COM, PCI-104

UNO-1172AH Class I, Division 2 Certified Intel Atom D510 DIN-rail PC with 3 x LAN, 2 x COM, VGA, Mini PCIe

Note: Advantech also offers Class I, Division 2 certified industrial communication solutions. Please refer to Chapter 10 & 11 for more information.

To view all of Advantech's Class I, Division 2 certified products, please visit www.advantech.com/products.
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.

<table>
<thead>
<tr>
<th>CLASSES</th>
<th>GROUPS</th>
<th>DIVISIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>Gases, vapors, and liquids</td>
<td>A: Acetylene</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B: Hydrogen, gases or vapors of equivalent hazard</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C: Ethyl-ether vapors, ethylene, or cyclo-propane</td>
</tr>
<tr>
<td></td>
<td></td>
<td>D: Gasoline, hexane, naptha, benzene, butane, propane, alcohol, etc.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>TEMPERATURE CLASSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>T6 Under 85°C (185°F)</td>
</tr>
<tr>
<td>T5 85 – 100°C (185 – 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 – 185°C (329 – 365°F)</td>
</tr>
<tr>
<td>T3 180 – 200°C (356 – 392°F)</td>
</tr>
<tr>
<td>T2 200 – 300°C (392 – 572°F)</td>
</tr>
<tr>
<td>T1 300 – 450°C (572 – 842°F)</td>
</tr>
</tbody>
</table>

CID2 Certified Data Acquisition Module Features

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.

Dual Watchdog Timer

All ADAM-4000 robust family modules provide two watchdog timers. The system watchdog will reboot the system when the module hangs, and the communication watchdog will re-initialize the RS-485 network if there is no communication for a specific time.

Multiple Mounting Methods

For easy installation using a versatile range of methods, most ADAM modules support a variety of mounting methods, such as DIN-rail mounting, wall mounting and piggybacking. All necessary mounting kits are included with the devices.

CID2 Certified Industrial Monitor and Controller Features

Stainless Steel Enclosure

The FPM-8151H is designed with a robust anodized aluminum front bezel and 316L stainless steel rear cover.

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.

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.

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.
## Analog Input

<table>
<thead>
<tr>
<th>Model</th>
<th>ADAM-4011</th>
<th>ADAM-4012</th>
<th>ADAM-4013</th>
<th>ADAM-4016</th>
<th>ADAM-4017</th>
<th>ADAM-4018</th>
<th>ADAM-4021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>16 bit</td>
<td>12 bit</td>
<td></td>
<td></td>
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<tr>
<td>Channels</td>
<td>1 differential</td>
<td>1 differential</td>
<td>1 differential</td>
<td>1 differential</td>
<td>6 differential 2 single-ended</td>
<td>6 differential 2 single-ended</td>
<td>-</td>
</tr>
<tr>
<td>Sampling Rate</td>
<td>10 Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage Input</td>
<td>±15 mV</td>
<td>±50 mV</td>
<td>±100 mV</td>
<td>±500 mV</td>
<td>±1 V</td>
<td>±10 V</td>
<td>±2.5 V</td>
</tr>
<tr>
<td>Current Input</td>
<td>±20 mA</td>
<td>±20 mA</td>
<td>±20 mA</td>
<td>±20 mA</td>
<td>±20 mA</td>
<td>±20 mA</td>
<td>±20 mA</td>
</tr>
<tr>
<td>Burn-out Detection</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Channel Independent Configuration</td>
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<td>-</td>
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<td>Analog Output</td>
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<td>-</td>
<td>1</td>
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<tr>
<td>Voltage Output</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0 ~ 10 V</td>
<td>-</td>
<td>-</td>
<td>0 ~ 10 V</td>
</tr>
<tr>
<td>Current Output</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0 ~ 20 mA</td>
</tr>
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<td>Digital Input and Output</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
</tr>
<tr>
<td>Input Channels</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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<tr>
<td>Output Channels</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>4</td>
<td>-</td>
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<td>-</td>
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<tr>
<td>Alarm Settings</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Counter (32-bit)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Channels</td>
<td>-</td>
<td>-</td>
<td>-</td>
<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>
<td>-</td>
</tr>
<tr>
<td>Isolation Voltage</td>
<td>3,000 V</td>
<td>3,000 V</td>
<td>3,000 V</td>
<td>3,000 V</td>
<td>3,000 V</td>
<td>3,000 V</td>
<td>3,000 V</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>Yes (System)</td>
<td>Yes (System)</td>
<td>Yes (System)</td>
<td>Yes (System)</td>
<td>Yes (System)</td>
<td>Yes (System)</td>
<td>Yes (System)</td>
</tr>
<tr>
<td>Safety Setting</td>
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<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Modbus Support</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Page</td>
<td>2-6</td>
<td>2-6</td>
<td>2-6</td>
<td>2-7</td>
<td>2-7</td>
<td>2-8</td>
<td>2-8</td>
</tr>
</tbody>
</table>

* All ADAM-4000 I/O Modules support ASCII Commands
### Class I, Division 2 Certified
Product Selection Guide

Digital Input/Output, Relay Output and Counter

<table>
<thead>
<tr>
<th>Model</th>
<th>ADAM-4050</th>
<th>ADAM-4052</th>
<th>ADAM-4053</th>
<th>ADAM-4060</th>
<th>ADAM-4080</th>
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</thead>
<tbody>
<tr>
<td><strong>Digital Input and Output</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input Channels</td>
<td>7</td>
<td>8</td>
<td>16</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Output Channels</td>
<td>8</td>
<td>-</td>
<td>-</td>
<td>4-ch relay</td>
<td>2</td>
</tr>
<tr>
<td><strong>Counter (32-bit)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channels</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Input Frequency</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>50 kHz</td>
</tr>
<tr>
<td>Isolation Voltage</td>
<td>-</td>
<td>5,000 VRMS</td>
<td>-</td>
<td>-</td>
<td>2,500 VRMS</td>
</tr>
<tr>
<td>Digital LED Indicator</td>
<td>Yes (System)</td>
<td>Yes (System)</td>
<td>Yes (System)</td>
<td>Yes (System)</td>
<td>Yes (System)</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>Yes (System)</td>
<td>Yes (System)</td>
<td>Yes (System)</td>
<td>Yes (System)</td>
<td>Yes (System)</td>
</tr>
<tr>
<td>Safety Setting</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Modbus Support *</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Power Requirement</td>
<td>10 ~ 30 V Vac</td>
<td>10 ~ 30 V Vac</td>
<td>10 ~ 30 V Vac</td>
<td>10 ~ 30 V Vac</td>
<td>10 ~ 30 V Vac</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>
<td>-10 ~ 70°C (14 ~ 158°F)</td>
<td>-10 ~ 70°C (14 ~ 158°F)</td>
</tr>
<tr>
<td>Humidity</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>0.4 W @ 24 Vac</td>
<td>0.4 W @ 24 Vac</td>
<td>1 W @ 24 Vac</td>
<td>0.8 W @ 24 Vac</td>
<td>2 W @ 24 Vac</td>
</tr>
<tr>
<td>Page</td>
<td>2-9</td>
<td>2-9</td>
<td>2-9</td>
<td>2-10</td>
<td>2-10</td>
</tr>
</tbody>
</table>

* All ADAM-4000 I/O Modules support ASCII Commands

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<table>
<thead>
<tr>
<th>Model</th>
<th>ADAM-4510</th>
<th>ADAM-4520</th>
<th>ADAM-4521</th>
<th>ADAM-4541</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Network</strong></td>
<td>RS-422/485</td>
<td>RS-232 to RS-422/485</td>
<td>RS-232 to RS-422/485</td>
<td>Fiber Optic to RS-422/485</td>
</tr>
<tr>
<td><strong>Communication Speed (bps)</strong></td>
<td>Serial: From 1,200 to 115.2 k</td>
<td>Serial: From 1,200 to 115.2 k</td>
<td>Serial: From 1,200 to 115.2 k</td>
<td>Serial: From 1,200 to 115.2 k</td>
</tr>
<tr>
<td><strong>Communication Distance</strong></td>
<td>2.5 km</td>
<td>2.5 km</td>
<td>2.5 km</td>
<td>2.5 km</td>
</tr>
<tr>
<td><strong>Digital LED Indicators</strong></td>
<td>Yes</td>
<td>Communication &amp; Power</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Data Flow Control</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Isolation Voltage</strong></td>
<td>-</td>
<td>3,000 V Vac</td>
<td>1,000 V Vac</td>
<td>-</td>
</tr>
<tr>
<td><strong>Power Requirement</strong></td>
<td>10 ~ 30 V Vac</td>
<td>10 ~ 30 V Vac</td>
<td>10 ~ 30 V Vac</td>
<td>10 ~ 30 V Vac</td>
</tr>
<tr>
<td><strong>Operating Temperature</strong></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>
<td>-10 ~ 70°C (14 ~ 158°F)</td>
</tr>
<tr>
<td><strong>Humidity</strong></td>
<td>5 ~ 95% RH</td>
<td>5 ~ 95% RH</td>
<td>5 ~ 95% RH</td>
<td>5 ~ 95% RH</td>
</tr>
<tr>
<td><strong>Power Consumption</strong></td>
<td>1.4 W @ 24 Vac</td>
<td>1.2 W @ 24 Vac</td>
<td>1 W @ 24 Vac</td>
<td>1.5 W @ 24 Vac</td>
</tr>
<tr>
<td><strong>Page</strong></td>
<td>2-11</td>
<td>2-11</td>
<td>2-12</td>
<td>2-12</td>
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</table>
## Industrial Monitor

<table>
<thead>
<tr>
<th>Model Name</th>
<th>FPM-8151H</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td></td>
</tr>
<tr>
<td>Display Type</td>
<td>XGA LED LCD</td>
</tr>
<tr>
<td>Display Size</td>
<td>15&quot;</td>
</tr>
<tr>
<td>Max. Resolution</td>
<td>1024 x 768</td>
</tr>
<tr>
<td>Max. Colors</td>
<td>16.2M (RGB 8-bits) or 262k colors (RGB 6-bits)</td>
</tr>
<tr>
<td>Luminance cd/m²</td>
<td>350</td>
</tr>
<tr>
<td>Viewing Angle (H/V°)</td>
<td>160/140</td>
</tr>
<tr>
<td>Backlight MTBF(hrs)</td>
<td>50000hrs</td>
</tr>
<tr>
<td><strong>Video Port</strong></td>
<td>VGA &amp; DVI-D</td>
</tr>
<tr>
<td><strong>Touchscreen</strong></td>
<td>Resistive</td>
</tr>
<tr>
<td><strong>Network(LAN)</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>I/O ports</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>HDD(Optional)</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>QSD(onscreen display)</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>CompactFlash Slots</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Expansion Slots</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Power Input Voltage</strong></td>
<td>100 – 240 VAC</td>
</tr>
<tr>
<td><strong>DC Power Input (voltage)</strong></td>
<td>24 VDC</td>
</tr>
<tr>
<td><strong>Ingress Protection (Front Panel)</strong></td>
<td>NEMA4X/IP65</td>
</tr>
<tr>
<td><strong>Enclosure</strong></td>
<td>Front panel: Stainless steel Rear cover: Stainless steel Ground isolation Protection</td>
</tr>
<tr>
<td><strong>Mounting</strong></td>
<td>Panel, wall, desktop, VESA arm, or 19” rackmount with optional mounting kit</td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td>-20 – 60°C (-4 – 140°F)</td>
</tr>
<tr>
<td><strong>Storage Temperature</strong></td>
<td>-30 – 80°C (-22 – 176°F)</td>
</tr>
<tr>
<td><strong>Dimension</strong></td>
<td>422 x 338 x 68 mm (16.61” x 13.31” x 2.68”)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>7.73 kg (17.04 lbs)</td>
</tr>
<tr>
<td><strong>Certification</strong></td>
<td>CE, FCC, UL, CB, BSMI, CCC</td>
</tr>
<tr>
<td><strong>Operating System</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Page</strong></td>
<td>2-14</td>
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</table>

## Embedded Automation Computers

<table>
<thead>
<tr>
<th>Model Name</th>
<th>UNO-1140FH</th>
<th>UNO-1150GH/GHE</th>
<th>UNO-1172AH</th>
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</thead>
<tbody>
<tr>
<td><strong>CPU</strong></td>
<td>EVA-X4150 SoC 486SX grade, 150 MHz</td>
<td>AMD Geode LX800, 500 MHz</td>
<td>Intel Atom D510, 1.66 GHz</td>
</tr>
<tr>
<td><strong>Onboard RAM</strong></td>
<td>64 MB SDRAM</td>
<td>256 MB DDR SDRAM</td>
<td>2 GB DDR2 SDRAM</td>
</tr>
<tr>
<td><strong>Battery-Backup SRAM</strong></td>
<td>-</td>
<td>1MB</td>
<td>-</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>VGA</td>
<td>VGA</td>
<td>VGA</td>
</tr>
<tr>
<td><strong>Audio</strong></td>
<td>-</td>
<td>Yes</td>
<td>5.1 channel HD Audio</td>
</tr>
<tr>
<td><strong>Serial Ports</strong></td>
<td>4 x isolated RS-232/485</td>
<td>2 x RS-232 (one pin header reserved)</td>
<td>2 x RS-232/422/485</td>
</tr>
<tr>
<td><strong>Ethernet Ports</strong></td>
<td>2 x RS-232/422/485</td>
<td>2 x RS-232/422/485</td>
<td>2 x RS-232 (pin header)</td>
</tr>
<tr>
<td><strong>USB Ports</strong></td>
<td>2 x RS-232</td>
<td>2 x RS-232/422/485</td>
<td>-</td>
</tr>
<tr>
<td><strong>PC Card Slots</strong></td>
<td>-</td>
<td>-</td>
<td>2-ch Di, 6-ch Do</td>
</tr>
<tr>
<td><strong>Printer Ports</strong></td>
<td>1 x LPT (pin header reserved for project)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>PCI/104 Expansion</strong></td>
<td>(Project reserved PC/104)</td>
<td>2 x PCI-104 (UNO-1150GHE)</td>
<td>-</td>
</tr>
<tr>
<td><strong>PCIe/PCI Expansion</strong></td>
<td>-</td>
<td>1 x Mini PCI (UNO-1150GHE)</td>
<td>1 x Mini PCIe</td>
</tr>
<tr>
<td><strong>Watchdog Timer</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>CompactFlash Slots</strong></td>
<td>One internal</td>
<td>One internal</td>
<td>One internal</td>
</tr>
<tr>
<td><strong>2.5” HDD Expansion</strong></td>
<td>-</td>
<td>1 x SATA (UNO-1150GHE)</td>
<td>1 x SATA</td>
</tr>
<tr>
<td><strong>Mounting</strong></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>5 G w/CF</td>
<td>2 G w/CF</td>
<td>2 G w/CF</td>
</tr>
<tr>
<td><strong>Anti-Shock</strong></td>
<td>50 G w/CF</td>
<td>20 G w/CF</td>
<td>20 G w/CF</td>
</tr>
<tr>
<td><strong>Power Input Range</strong></td>
<td>10 – 30 Vcc</td>
<td>10 – 36 Vcc</td>
<td>10 – 36 Vcc</td>
</tr>
<tr>
<td><strong>Power Consumption Typical</strong></td>
<td>10 W</td>
<td>15 W</td>
<td>24 W</td>
</tr>
<tr>
<td><strong>Power Requirement</strong></td>
<td>24 W, +24 V @ 1 A power input</td>
<td>24 W, +24 V @ 1 A power input</td>
<td>48 W, +24 V @ 1 A power input</td>
</tr>
<tr>
<td><strong>Dimensions (W x D x H)</strong></td>
<td>71 x 139 x 152 mm (2.8” x 5.5” x 6”)</td>
<td>71 x 139 x 152 mm (2.8” x 5.5” x 6”)</td>
<td>85.5 x 139 x 152 mm (3.4” x 5.5” x 6”)</td>
</tr>
<tr>
<td><strong>CLD2 Temp. Code</strong></td>
<td>T4A</td>
<td>T3A</td>
<td>T5</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>1.0 kg</td>
<td>1.6 kg / 2.0 kg</td>
<td>1.6 kg</td>
</tr>
<tr>
<td><strong>Page</strong></td>
<td>2-16</td>
<td>2-17</td>
<td>2-18</td>
</tr>
</tbody>
</table>
**ADAM-4011**
1-ch Thermocouple Input Module

**ADAM-4012**
1-ch Analog Input Module

**ADAM-4013**
1-ch RTD Input Module

---

### Specifications

#### General
- **Power Consumption**: 1.4 W @ 24 Vcc
- **Supported Protocols**: ASCII command

#### Analog Input
- **Channels**: 1
- **Input Impedance**: Voltage: 2 MΩ
- **Input Type**: T/C, mV, V or mA
- **Input Range**: ±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1 V, ±2.5 V, ±10 V, ±20 mA
- **Accuracy**: Voltage: ±0.1% or better
- **T/C Type and Temperature Range**:
  - J: 0 ~ 760°C
  - K: 0 ~ 1,350°C
  - T: -100 ~ 600°C
  - E: 0 ~ 1,000°C
  - Span Drift: ±25 ppm/°C
  - Zero Drift: ±6 µV/°C

#### Digital Input
- **Channels**: 1
- **Logic Level**: 0: 1 V max.
- **Pull-up Current**: 0.5 mA
- **Input Impedance**: 10 kΩ, 10 kΩ, 10 kΩ, 10 kΩ
- **Input Frequency**: 50 Hz
- **Max. Input Pulse Width**: 500 µs

#### Digital Output
- **Channels**: 2
- **Logic Level**: 0: 1 V max.
- **Pull-up Current**: 0.5 mA, 10 kΩ
- **Input Impedance**: 10 kΩ, 10 kΩ, 10 kΩ
- **Max. Output Pulse Width**: 500 µs

---

### 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

#### Environment
- **Humidity**: 5 ~ 95% RH
- **Operating Temp.**: -10 ~ 70°C (14 ~ 158°F)
- **Storage Temp.**: -25 ~ 85°C (-13 ~ 185°F)

#### CMR @ 50/60 Hz
- **150 dB**

#### NMR @ 50/60 Hz
- **100 dB**

#### Isolation Voltage
- **3,000 Vcc**

---

### Ordering Information

#### ADAM-4011
- 1-ch Thermocouple Input Module

#### ADAM-4012
- 1-ch Analog Input Module

#### ADAM-4013
- 1-ch RTD Input Module

---

**Hazardous Location Solutions**

**SHOp ONLINE at www.airlinehyd.com**

**800-999-7378**
# Specifications

## General
- Connectors: 2 x plug-in terminal blocks (#14 ~ 22 AWG)
- Power Consumption: 2.2 W @ 24 Vdc
- Watchdog Timer: System (1.6 s)
- Supported Protocols: ASCII command

## Analog Input
- Channels: 1 differential
- Input Impedance: Voltage: 2 MΩ, Current: 125 Ω (Added by users)
- Input Type: mV, mA
- Input Range: ±15 mV, ±50 mV, ±100 mV, ±500 mV, ±20 mA

## Analog Output
- Channels: 1
- Accuracy: 0.05% of FSR
- Output Type: V
- Output Range: 0 ~ 10 V
- Drift: ±50 ppm/°C
- Drive Current: 30 mA
- Isolation Voltage: 3,000 Vdc

## Digital Output
- Channels: 4, open collector to 30 V, 30 mA max. load
- Power Dissipation: 300 mW

## Common Specifications

<table>
<thead>
<tr>
<th>General</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Input</td>
<td>Unregulated 10 ~ 30 Vdc</td>
</tr>
<tr>
<td>Connectors</td>
<td>2 x plug-in terminal block (#14 ~ 22 AWG)</td>
</tr>
<tr>
<td>Analog Input</td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>Voltage mode: ±0.1% or better</td>
</tr>
<tr>
<td>Resolution</td>
<td>16-bit</td>
</tr>
<tr>
<td>Sampling Rate</td>
<td>10 sample/second (total)</td>
</tr>
<tr>
<td>Isolation Voltage</td>
<td>3,000 Vdc</td>
</tr>
<tr>
<td>CMR @ 50/60 Hz</td>
<td>120 dB</td>
</tr>
<tr>
<td>NMR @ 50/60 Hz</td>
<td>100 dB</td>
</tr>
<tr>
<td>Span Drift</td>
<td>±25 ppm/°C</td>
</tr>
<tr>
<td>Zero Drift</td>
<td>±6 µV/°C</td>
</tr>
<tr>
<td>Environment</td>
<td></td>
</tr>
<tr>
<td>Humidity</td>
<td>5 ~ 95% RH</td>
</tr>
<tr>
<td>Operating Temp.</td>
<td>-10 ~ 70°C (14 ~ 158°F)</td>
</tr>
<tr>
<td>Storage Temp.</td>
<td>-25 ~ 85°C (-13 ~ 185°F)</td>
</tr>
</tbody>
</table>

## Ordering Information
- ADAM-4016: 1-ch Analog Input/Output Module
- ADAM-4017: 8-ch Analog Input Module
ADAM-4018
8-ch Thermocouple Input Module
ADAM-4021
1-ch Analog Output Module

Specifications

General
- Power Consumption: 0.8 W @ 24 Vdc
- Watchdog Timer: System (1.6 second)
- Supported Protocols: ASCII command

Analog Input
- Channels: 6 differential and 2 single-ended
- Input Type: Thermocouple, mV, V, mA
- Input Range: ±50 mV, ±100 mV, ±500 mV, ±1 V, ±2.5 V, ±20 mA
- T/C Types and Temperature Ranges:

<table>
<thead>
<tr>
<th>T/C Type</th>
<th>Temperature Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
<td>0 – 760°C</td>
</tr>
<tr>
<td>K</td>
<td>0 – 1,370°C</td>
</tr>
<tr>
<td>T</td>
<td>-100 – 400°C</td>
</tr>
<tr>
<td>E</td>
<td>0 – 1,000°C</td>
</tr>
<tr>
<td>R</td>
<td>500 – 1,750°C</td>
</tr>
</tbody>
</table>

Specifications

General
- Connectors: 2 x plug-in terminal blocks (#14 – 22 AWG)
- Power Consumption: 1.4 W @ 24 Vdc
- 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: ±0.1%, ±0.2%
- Current Load Resistor: 0 to 500 Ω (source)
- Resolution: 12-bit
- Isolation Voltage: 3,000 Vdc
- Programmable Output Slope: 0.125 – 128 mA/sec.
- Readback Accuracy: ±1%
- Span Temperature Coefficient: ±25 ppm/°C
- Zero Drift:
  - Voltage output: ±30 µV/°C
  - Current output: ±0.2 µA/°C

Common Specifications

General
- Power Input: Unregulated 10 – 30 Vdc
- Connector: 2 x plug-in terminal blocks (#14 – 22 AWG)
- Isolation Voltage: 3,000 Vdc
- Supported Protocols: ASCII Command and Modbus/RTU

Environment
- Humidity: 5 – 95% RH
- Operating Temp.: -40 – 85°C (-40 – 185°F)
- Storage Temp.: -40 – 85°C (-40 – 185°F)

Ordering Information
- ADAM-4018: 8-ch Thermocouple Input Module
- ADAM-4021: 1-ch Analog Output Module
### ADAM-4050
15-ch Digital I/O Module

### ADAM-4052
8-ch Isolated Digital Input Module

### ADAM-4053
16-ch Digital Input Module

#### Specifications

**ADAM-4050**

- **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

**ADAM-4052**

- **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

**ADAM-4053**

- **Connectors**: 2 x plug-in terminal blocks (#14 ~ 22 AWG)
- **Power Consumption**: 1 W @ 24 Vdc
- **Watchdog Timer**: System (1.6 second)
- **Supported Protocols**: ASCII command

#### Digital Input

- **Channels**: 7 (6 fully independent isolated channels, 2 isolated channels with common ground)
- **Input Level**: Logic level 0: 1 V max. Logic level 1: 3.5 ~ 30 V
- **Isolation Voltage**: 5,000 VRMS
- **Input Resistance**: 3 kΩ
- **Power Consumption**: 300 mW

- **Channels**: 8
  - **Input Level**: Dry contact: Logic level 0: close to GND Logic level 1: open
  - **Effective Distance**: 500 m max. (dry contact only)

- **Channels**: 16
  - **Input Level**: Logic level 0: 2 V max. Logic level 1: 4 ~ 30 V

#### Digital Output

- **Channels**: 8
  - **Input Level**: Logic level 0: 0.5 mA, 10 kΩ resistor to 5 V
  - **Power Consumption**: 300 mW

- **Input Level**: Logic level 0: close to GND Logic level 1: open

**Common Specifications**

<table>
<thead>
<tr>
<th>General</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power Input</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Humidity</strong></td>
</tr>
<tr>
<td><strong>Operating Temp.</strong></td>
</tr>
<tr>
<td><strong>Storage Temp.</strong></td>
</tr>
</tbody>
</table>

**Ordering Information**

- **ADAM-4050**: 15-ch Digital I/O Module
- **ADAM-4052**: 8-ch Isolated Digital Input Module
- **ADAM-4053**: 16-ch Digital Input Module
### Specifications

#### General
- **Connectors**: 2 x plug-in terminal blocks (#14 ~ 22 AWG)
- **Power Consumption**: 0.8 W @ 24 VDC
- **Watchdog Timer**: System (1.6 second)
- **Supported Protocols**: ASCII command

#### Relay Output
- **Breakdown Voltage**: 500 VAC (50/60 Hz)
- **Channels**: 2 x Form A, 2 x Form C
- **Contact Rating (Resistive)**: 0.6 A @ 125 VAC, 0.3 A @ 250 VAC, 2 A @ 30 VDC, 0.6 A @ 110 VAC
- **Initial Insulation Resistance**: 1 GΩ min. at 500 VDC
- **Relay off Time (Typical)**: 2 ms
- **Relay on Time (Typical)**: 3 ms
- **Max. Operating Speed**: 20 operations/min (at related load)

### Common Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General</strong></td>
<td>Power Input: Unregulated 10 ~ 30 VDC</td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td><strong>Humidity</strong>: 5 ~ 95% RH</td>
</tr>
<tr>
<td></td>
<td><strong>Operating Temp.</strong>: -10 ~ 70°C (14 ~ 158°F)</td>
</tr>
<tr>
<td></td>
<td><strong>Storage Temp.</strong>: -25 ~ 85°C (-13 ~ 185°F)</td>
</tr>
<tr>
<td><strong>Ordering Information</strong></td>
<td><strong>ADAM-4060</strong>: 4-ch Relay Output Module</td>
</tr>
<tr>
<td></td>
<td><strong>ADAM-4080</strong>: 2-ch Counter/Frequency Modules</td>
</tr>
</tbody>
</table>

### Ordering Information
- **ADAM-4060**: 4-ch Relay Output Module
- **ADAM-4080**: 2-ch Counter/Frequency Modules

---

### Specifications

#### General
- **Connectors**: 2 x plug-in terminal blocks (#14 ~ 22 AWG)
- **Power Consumption**: 2.0 W @ 24 VDC
- **Watchdog Timer**: System (1.6 second)
- **Supported Protocols**: ASCII command
- **LED Indicators**: 5-digit readout, Ch 0 or Ch 1 (programmable)

#### Counter Input
- **Channels**: 2 independent counters (32-bit + 1-bit overflow)
- **Input Frequency**: 50 kHz max.
- **Input Pulse Width**: >10 µs.
- **Input Mode**: Isolated or non-isolated
- **Isolated Input Level**: Logic level 0: 1 V max., Logic level 1: 3.5~30 V
- **Isolation Voltage**: 2,500 VRMS
- **Non-isolated**: Programmable
- **Input Level**: Logic level 0: 0.8 V max., Logic level 1: 2.4 ~ 5.0 V
- **Maximum Count**: 4,294,967,295 (32 bits)
- **Preset Type**: Absolute or relative
- **Programmable**: 2 µs ~ 65 ms
- **Digital Noise Filter**: Alarm comparators on each counter
- **Alarm**: 5 Hz ~ 50 kHz
- **Frequency**: Programmable
- **Measurement Range**: 1 or 0.1 second
- **Built-in Gate Time**: Programmable

#### Digital Output
- **Channels**: 2, open collector to 30 V, 30 mA max. load
- **Power Dissipation**: 300 mW for each channel
# Specifications

## General
- **Connectors**: 2 x plug-in terminal blocks (#14 ~ 22 AWG) (RS-422/485)
- **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 Conversion Ability**

## Common Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>ADAM-4510</th>
<th>ADAM-4520</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Input</td>
<td>Unregulated 10 - 30 Vdc w/power reversal protection</td>
<td>Unregulated 10 - 30 Vdc w/power reversal protection</td>
</tr>
<tr>
<td>Humidity</td>
<td>5 - 95% RH</td>
<td>5 - 95% RH</td>
</tr>
<tr>
<td>Operating Temp.</td>
<td>-10 ~ 70°C (14 ~ 158°F)</td>
<td>-10 ~ 70°C (14 ~ 158°F)</td>
</tr>
<tr>
<td>Storage Temp.</td>
<td>-25 ~ 85°C (-13 ~ 185°F)</td>
<td>-25 ~ 85°C (-13 ~ 185°F)</td>
</tr>
<tr>
<td>Supports Noise Rejection</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

## Ordering Information
- **ADAM-4510**: Robust RS-422/485 Repeater
- **ADAM-4520**: Robust RS-232 to RS-422/485 Converter
ADAM-4521
ADAM-4541

Addressable RS-422/485 to RS-232 Converter
Multi-mode Fiber Optic to RS-232/422/485 Converter

Specifications

General
- Connectors 1 x plug-in terminal block (#14 – 22 AWG) (RS-422/485)
  1 x DB9-F (RS-232)
- Isolation Voltage 1,000 VDC
- Power Consumption 1.0 W @ 24 VDC
- Built-in microprocessor and watchdog timer

Serial Communications
- Input RS-485 (2-wire) or RS-422 (4-wire)
- Output RS-232 (4-wire)
- Speed Modes (bps) 300, 600, 1,200, 2,400, 4,800, 9,600, 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

Fiber Optic Communications
- Optical Power Budget 12.5 dB (measured with attenuation)
- Transmission Distance 2.5 km
- Transmission Mode Full/half duplex, bidirectional
- Wavelength 820 nm

Common Specifications

General
- Power Input Unregulated 10 – 30 VDC (ADAM-4521 with power reversal protection)

Environment
- Humidity 5 – 95% RH
- Operating Temperature -10 – 70°C (14 – 158°F)
- Storage Temperature -25 – 85°C (-13 – 185°F)

Ordering Information
- ADAM-4521 Addressable RS-422/485 to RS-232 Converter
- ADAM-4541 Multi-mode Fiber to RS-232/422/485 Converter
ADAM-3011
Isolated Thermocouple Input Module
ADAM-3014
Isolated DC Input/Output Module

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>E</td>
<td>0 – 1,000</td>
<td>±2</td>
</tr>
<tr>
<td>S</td>
<td>500 – 1,750</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 (Three-way): 1,000 Vdc
- 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 Vdc
- Power Consumption: 1.4 W
- Power Input: 24 Vdc ± 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

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
- Current Output: 0 – 20 mA
- Stability (Temperature Drift): 150 ppm (typical)
- Voltage Input
  - Bipolar input: ±10 mV, ±50 mV, ±100 mV, ±0.5 V, ±1.0 V, ±5 V, ±10 V
  - Unipolar input: 0 – 10 mV, 0 – 50 mV, 0 – 100 mV, 0 – 0.5 V, 0 – 5 V, 0 – 10 V
  - Input impedance: 2.4 kHz (typical)
  - Input bandwidth: 2.4 kHz (typical)
- Voltage Output
  - Bipolar: ±5 V, ±10 V
  - Unipolar: 0 – 10 V
  - Impedance: < 50 Ω
  - Drive: 10 mA max.

General
- Connectors: Screw terminal
- Enclosure: ABS
- Indicators: Power LED indicator
- Isolation (Three-way): 1,000 Vdc
  - Power 0.85 W (voltage output)
- Consumption: 1.2 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-3014: Isolated DC Input/Output Module
Introduction

FPM-8151H is a particularly rugged and reliable 15” XGA wide temperature industrial monitor for a variety of industry applications. Equipped with a wide operating temperature -20 ~ 60°C (-4 ~ 140°F), it can satisfy demands in a wide range of harsh industrial applications. This model also features enhanced 5-wire resistive touch and system isolation to enhance the reliability. Moreover, the FPM-8151H is designed to be safely operated in these locations and is undergoing certification to be UL listed for Hazardous Locations with Class I, Division 2.

Specifications

General
- Button Controls: OSD control pad on front panel with lockable function
- Certification: CE, FCC Class A, UL, CB, BSMI, CCC
- Dimension (W x H x D): 422 x 338 x 68 mm (16.61” x 13.31” x 2.68”)
- Enclosure: Front panel: Stainless steel, Rear cover: Stainless steel, Ground Isolation Protection
- Mounting: Panel, wall, desktop, VESA arm, or 19” rackmount 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 (Optional)
- 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-bits) or 262k colors (RGB 6-bits)
- Viewing Angle (H/V°): 160/140
- Luminance (cd/m²): 350
- Backlight Life (hrs): 50,000
- Contrast Ratio: 700:1

Features
- 15” XGA TFT LCD with LED backlight
- Stainless steel 316L front panel
- NEMA4X/IP65 compliant front panel
- -20 ~ 60°C wide operating temperature
- Enhanced 5-wire resistive touch panel
- Direct VGA & DVI-D video input interface
- Combo RS-232 & USB interface for touchscreen function
- Supports 24 Vdc input and 100 ~ 240 Vac input (optional AC adapter)
- OSD control pad with lockable function on front panel
- Meets hazardous requirements with CID2 certification

Touchscreen
- 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 2000, XP, Vista, 7, 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 NEMA4/IP65 compliant
- Shock: 11ms, 10G (Non Operating, Half Sine Wave)
- Vibration: 5 ~ 500 Hz; 1 Grms (Operating, Random)

Ordering Information
- FPM-8151H-R3AE: 15” XGA Ind. Monitor VGA, DVI, Wide Temp
**Dimensions**

Panel Cut-out Dimensions: 396 x 296 mm (15.59" x 11.65")

**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
- 1757002742  Adapter AC 90-264V, 57W, SPU63-105

**I/O View**

- 24 Vdc Input
- 100 - 240 Vac Power Adapter
- VGA Port
- DVI-D
- Touch Screen (RS-232)
- Touch Screen (USB)
Hazardous Location Solutions

UNO-1140FH

Features
- UL listed for Hazardous Locations: Class I, Division 2
- Onboard Advantech EVA-X4150 486SX SoC
- 4 x isolated RS-232/485 and 4 x isolated RS-485 ports with automatic flow control
- Industrial-grade serial port design without data loss
- 1 x 10/100Base-T RJ-45, 2 x USB 2.0, and 1 x internal CompactFlash®
- Compact size, small footprint, saves space
- Front-accessible I/O and DIN-rail design for easy installation in control cabinet
- Wide operating temperature range up to 60°C
- Windows® CE 5.0, DOS, and Linux ready solution
- Fanless design with no internal cabling
- Grounding isolation between chassis and system
- IP40 ingress protection

Introduction
In hazardous locations, devices are under potential danger from flammable gases, combustible dust, or ignitable fibers, creating the potential for fire and explosions. UNO-1140FH is designed to be safely operated in these locations and is UL listed for Hazardous Locations with Class I, Division 2, group A, B, C, D & T4A certification. The UNO-1140FH is also DIN-rail mountable, providing several serial communication ports and Ethernet interfaces. With a compact size, small footprint and front accessible I/Os, the UNO-1140FH is convenient for the control cabinet. The wide operation temperature and industrial serial port design makes the UNO-1140FH a perfect communication gateway. With OS and driver support on WinCE, Linux, users can integrate applications easily with an application ready platform that can provide a versatile function to fulfill diverse requirements.

Specifications

General
- Certification: CE, FCC Class A, UL, CCC
- Temperature Code: T4A
- Ambient Temperature Range: -10°C ≤ Tamb ≤ 60°C
- Dimension (W x H x D): 71 x 152 x 139 mm (2.8" x 6" x 5"
- Enclosure: Aluminum + SECC
- Mounting: DIN-rail, Wallmount
- Industrial Grounding: Isolation between chassis and power ground
- Power Consumption: 10 W (Typical)
- Power Requirement: 10 – 30 VDC (e.g. +24 V @ 1 A) (Min. 24 W), AT
- Weight: 1.0 kg
- OS Support: DOS, Windows CE 5.0/6.0, Linux
- System Design: Fanless design with no internal cabling
- Remote Management: Built-in Advantech DiagAnywhere agent on Windows CE

System Hardware
- CPU: Advantech EVA-X4150 SoC, 486SX grade, 150MHz
- Memory: Onboard 64 MB Industrial grade SDRAM
- Indicators: LEDs for Power, CF, LAN (Active, Status) and Serial (Tx, Rx)
- Keyboard/Mouse: 1 x PS/2
- Storage: CF: 1 x internal type II CompactFlash® slot
- Display: DB15 VGA connector, supports up to 1024 x 768 @ 60 Hz
- Watchdog Timer: Programmable 256 levels timer interval, from 1 to 255 sec

Environment
- Ingress Protection: IP40
- Operating Temperature: IEC 60068 - 2-2 (with 100% CPU/ I/O loading)
- Operating Humidity: 20 ~ 95% (non-condensing)
- Operating Humidity: IEC 60068 - 2-27
- Vibration Protection: CompactFlash®: 5 Grms @ 5 ~ 500 Hz

I/O Interface
- Serial Ports: 4 x isolated RS-232/485 with DB9 connectors, 4 x isolated RS-485 with screw terminal, Automatic RS-485 data flow control
- Serial Port Speed: COM1 – COM4
- Serial Port Speed: COM5 – COM 8
- Serial Port Speed: COM5 – COM 8
- Serial Port Speed: 500kbps, Isolation Protection
- Serial Port Speed: 2000VDC, EFT Protection
- LAN: 1 x 10/100Base-T RJ-45 port
- USB: 2 x USB, USB 2.0 compliant

Ordering Information
- UNO-1140FH-V10E: CID2 ESA SoC DIN-rail PC w/ 64 MB RAM and 8 x iso. COM

Accessories
- UNO-FPM11-8E: UNO-1100 series VESA mount kit
- PCLS-DIAGAW10: Advantech Remote Monitoring & Diagnosis Utility

Hazardous Location Solutions

Class I, Division 2 Certified
486SX-grade SoC DIN-rail PC
with 1 x LAN, 8 x Isolated COM

Features
- UL listed for Hazardous Locations: Class I, Division 2
- Onboard Advantech EVA-X4150 486SX SoC
- 4 x isolated RS-232/485 and 4 x isolated RS-485 ports with automatic flow control
- Industrial-grade serial port design without data loss
- 1 x 10/100Base-T RJ-45, 2 x USB 2.0, and 1 x internal CompactFlash®
- Compact size, small footprint, saves space
- Front-accessible I/O and DIN-rail design for easy installation in control cabinet
- Wide operating temperature range up to 60°C
- Windows® CE 5.0, DOS, and Linux ready solution
- Fanless design with no internal cabling
- Grounding isolation between chassis and system
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Introduction
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Specifications

General
- Certification: CE, FCC Class A, UL, CCC
- Temperature Code: T4A
- Ambient Temperature Range: -10°C ≤ Tamb ≤ 60°C
- Dimension (W x H x D): 71 x 152 x 139 mm (2.8" x 6" x 5"
- Enclosure: Aluminum + SECC
- Mounting: DIN-rail, Wallmount
- Industrial Grounding: Isolation between chassis and power ground
- Power Consumption: 10 W (Typical)
- Power Requirement: 10 – 30 VDC (e.g. +24 V @ 1 A) (Min. 24 W), AT
- Weight: 1.0 kg
- OS Support: DOS, Windows CE 5.0/6.0, Linux
- System Design: Fanless design with no internal cabling
- Remote Management: Built-in Advantech DiagAnywhere agent on Windows CE

System Hardware
- CPU: Advantech EVA-X4150 SoC, 486SX grade, 150MHz
- Memory: Onboard 64 MB Industrial grade SDRAM
- Indicators: LEDs for Power, CF, LAN (Active, Status) and Serial (Tx, Rx)
- Keyboard/Mouse: 1 x PS/2
- Storage: CF: 1 x internal type II CompactFlash® slot
- Display: DB15 VGA connector, supports up to 1024 x 768 @ 60 Hz
- Watchdog Timer: Programmable 256 levels timer interval, from 1 to 255 sec

Environment
- Ingress Protection: IP40
- Operating Temperature: IEC 60068 - 2-2 (with 100% CPU/ I/O loading)
- Operating Humidity: 20 ~ 95% (non-condensing)
- Shock Protection: IEC 60068 - 2-27
- Vibration Protection: CompactFlash®: 50 G @ wall mount, half sine, 11 ms

I/O Interface
- Serial Ports: 4 x isolated RS-232/485 with DB9 connectors, 4 x isolated RS-485 with screw terminal, Automatic RS-485 data flow control
- Serial Port Speed: COM1 – COM4
- Serial Port Speed: COM5 – COM 8
- Serial Port Speed: COM5 – COM 8
- Serial Port Speed: 500kbps, Isolation Protection
- Serial Port Speed: 2000VDC, EFT Protection
- LAN: 1 x 10/100Base-T RJ-45 port
- USB: 2 x USB, USB 2.0 compliant

Ordering Information
- UNO-1140FH-V10E: CID2 ESA SoC DIN-rail PC w/ 64 MB RAM and 8 x iso. COM

Accessories
- UNO-FPM11-8E: UNO-1100 series VESA mount kit
- PCLS-DIAGAW10: Advantech Remote Monitoring & Diagnosis Utility

RoHS COMPLIANT 2002/95/EC
Introduction

In hazardous locations, devices are under potential danger from flammable gases, combustible dust, or ignitable fibers, creating the potential for fire and explosions. 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.

In hazardous locations, devices are under potential danger from flammable gases, combustible dust, or ignitable fibers, creating the potential for fire and explosions. 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

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 flow control
- LAN: 2 x 10/100Base-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: IEC 60068-2-1, 100% CPU/ I/O loading, -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
- Vibration Protection: IEC 60068-2-64

Ordering Information
- UNO-1150GH-G30E: C1D2 AMD Geode™ LX800 500 MHz, 256 MB DIN-rail PC
- UNO-1150GHE-G30E: C1D2 AMD Geode™ LX800 500 MHz, 256 MB DIN-rail PC w/PCI-104

Accessories
- UNO-FPM11-8E
- PCLS-DIAGAW10

Advantech Remote Monitoring & Diagnosis Utility

UNO-1100 Series VESA Mount kit

Systems 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 I/II CompactFlash® slot
- PC/104 Slot: 2 x PCI-104 slots, supports 3.3 V & +5 V
- Mini PCI: 1 x Mini PCI (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 I, Division 2
- Onboard AMD Geode LX800 500 MHz CPU
- 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 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
Introduction

In hazardous locations, devices are under potential danger from flammable gases, combustible dust, or ignitable fibers, creating the potential for fire and explosions. 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 learning function support allow users to uplink two ports with data transmission fault tolerance and download one port to field device.

Specifications

General
- Certification: CE, FCC Class A, UL, CCC
- Dimension (W x H x D): UNO-1172AH: 85 x 152 x 139 mm (3.4” x 6” x 5.5”)
- Enclosure: Aluminum + SECC DIN-rail, Wallmount
- Power Consumption: 24 W (Typical)
- Power Requirement: 10 - 36 VDC (e.g. +24 V @ 2 A) (Min. 48 W), AT/ATX power mode by Jump selection and BIOS AT simulation (support system reboot automatically after power recovery)
- Weight: 1.6 kg
- OS Support: WES Windows XP Embedded, Windows XP & Windows 7, Windows CE 5.0/6.0, 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 (Tx, Rx), Diagnostic; Alarm: over system temperature, over voltage, alarm for battery backup SRAM, alarm for RTC battery,Programmable (while disable Serial Tx/Rx), Buzzer for Diagnosis (programmable) 1 x F2S2
- Keyboard/Mouse: 1 x PS/2
- Storage: SSD: 1 x internal type UI CompactFlash slot, HDD: on 2.5” SATA HDD bracket
- Display: 1 x DC VGA connector, 1800 x 1200 @ 85 Hz
- Audio: 5.1 channel HD Audio, Mic in, Line in, Line out
- Watchdog Timer: Programmable: 256 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)
- LAN: RS-232: 50 – 115.2 kbps
- USB: RS-22/42/485: 50 – 115.2 kbps (Max)
- Digital Input: 4 x USB, EHCI, Rev. 2.0 compliant
- Digital Output: 2-ch. wet/dry contact, 70 Vr over-voltage protection, 0 – 50 Vr: input range and Interrupt handling
- System Diagnoses: 6-ch DO IP40 - 200 mA max/channel sink current - Keep output status after system hot reset - 5 – 40 Vr: output range and 10 kHz speed
- Languages: Remote monitoring: over system temperature, over voltage, battery power fail, power status
- Remote control: Power On/Off, Reset
- Ingress Protection: IP40
- Operating Temperature: -10 ~ 60°C (-4 ~ 176°F)
- Storage Temperature: -20 ~ 85°C (-4 ~ 176°F)
- Operating Humidity: 20 ~ 95% (non-condensing)
- Storage Humidity: 0 ~ 95% (non-condensing)
- Shock Protection: 2 x 2G, 25/50 kHz, 2.5 kHz
- Vibration Protection: 2 x 0.5 x 500 Hz

Ordering Information
- UNO-1172AH-A33E: CID2 Intel Atom D510 1.66 GHz, 2 GB RAM DIN-rail PC

Accessories
- UNO-FPM11-8E
- PCLS-DIAGAW10: Advantech Remote Monitoring & Diagnosis Utility