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To view all of Advantech’s Building Automation Systems, please visit www.advantech.com/products.
Empower BA Systems with Open and Web-enabled Technologies

System Overview
Advantech provides building automation solutions for the i-Energy, i-Security, i-Facility, i-Management sectors with energy-saving solutions, video surveillance systems, HVAC and lighting systems, building for control and monitoring systems in this domain-focused market.

Advantech’s BAS web-enabled system adopts open building networking standards - Modbus and BACnet. It also features the powerful BASPro programming tool with BA domain function blocks, such as AHU control, HVAC, sequential control, PID control, alarm, and schedule functions that are convenient for engineers to quickly develop specific applications.

Advantech Building Energy Management System software (BEMS) also receives and analyzes energy consumption patterns to enact peak-shaving, thus saving high utility rate charges.

Advantech provides a wide range of methods to expand, upgrade, and optimize your facility systems with an intelligent building solution that make buildings more comfortable, safe, energy-saving and less costly to operate.

Advantech Web-enabled BAS System Architecture

Browser-based HMI/SCADA Software

Web Browser Client to View and Control
WebAccess SCADA software allows users to view, access and control their equipment through Microsoft’s Internet Explorer web browser.

Distributed Architecture
SCADA nodes run independent of any other node. Each SCADA node communicates to automation equipment using communication driver supplied with WebAccess.

Central Database Server
The project node is a centralized database server of configuration database and configurable process database through ODBC interface.

Scheduler
The Scheduler provides control and changes set point status based on time and date. The Scheduler is also used in process control and manufacturing applications. All these schedule configurations can be modified remotely through the internet.

Energy Management
Advantech BEMS is a browser-based energy profiling tool designed to help manage building automation applications. Users can trend and analyze energy data depending on the combination of values and reports selected, identify correlations between building energy consumption patterns and equipment usage to develop improved processes and profiles.

Modbus/BACnet Web-enabled DDC Controllers
Advantech Web-enable DDC BAS-3000 family controllers are powerful in the industry. They provide stand-alone operation, running DDC control programs, schedules, and issuing their own alarms and events. In addition, engineers can remotely upload and download DDC programs as well as service and maintenance.

Web-enabled HMI
Advantech’s WebView-1200 series is a web-based HMI and SCADA platform. All of the features are available through a browser, including animated graphic displays, trends, alarms, schedules and more.

Energy Data Concentrator
Advantech BEMG–4000 series featuring pre-installed and pre-tested WinCE WebAccess helps customers reduce costs and time in selecting products, whilst setting up an IIS and system that also guarantees product quality. For energy saving, we provide data transfer from Advantech’s power meter or 3rd party meter to Advantech’s BEMS to help customers easily to plan and manage their energy strategy.

Power Meter
To complete the energy saving solution, Advantech provides PME-1000 series power meters for sub-metering applications, ranging from power distribution, small motor control to lighting load circuit. The measurement data can be viewed directly from local display, and also can be transmitted through a RS-485 port using the Modbus protocol.
Advantech BAS Solution Framework

Facility Monitoring and Control System

The facility management system allows control of:
- Chiller plants
- Water pumps
- Boilers
- Cooling towers
- Heat pumps
- Small to large Air Handler Unit (AHU)
- Makeup Air Unit (MAU) for cleaning room
- Environment monitoring system (Temperature, Humidity, CO2 etc.)
- Other facility control/monitoring applications such as power, lighting etc.

For facility control applications like chiller plant control, water pump control and cooling tower control, the BAS-3000 system with BASPro programming tool can easily and flexibly tailor DDC control strategy.

Energy Saving System

Advantech BEMS analyzes energy usage helping to save energy costs. Additionally, it provides the following features:
- Receives, stores and analyzes metering and sensor data to optimize energy usage
- Provides powerful analysis and reporting tools for exploring cost reduction opportunities
- Automates cost allocation and supports utility bill validation
- Demands limit control

Video Surveillance

PowerView is a complete advanced digital surveillance system designed to meet the requirements of modern security. High compression rate and image quality, real-time video plus audio recording, and monitoring, make it a dependable first choice for professionals needing an all-in-one state of the art solution that is ready for continuous 24-hour operation in large networks with centralized control.

Building Automation

Advantech BEMS analyzes energy usage helping to save energy costs. Additionally, it provides the following features:
- Receives, stores and analyzes metering and sensor data to optimize energy usage
- Provides powerful analysis and reporting tools for exploring cost reduction opportunities
- Automates cost allocation and supports utility bill validation
- Demands limit control
## Selection Guide

### Direct Digital Controller: BAS-3000 Family

<table>
<thead>
<tr>
<th>Model Name</th>
<th>BAS-3500BC</th>
<th>BAS-3512</th>
<th>BAS-3520</th>
<th>BAS-3520C</th>
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</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Ethernet-based, Standalone Programmable BACnet DDC Controller</td>
<td>12-ch Web-enabled DDC Controller</td>
<td>20-ch Web-enabled DDC Controller</td>
<td>20-ch Web-enabled Chiller DDC Controller</td>
</tr>
<tr>
<td><strong>Protocol</strong></td>
<td>BACnet MS/TP, BACnet IP</td>
<td>Modbus/TCP, Modbus/RTU</td>
<td>Modbus/TCP, Modbus/RTU</td>
<td>Modbus/TCP, Modbus/RTU</td>
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<tr>
<td><strong>Power</strong></td>
<td>24Vac, 24Vdc; 3W @ 24Vdc</td>
<td>24Vac, 24Vdc; 10W @ 24Vdc</td>
<td>24Vac, 24Vdc; 10W @ 24Vdc</td>
<td>24Vac, 24Vdc; 10W @ 24Vdc</td>
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<tr>
<td><strong>Watchdog Timer</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td><strong>LCM Module Support</strong></td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Optional</td>
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<tr>
<td><strong>Programming Tool Support</strong></td>
<td>BASPro</td>
<td>BASPro</td>
<td>BASPro</td>
<td>BASPro</td>
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<tr>
<td><strong>Expansion</strong></td>
<td>N/A</td>
<td>3 local I/O expansion modules</td>
<td>3 local I/O expansion modules</td>
<td>3 local I/O expansion modules</td>
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<tr>
<td><strong>Universal Input</strong></td>
<td>Number of Inputs</td>
<td>-</td>
<td>-</td>
<td>4</td>
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<tr>
<td><strong>Signal type</strong></td>
<td>-</td>
<td>-</td>
<td>0<del>10 V, 0</del>20 mA, 4~20 mA</td>
<td>0<del>10 V, 0</del>20 mA, 4~20 mA</td>
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<tr>
<td><strong>Direct sensor input</strong></td>
<td>-</td>
<td>-</td>
<td>Pt-100 RTD, Pt-1000 RTD, Thermistor 3K, 10K</td>
<td>Pt-100 RTD, Pt-1000 RTD, Thermistor 3K, 10K</td>
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<tr>
<td><strong>Analog Output</strong></td>
<td>Number of Inputs</td>
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<td>-</td>
<td>4</td>
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<tr>
<td><strong>Signal type</strong></td>
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<td>-</td>
<td>0<del>10 V, 0</del>20 mA, 4~20 mA</td>
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<td><strong>Digital Input</strong></td>
<td>Number of Inputs</td>
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<td>-</td>
<td>8</td>
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<td><strong>Dry Contact</strong></td>
<td>Logic High: Close Logic Low: Open</td>
<td>Logic High: Close Logic Low: Open</td>
<td>Logic High: Close Logic Low: Open</td>
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<tr>
<td><strong>Digital Output</strong></td>
<td>Number of Outputs</td>
<td>-</td>
<td>4</td>
<td>4</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 ~ 60°C (14 ~ 140°F)</td>
<td>-10 ~ 60°C (14 ~ 140°F)</td>
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<tr>
<td><strong>Storage Temperature</strong></td>
<td>-20 ~ 80°C (-4 ~ 176°F)</td>
<td>-20 ~ 80°C (-4 ~ 176°F)</td>
<td>-20 ~ 80°C (-4 ~ 176°F)</td>
<td>-20 ~ 80°C (-4 ~ 176°F)</td>
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<tr>
<td><strong>Operating Humidity</strong></td>
<td>20 ~ 95% (Non-condensing)</td>
<td>20 ~ 95% (Non-condensing)</td>
<td>20 ~ 95% (Non-condensing)</td>
<td>20 ~ 95% (Non-condensing)</td>
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<tr>
<td><strong>Storage Humidity</strong></td>
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<td>0 ~ 95% (Non-condensing)</td>
<td>0 ~ 95% (Non-condensing)</td>
<td>0 ~ 95% (Non-condensing)</td>
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</tbody>
</table>

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**Advantech**

**Building Automation Systems**

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**800-999-7378**
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<table>
<thead>
<tr>
<th>Model Name</th>
<th>BAS-3018BC</th>
<th>BAS-3024BC</th>
<th>BAS-3050BC</th>
<th>BAS-3051BC</th>
<th>BAS-3051BC</th>
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</thead>
<tbody>
<tr>
<td>Description</td>
<td>8-ch UI BACnet Remote Module</td>
<td>4-ch UI, 4-ch AO, 4-ch DO BACnet Expansion Module</td>
<td>8-ch DI, 8-ch DO BACnet Expansion Module</td>
<td>16-ch DI BACnet Remote Module</td>
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<tr>
<td>Protocol</td>
<td>BACnet MS/TP Server</td>
<td>BACnet MS/TP Server</td>
<td>BACnet MS/TP Server</td>
<td>BACnet MS/TP Server</td>
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<tr>
<td>Power</td>
<td>24Vdc, 48Vdc, 3W @ 24Vdc</td>
<td>24Vdc, 48Vdc, 3W @ 24Vdc</td>
<td>24Vdc, 48Vdc, 3W @ 24Vdc</td>
<td>24Vdc, 48Vdc, 3W @ 24Vdc</td>
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<tr>
<td>Universal Input</td>
<td>Number of Inputs</td>
<td>Number of Inputs</td>
<td>Number of Inputs</td>
<td>Number of Inputs</td>
<td>Number of Inputs</td>
</tr>
<tr>
<td>Signal type</td>
<td>0–10 V, 0–20 mA, 4–20 mA</td>
<td>0–10 V, 0–20 mA, 4–20 mA</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Direct sensor input</td>
<td>RTD, Pt-100/1000, Thermistor 3K, 10K</td>
<td>RTD, Pt-100/1000, Thermistor 3K, 10K</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Analog Output</td>
<td>Number of Outputs</td>
<td>Number of Outputs</td>
<td>Number of Outputs</td>
<td>Number of Outputs</td>
<td>Number of Outputs</td>
</tr>
<tr>
<td>Signal type</td>
<td>0–10 V, 0–20 mA, 4–20 mA</td>
<td>0–10 V, 0–20 mA, 4–20 mA</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Digital Input</td>
<td>Number of Inputs</td>
<td>Number of Inputs</td>
<td>Number of Inputs</td>
<td>Number of Inputs</td>
<td>Number of Inputs</td>
</tr>
<tr>
<td>Rated Load Voltage</td>
<td>10-35Vdc, 1A (Per Channel)</td>
<td>10-35Vdc, 1A (Per Channel)</td>
<td>10-35Vdc, 1A (Per Channel)</td>
<td>10-35Vdc, 1A (Per Channel)</td>
<td>10-35Vdc, 1A (Per Channel)</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>120 x 120 x 44 mm</td>
<td>120 x 120 x 44 mm</td>
<td>120 x 120 x 44 mm</td>
<td>120 x 120 x 44 mm</td>
<td>120 x 120 x 44 mm</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>BACnet Certification</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Page</td>
<td>4-12</td>
<td>4-12</td>
<td>4-13</td>
<td>4-13</td>
<td></td>
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</table>

### Modbus I/O Modules

<table>
<thead>
<tr>
<th>Model Name</th>
<th>BAS-3018</th>
<th>BAS-3024</th>
<th>BAS-3050</th>
<th>BAS-3051</th>
<th>BAS-3060</th>
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</thead>
<tbody>
<tr>
<td>Description</td>
<td>8-ch UI Expansion Module</td>
<td>4-ch UI, 4-ch AO, 4-ch DO Expansion I/O Module</td>
<td>8-ch DI, 8-ch DO Expansion I/O Module</td>
<td>16-ch DI Expansion I/O Module</td>
<td>8-ch DO Relay Expansion I/O Module</td>
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<tr>
<td>Communication</td>
<td>Modbus RTU</td>
<td>Modbus RTU</td>
<td>Modbus RTU</td>
<td>Modbus RTU</td>
<td>Modbus RTU</td>
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<tr>
<td>Power</td>
<td>24Vdc, 48Vdc, 3W @ 24Vdc</td>
<td>24Vdc, 48Vdc, 3W @ 24Vdc</td>
<td>24Vdc, 48Vdc, 3W @ 24Vdc</td>
<td>24Vdc, 48Vdc, 3W @ 24Vdc</td>
<td>24Vdc, 48Vdc, 3W @ 24Vdc</td>
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<tr>
<td>Universal Input</td>
<td>Number of Inputs</td>
<td>Number of Inputs</td>
<td>Number of Inputs</td>
<td>Number of Inputs</td>
<td>Number of Inputs</td>
</tr>
<tr>
<td>Signal type</td>
<td>0–10 V, 0–20 mA, 4–20 mA</td>
<td>0–10 V, 0–20 mA, 4–20 mA</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Direct sensor input</td>
<td>RTD, Pt-100/1000, Thermistor 3K, 10K</td>
<td>RTD, Pt-100/1000, Thermistor 3K, 10K</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Analog Output</td>
<td>Number of Outputs</td>
<td>Number of Outputs</td>
<td>Number of Outputs</td>
<td>Number of Outputs</td>
<td>Number of Outputs</td>
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<tr>
<td>Signal type</td>
<td>0–10 V, 0–20 mA, 4–20 mA</td>
<td>0–10 V, 0–20 mA, 4–20 mA</td>
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<td>-</td>
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<tr>
<td>Digital Input</td>
<td>Number of Inputs</td>
<td>Number of Inputs</td>
<td>Number of Inputs</td>
<td>Number of Inputs</td>
<td>Number of Inputs</td>
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<tr>
<td>Rated Load Voltage</td>
<td>10-35Vdc, 1A (Per Channel)</td>
<td>10-35Vdc, 1A (Per Channel)</td>
<td>10-35Vdc, 1A (Per Channel)</td>
<td>10-35Vdc, 1A (Per Channel)</td>
<td>10-35Vdc, 1A (Per Channel)</td>
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<td>PWM Period (min)/Pulse Width (min)</td>
<td>1 sec. / 0.1 sec.</td>
<td>1 sec. / 0.1 sec.</td>
<td>1 sec. / 0.1 sec.</td>
<td>1 sec. / 0.1 sec.</td>
<td>1 sec. / 0.1 sec.</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>120 x 120 x 44 mm</td>
<td>120 x 120 x 44 mm</td>
<td>120 x 120 x 44 mm</td>
<td>120 x 120 x 44 mm</td>
<td>120 x 120 x 44 mm</td>
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<tr>
<td>Watchdog Timer</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
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<td>online</td>
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<td>online</td>
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<td>online</td>
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</tbody>
</table>
## Energy Data Concentrators

### Model BEMG-4110

- **Description**: Building Energy Data Concentrator with 4 COM, 1 LAN
- **CPU**: AMD Geode LX800 500MHz
- **Memory**: 256 MB DDR SDRAM
- **Display**: VGA
- **Communications**: Serial Ports 2 x RS232/485, 2 x RS232
- **Network (LAN)**: 10/100Base-T
- **Compact Flash**: 1G
- **CPU**: AMD Celeron M, 1GHz
- **Memory**: 512 MB DDR SDRAM
- **Display**: VGA
- **Communications**: Serial Ports 2 x RS232/485, 2 x RS232
- **Network (LAN)**: 10/100Base-T
- **Compact Flash**: 1G
- **CPU**: Atom N450, 1.67GHz
- **Memory**: 2G DDR2 SDRAM
- **Display**: VGA
- **Communications**: Serial Ports 2 x RS232/485, 2 x RS232
- **Network (LAN)**: 10/100Base-T
- **Compact Flash**: 1G
- **CPU**: Atom Dual Core D510, 1.67GHz
- **Memory**: 2G DDR2 SDRAM
- **Display**: VGA
- **Communications**: Serial Ports 2 x RS232/485, 2 x RS232
- **Network (LAN)**: 10/100Base-T
- **Compact Flash**: 1G

### Power Meters

#### Model PME-1130

- **Description**: 3-Phase KW & KWH Energy Meter
- **Power Supply**: 110 VAC: 93 to 126 VAC, 220 VAC: 187 to 253 VAC
- **Power Consumption**: 5VA
- **Communication Interface**: Bus: Photo-isolated RS-485
- **Voltage Measurement**: 1P2W, 80 ~ 600 VAC
- **Accuracy**: ±0.5% full scale
- **Power Measurement (Total)**: 1W (per phase), 1% full scale
- **Energy Measurement (Total)**: 0.1 kWh (Range 0 ~ 9,999,999.9kWh)
- **Temperature**: -10 ~ 55°C (14 ~ 131°F)

#### Model PME-1210

- **Description**: 1-Phase Multifunction Power Meter
- **Power Supply**: 110 VAC: 93 to 126 VAC, 220 VAC: 187 to 253 VAC
- **Power Consumption**: 5VA
- **Communication Interface**: Bus: Photo-isolated RS-485
- **Voltage Measurement**: 1P3W/3P3W/3P4W, 80 ~ 600 VAC
- **Accuracy**: ±0.5% full scale
- **Power Measurement (Total)**: 1W (per phase), 1% full scale
- **Energy Measurement (Total)**: 0.1 kWh (Range 0 ~ 9,999,999.9kWh)
- **Temperature**: -10 ~ 70°C (14 ~ 158°F)

#### Model PME-1230

- **Description**: 3-Phase Multifunction Power Meter
- **Power Supply**: 110 VAC: 93 to 126 VAC, 220 VAC: 187 to 253 VAC
- **Power Consumption**: 5VA
- **Communication Interface**: Bus: Photo-isolated RS-485
- **Voltage Measurement**: 1P3W/3P3W/3P4W, 80 ~ 600 VAC
- **Accuracy**: ±0.5% full scale
- **Power Measurement (Total)**: 1W (per phase), 1% full scale
- **Energy Measurement (Total)**: 0.1 kWh (Range 0 ~ 9,999,999.9kWh)
- **Temperature**: -10 ~ 70°C (14 ~ 158°F)
## Web-enabled HMI

<table>
<thead>
<tr>
<th>Model</th>
<th>WebView-1206</th>
<th>WebView-1210</th>
<th>WebView-1212</th>
<th>WebView-1215</th>
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<tbody>
<tr>
<td>Description</td>
<td>Web-enabled HMI</td>
<td>Web-enabled HMI</td>
<td>Web-enabled HMI</td>
<td>Web-enabled HMI</td>
</tr>
<tr>
<td>CPU</td>
<td>Intel® Atom™ 1.33 GHz</td>
<td>Intel® Celeron® M, 1GHz</td>
<td>Intel® Celeron® M, 1GHz</td>
<td>Intel® Celeron® M, 1GHz</td>
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<tr>
<td>Memory</td>
<td>1G DDR2 SDRAM</td>
<td>512 MB DDR SDRAM</td>
<td>1G DDR SDRAM</td>
<td>1G DDR SDRAM</td>
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<td>10.4&quot;</td>
<td>12.1&quot;</td>
<td>15&quot;</td>
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<td>Resolution</td>
<td>640 x 480</td>
<td>800 x 600</td>
<td>800 x 600</td>
<td>1024 x 768</td>
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<td>1 x RS232, 1 x 422/485</td>
<td>2 x RS232, 1 x RS232/422/485</td>
<td>3 x RS232, 1 x RS232/422/485</td>
<td>2 x RS232, 1 x RS232/422/485</td>
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<td>USB Ports</td>
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<td>2</td>
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<tr>
<td>Network (LAN)</td>
<td>2 x 10/100/1000Base-T</td>
<td>2 x 10/100Base-T</td>
<td>2 x 10/100Base-T</td>
<td>1 x (10/100BaseT)</td>
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<td>CompactFlash</td>
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<td>1G Compact Flash</td>
<td>1G Compact Flash</td>
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<td>Watchdog Timer</td>
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<td>Yes</td>
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<tr>
<td>Power Input Range</td>
<td>18–32 Vdc</td>
<td>18–32 Vdc</td>
<td>18–32 Vdc</td>
<td>18–32 Vdc</td>
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<tr>
<td>Power Consumption</td>
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<td>41W</td>
<td>40W</td>
<td>42W</td>
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<tr>
<td>Operating Temperature</td>
<td>-20 – 60°C (-4 – 140°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>Dimensions (W x D x H)</td>
<td>195 x 148 x 58 mm (7.68” x 45.83” x 2.28”)</td>
<td>286 x 226 x 58 mm (11.26” x 8.9” x 2.28”)</td>
<td>311 x 237 x 52.3 mm (12.24” x 9.33” x 2.06”)</td>
<td>383 x 307 x 64.5 mm (15.08” x 12.09” x 2.54”)</td>
</tr>
</tbody>
</table>

### Software Specification

- **Operating System**: WinCE 5.0
- **Certifications**: CCC, CE, FCC, UL
- **Configure/Service**: Web configuration & service
- **Web Clients**: 2
- **I/O Tag Number**: 600
- **Alarm Logging**: 1000
- **Action Logging**: 1000
- **Number of Graphic**: 100
- **Number of data logging**: 50
- **Recipes per Project**: 100
- **Time Zone Groups**: 99
- **Device Loop Groups**: 99
- **Equipment Groups**: 99
- **Page**: online, online, 4-14, online

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**Online Download** www.advantech.com/products

**SHOP ONLINE at www.airlinehyd.com**

800-999-7378
Introduction
Advantech BEMS is a set of advanced Web-based energy management system aiming at helping customers with energy consumption management. This system can collect energy consumption data of different classifications and sub-items. Customers can create energy management projects and groups to manage these data according to their requirements. Various charts and its statistical analysis function can help customers to find out an optimized energy-saving strategy.

Specifications

Energy Profile
Each management group provides energy consumption profile on a hourly, daily, monthly and yearly basis, and thus helping customers to know its own energy consumption situation and finding out the abnormal value. All kinds of related energy consumption indicators, such as Energy Use Intensity (EUI) provide data support to energy consumption statistic and energy audit. Some reference functions, such as temperature and humidity help to analyze the correlation between consumption data and environment data.

Energy Ranking
Energy consumption ranking during different time periods helps to find out the energy efficiency device units.

Energy Comparison
Energy comparison between different energy management groups during different time periods.

Average Daily Profile
Average daily profile per 15 minutes on each day. It helps customers to know its energy consumption pattern and find out the peak requirement more than expected; therefore customers can refer to it when signing the contract with power company.

Deviation Report
Deviation between energy consumption value and set value during different time periods on any day. The red value represents the increment trend of energy consumption.

Max/Min Value Analysis
Max/Min value during different time periods helps to analyze the relations between energy consumption and time.

Primary Energy Profile
Converts energy consumption to heat (MJ), standard coal, crude oil and coal as well as other primary energy consumption value and their relative CO2 emission value.

Cost Profile
Each management group provides cost profile on a daily, monthly and yearly basis. It calculates the cost based on the data in the energy table and rate structure in order to manage the energy cost. Customers can set an energy consumption benchmark. Set the budget based on the deviation from the actual cost will contribute to the decreasing of the risk in the process of purchasing.

Cost Ranking
Energy consumption cost ranking during different time periods helps to find out the max./min. energy efficiency device units.

Statistical Report
Statistics report (Y/M/D) with classification and sub-items allows customers to view clearly the energy consumption and helps them to make a reasonable allocation and use of energy.

Ordering Information
- WebAccess-70-AE WebAccess V7.0 software suite package
- 968W0070A0 WebAccess BEMS control file
Note: Users need to have WebAccess HMI/SCADA and its control file, and purchase BEMS Software including WebAccess-70-AE and 968W0070A0
Introduction

BASPro is a programming software package suitable for building automation application, perfectly integrating with BAS-3500 Series DDC Controller (Direct Digital Controller). BASPro features rich function blocks like mathematical calculation, data conversion, logic operation, alarm, event and timer, and control algorithm (PID, Ramp, ON/OFF switch control). Moreover, BASPro also provides many BA domain function blocks, such as scheduler, HVAC calculation and sequential control, which are commonly used in building applications. Developers can benefit from saving development time by the function blocks. Engineers can develop applications on their computer. After the application program is complete, it can be downloaded to the BAS-3500 series through Ethernet. Then BAS-3500 series becomes a standalone controller since it can execute the program by itself. Besides, BASPro delivers simulation function that you can observe the program execution situation before the program is downloaded to the BAS-3500 series.

Features

Graphical Programming Environment
BASPro features completely graphical programming environment, it makes the engineers easily develop their function and control logic in various applications.

Supports Remote Download and Maintenance
BASPro supports Ethernet communication, which can deliver remotely downloading and uploading control logic programs. Users also can maintain their device by remote control.

Powerful and Flexible Function Blocks
There can be up to 30 control pages per controller, each page supports up to 50 function blocks (max.4 PID blocks per page, total 16 PID per controller). BASPro delivers plenty of built-in function blocks, integrating many control and calculation functions into one simple block. Developers don’t need to write program code for the control function blocks by themselves, and simply uses these function blocks to complete their applications. It helps greatly decreasing the development time.

- Mathematical Calculation
  - Addition, subtraction, multiplication, division, exponentiation, square root operation, logarithm operation, natural logarithm operation, absolute operation, maximum number, minimum number, scale conversion.

- Logic Operation
  - Boolean calculation (such as AND, OR, NOT, NAND, NOR, XOR, ...), value comparison, trigger function, etc.

- Timer/Counter
  - Create time delay, count event, timing measurement, pulse, etc.

- Data Conversion
  - Conversion for various data type, such as convert float type data to integer data, convert boolean data to numeric data, combine byte to word, unpack byte to bit, etc.

- Control and Alarm
  - PID control, Ramp/Soak, ON/OFF switch control, alarm setting (H, L, HH, LL alarm), etc.

- Broadcast Variable Function
  - Sharing broadcast variable provides simple and efficient way to make the DDC quickly share data between devices in the same network.

- Schedule
  - Provide schedule function to implement multiple purpose scheduling task controls with the very friendly configuration edit page, such as Holiday, Weekly and Device group. We also provide campus schedule control using in campus.

- Sequential Control
  - Provide the multiple stage control function for 4 or 8 stage control units. It will turn on or turn off the unit device according to PV, SP, deadband and control mode parameters. The sequential order includes first in last out, first in first out, depending on the time length of operation, etc.

- HVAC Function
  - We support HVAC function include Dew Point, Vapor Pressure, Wet Bulb, and Enthalpy Calculation, also include calculation of absolute humidity and AHU function block.

- BA Domain Focus Function
  - BA Domain function module is provided for the specific control equipment, such as pumps, solenoid valves, fans, dampers, air handling units. Engineers can make system integration with different devices not only simplifies the design work, but also reduce the workload of the project.

Note: This software is only available as a bundle with BAS-3512, BAS-3520, and BAS-3520C.
Introduction

BAS-3512/3520 is a standalone programmable controller specially designed for building automation (BA) applications. Designed as a typical DDC (Direct Digital Controller), BAS-3512/3520 delivers various onboard I/O including universal input, analog output, digital input and digital output, providing flexible options to satisfy versatile application requirements. It also features powerful BASPro programming tool for engineers to quickly develop their application. BASPro delivers many function blocks suitable for BA applications, such as scheduler, HVAC calculation, sequential control, PID control, alarm, and event. Its compact size makes it an ideal solution to fulfill BA installation environment. The I/O expansion modules (BAS-3018, BAS-3024, BAS-3050, BAS-3051 and BAS-3060) provide more I/O points and make the system a scalable solution.

Specifications

<table>
<thead>
<tr>
<th>General</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension (W x H x D)</td>
<td>176 x 120 x 44 mm (6.93” x 4.72” x 1.73”)</td>
</tr>
<tr>
<td>Enclosure</td>
<td>ABS + PC</td>
</tr>
<tr>
<td>Power Input</td>
<td>24 VDC/24 VAC</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>10 W @ 24 VDC</td>
</tr>
<tr>
<td>Real-time Clock</td>
<td>Yes</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>Yes</td>
</tr>
<tr>
<td>I/O Isolation Protection</td>
<td>3,000 VDC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hardware</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>32-bit CPU 312 MHz</td>
</tr>
<tr>
<td>Flash Memory</td>
<td>32 MB</td>
</tr>
<tr>
<td>RAM</td>
<td>64 MB SDRAM</td>
</tr>
<tr>
<td>Battery Backup SRAM</td>
<td>512 KB</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Communication</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LAN</td>
<td>1 x 10/100Base-T ( RJ-45)</td>
</tr>
<tr>
<td>RS-485</td>
<td>1 (isolated)</td>
</tr>
<tr>
<td>Communication Protocol</td>
<td>Modbus/ TCP, Modbus/RTU</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Universal Input (BAS-3520 only)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Channels</td>
<td>4</td>
</tr>
<tr>
<td>Resolution</td>
<td>16-bit</td>
</tr>
<tr>
<td>Sample Rate</td>
<td>10 Hz (Total)</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±0.1% of FSR (Voltage, Current)</td>
</tr>
<tr>
<td>Type and Range</td>
<td>Analog Input: 0 – 10 V, 0 – 20 mA, 4 – 20 mA, Pt-100 RTD, Pt-1000 RTD, Thermistor (3 k, 10 k)</td>
</tr>
<tr>
<td>Digital Input</td>
<td>Logic High: Close</td>
</tr>
<tr>
<td>(Dry Contact)</td>
<td>Logic Low: Open</td>
</tr>
<tr>
<td>Over Voltage Protection</td>
<td>±35 V</td>
</tr>
<tr>
<td>Span Drift</td>
<td>±25 ppm/° C</td>
</tr>
<tr>
<td>Zero Drift</td>
<td>±6 µV/° C</td>
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<table>
<thead>
<tr>
<th>Analog Output (BAS-3520 only)</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Channels</td>
<td>4</td>
</tr>
<tr>
<td>Resolution</td>
<td>12-bit</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±0.1% of FSR</td>
</tr>
<tr>
<td>Range</td>
<td>0 – 10 V, 0 – 20 mA, 4 – 20 mA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Digital Input</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Channels</td>
<td>8</td>
</tr>
<tr>
<td>Dry Contact</td>
<td>Logic High: Close</td>
</tr>
<tr>
<td>Logic Low: Open</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Digital Output</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Channels</td>
<td>4 (Source Type)</td>
</tr>
<tr>
<td>Vcc: 10 – 35 Vdc, Current: 1 A (per channel)</td>
<td></td>
</tr>
<tr>
<td>PWM output (2 channels)</td>
<td>Minimum Period: 1 second (for PWM output)</td>
</tr>
<tr>
<td>Minimum Pulse Width: 0.1 second (for PWM output)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LCM Operation Unit (Optional)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2 line x 8 char, backlight LCD</td>
<td></td>
</tr>
<tr>
<td>5 button keypad</td>
<td></td>
</tr>
<tr>
<td>Hot swap capable</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>-10 – 60°C (14 – 140°F) (with airflow)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-20 – 80°C (-4 – 170°F)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>20 – 95% (Non-condensing)</td>
</tr>
<tr>
<td>Storage Humidity</td>
<td>0 – 95% (Non-condensing)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ordering Information</th>
<th></th>
</tr>
</thead>
</table>
| BAS-3512-AE | BASPro programming software provides BA domain function (scheduler, HVAC calculation, sequence…)
| BAS-3520-AE | Auto-tuning PID control
| BAS-3595-AE | Calendar schedule control
|  | Alarm and event notifications
|  | Provides RS-485 to connect with remote I/O devices
|  | Up to 3 local I/O expansion modules
|  | Remote programming and maintenance through Ethernet
|  | LCM display (optional) |
Introduction

The BAS-3500BC is an Ethernet-based, standalone programmable controller specially designed for the BACnet standard building automation (BA) applications. As a native BACnet® Building Controller (B-ASC), BAS-3500BC integrates into any 3rd-party BACnet® system with low and predictable effort. It supports BACnet MS/TP, also features powerful BASPro programming tool for engineers to quickly develop their application. BASPro tool delivers many function blocks suitable for BA application, such as scheduler, HVAC, sequential control, PID control, alarm, and event. Its compact size makes it an ideal solution to fulfill BA installation environment. The I/O expansion modules (BAS-3018BC, BAS-3024BC, BAS-3050BC, BAS-3051BC) provide more I/O points and make the system a scalable solution.

Specifications

General
- Certification: CE, FCC
- Mounting: DIN-rail, wall mount
- Dimensions (W x H x D): 176 x 110 x 39.2 mm (6.93" x 4.33" x 1.54")
- Power Input: 24 VAC/24 VDC
- Power Consumption: 3 W @ 24 VDC
- Real-time Clock: Yes
- Watchdog Timer: Yes

Hardware
- CPU: 32-bit CPU 312 MHz
- Flash Memory: 32MB
- RAM: 64M SDRAM
- Battery Backup SRAM: 512KB

Communication
- LAN: 1 x 10/100Base-T (RJ-45) BACnet/IP server & client
- COM1: RS-485 BACnet MS/TP
- COM2: RS-485 BACnet MS/TP
- COM3: RS-485 Modbus RTU Master
- COM4: RS-485 A-Bus Extension (Advantech product use)

Environment
- 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)

Ordering Information
- BAS-3500BC-AE: Web-enabled BACnet DDC Controller
Introduction
BAS-3018BC/BAS-3024BC can serve as BACnet MS/TP remote I/O modules through an RS-485 network to be integrated with worldclass BACnet DDC Controller such as Johnson Controls, Honeywell etc.

Specifications

General
- Dimensions (W x H x D): 120 x 120 x 44 mm (4.72” x 4.72” x 1.73”)
- Enclosure: ABS + PC
- Power Input: 24 VDC/24 VAC
- Power Consumption: 3 W @ 24 VDC (BAS-3018BC)/4 W @ 24 VDC (BAS-3024)
- Watchdog Timer: Yes
- Communication: RS-485

Universal Input
- Channels: 8 (BAS-3018BC)/4 (BAS-3024BC)
- Resolution: 16-bit
- Sample Rate: 10 Hz (Total)
- Accuracy: ±0.1% of FSR (Voltage, Current)
- Type and Range:
  - Analog Input: 0 ~ 10 V, 0 ~ 20 mA, 4 ~ 20 mA, Pt-100/1000, RTD, Thermistor (3k, 10k), and digital input (Dry contact) Logic High: Close, Logic Low: Open
  - Over Voltage Protection: ±35 V

Analog Output (BAS-3024 only)
- Channels: 4
- Resolution: 12-bit
- Accuracy: ± 0.1% of FSR
- Range: 0 ~ 10 V, 0 ~ 20 mA, 4 ~ 20 mA

Digital Output (BAS-3024 only)
- Channels: 4 (Source Type)
- Vcc: 10 ~ 35 VDC, Current: 1 A (per channel)
- PWM Output (2 channels)
  - Minimum Period: 1 second (for PWM output)
  - Minimum Pulse Width: 0.1 second (for PWM output)

Protection
- Isolation Voltage: 3,000 VDC

BACnet Profile
- Protocol: BACnet MS/TP Server
- Mode: Master and Slave
- Device Profile: BACnet Smart Sensor (B-SS)
- Objects: AI, AO, BO and Device

Environment
- 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)

Ordering Information
- BAS-3018BC-AE: 8-ch UI BACnet MS/TP Remote I/O Module
- BAS-3024BC-AE: 4-ch UI, 4-ch AO, 4-ch DO BACnet MS/TP Remote I/O Module
Introduction
BAS-3050BC/BAS-3051BC can serve as BACnet MS/TP remote I/O modules through an RS-485 network to be integrated with worldclass BACnet DDC Controllers such as Johnson Controls, Honeywell etc.

Specifications

General
- Dimensions (W x H x D): 120 x 120 x 44 mm (4.72” x 4.72” x 1.73”)
- Enclosure: ABS + PC
- Power Input: 24 VDC/24 VAC
- Power Consumption: 3 W @ 24 VDC
- Watchdog Timer: Yes
- Communication: RS-485

Digital Input
- Channels: 8 (BAS-3050BC)/16 (BAS-3051BC)
- Dry Contact: Logic High: Close
- Power Consumption: 3 W @ 24 VAC
- Support 1 kHz Counter Input (2 channels)
- Support 1 kHz Frequency Input (2 channels)

Digital Output (BAS-3050BC only)
- Channels: 8 (Source Type)
- Vcc: 10 ~ 35 VDC, Current: 1 A (per channel)
- Supports PWM Output (2 channels)
  - Minimum Period: 1 second (for PWM output)
  - Minimum Pulse Width: 0.1 second (for PWM output)

Protection
- Isolation Voltage: 3,000 VDC

BACnet Profile
- Protocol: BACnet MS/TP Server
- Mode: Master and Slave
- Device Profile: BACnet Smart Sensor (B-SS)
- Objects: BS, BO, and Device

Environment
- 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)

Ordering Information
- BAS-3050BC-AE: 8-ch DI, 8-ch DO BACnet MS/TP Remote I/O Module
- BAS-3051BC-AE: 16-ch DI BACnet MS/TP Remote I/O Module
WebView-1212 12" Web-enabled touch IPC with 600 I/O tags

Introduction
The WebView-1212 is a web-based touch panel IPC bundle with SCADA software - WebAccess. With the Intel Celeron M 1 GHz processor has low power consumption and rich I/O portfolio meets diverse requests. WebAccess communicates with automation equipment used in manufacturing facilities, industrial plants and building automation systems. The software acquire, display, monitor and store real-time data and allows operators to change set-points, equipment status and other parameters in Programmable Logic Controllers (PLCs), Controllers, IO, RTUs, DCS and DDC systems.

Specifications

General
- BIOS: Award® 4 MB
- Certification: BSMI, CCC, CE, FCC, UL
- Cooling System: Fanless design
- Dimensions (W x H x D): 311 x 237 x 52.3 mm (12.24" x 9.33" x 2.06")
- Enclosure: Front bezel: Die-cast Aluminum alloy Mounting Desktop, Wall or Panel Mount
- OS Support: Windows CE
- Power Consumption: 40 W (typical)
- Power Input: 18 ~ 32 VDC
- Watchdog Timer: 1 ~ 255 sec (system)
- Weight (Net): 3.3kg (7.28lbs)

System Hardware
- CPU: Intel® Celeron® M 1GHz non-cache
- Chipset: Intel® 915GME + ICH6M
- Memory: 1GB onboard DDR2 SDRAM
- LAN: 10/100Base-T x 2
- Expansion Slots: PCI-104 x 1
- I/O: Storage 1 x CompactFlash® slot 2.5" SATA HDD x 1 wide temperature HDD (optional) RS-232 x 3 (COM1, 2, 3) RS-232/422/485 x 1 (COM4) with auto data flow control USB 2.0 x 4 (Host) VGA x 1 MIC-in x 1, Line-out x 1

LCD Display
- Display Type: SVGA LED backlight 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: 1 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: 302.5 x 228.5 mm

Software Specifications

- Advantech WinCE WebAccess specifications
- Operating System: Windows CE 5.0
  - I/O Tag Number: 600
  - Internal Tag Number: 600
  - Web Client: 2
  - Alarm Log: 1,000
  - Action Log: 1,000
- Graphics
  - No. of Variables per Graphic Page: 255
  - Graph format: BMP
- Data Trend Log
  - No. of data logging: 50 Tags
- Recipe
  - Recipes per Project: 100
- Scheduler
  - Holiday Configuration: 10 groups
  - Time Zone Group: 99
  - Device Loop Group: 99
  - Class Scheduler: Yes
- BEMS Data Transfer
  - Data Transfer to BEMS Data Server: Yes

Ordering Information

- WVIEW1212-P21C-AE: 12" Web-enabled touch IPC with 600 I/O tags
- TPC-1270H-SMKE: TFC-1270H Desktop Stand
- TPC-1270H-WMKE: TFC-1270H Wallmount Kit
- TPC-1270H-EPKE: TFC Series PC/PCI-104 Extension Kit
- PWR-247-AE 24V: 50W AC-DC Power Adapter
Introduction

Advantech BEMG-4110 is a fanless Energy Data Concentrator featuring an AMD Geode LX800 500MHz and rich interfaces (such as serial, USB and LAN). Installed with Advantech WinCE WebAccess, BEMG-4110 is a browser-based Energy Data Concentrator, whose Web Server function increases flexibility and convenience, making it easy to configure and maintain the system via Internet. With built-in driver, BEMG-4110 can connect with a variety of automation equipment and devices, and get data from them.

Specifications

General

- **Certification**: CE, FCC Class A, CCC
- **Dimensions (W x D x H)**: 188.8 x 106.5 x 35.5 mm (7.5” x 4.2” x 1.4”)
- **Enclosure**: Aluminum
- **Mounting**: Wallmount, DIN-rail
- **Industrial Grounding**: Isolation between chassis and power ground
- **Power Consumption**: 15 W (typical)
- **Power Requirements**: 10 ~ 48 VDC (e.g +24 V @ 1 A) (Min. 24 W), AT
- **Weight**: 0.8 kg
- **System Design**: Fanless with no internal cabling
- **Remote Management**: Built-in Advantech DiagAnywhere agent on Windows CE/XPe

System Hardware

- **CPU**: AMD Geode LX800 500MHz
- **Memory**: Onboard 256 MB DDR SDRAM
- **Indicators**: LEDs for power, IDE, diagnosis (programmable) and LAN (Active, Status)
- **Keyboard/Mouse**: 1 x PS/2
- **Storage**: SSD: 1 x internal type I/II CompactFlash® slot
- **Display**: DB15 VGA connector, 1024 x 768 @ 60 Hz
- **Watchdog Timer**: Programmable 256 levels timer interval, from 1 to 255 sec

I/O Interface

- **Serial Ports**: 2 x RS-232/485, 2 x RS-232/422/485
  - Automatic RS-485 data flow control
  - RS-422/485 surge protection up to 2,000 V<sub>oc</sub>
- **Serial Port Speed**: RS-232: 50 ~ 230 Kbps;
  RS-422/485: 50 ~ 921.6 Kbps (Max.)
- **USB Ports**: 2 x USB ports, EHCl, Rev. 2.0 compliant
- **LAN**: 1 x 10/100Base-T RJ-45 port

Software Specifications

- **Operating System**: Windows CE 5.0
- **Advantech WinCE WebAccess Energy Data Concentrator**:
  - **I/O Tag Number**: 600
  - **Internal Tag Number**: 600
  - **Web Client**: 2
  - **Number of I/O Devices**: 64 (max)

Environment

- **Humidity**: 95 % @ 40°C (non-condensing)
- **Ingress Protection**: IP40
- **Operating Temperature**: (IEC 60068-2-2, 100% CPU/ I/O loading)
  -10 ~ 55°C (14 ~ 131°F)
- **Shock Protection**: IEC 68 2-27
  CompactFlash®: 20 G @ DIN, half sine, 11 ms, 50 G @ Wall/Panel, half sine, 11 ms
- **Vibration Protection**: IEC 68 2-6
  CompactFlash®: 2 Grms @ sine, 5 ~ 500 Hz, 1 Oct./min, 1 hr/axis.
  HDD: 1 Grms @ sine, 12 ~ 300 Hz, 1 Oct./min, 1 hr/axis.

Ordering Information

- **BEMG-4110-AE**: Energy Data Concentrator with 4 x COM, 1 x LAN
BEMG-4221/4222 Energy Data Concentrator with 6 x USB, 4 x COM/8 x COM, 128 Devices

Introduction
BEMG-4221 and BEMG-4222 are powerful data concentrators bundled with SCADA software - WebAccess. With Intel Atom N450/D510 1.67GHz CPUs, Gigabit Ethernet ports, rich I/O, and 2 x Mini PCI slot. 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.

WebAccess communicates with automation equipment used in manufacturing facilities, industrial plants and building automation systems. The software acquire, display, monitor and store real-time data and allows operators to change set-points, equipment status and other parameters in end-device.

Specifications

General
- Certification: Energy Star, CE, FCC Class A, UL, CCC, C-tick Class A, ESMI
- Dimensions (W x D x H): BEMG-4221: 255 x 152 x 50 mm (10" x 6.0" x 2.0")
- BEMG-4222: 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: BEMG-4221: 12W (Typical)
- BEMG-4222: 16W (Typical)
- Power Requirements: 9 ~ 36 Vdc (e.g. +24 V @ 1.5 A) (Min. 36 W), ATX
- Weight: 2.5 kg
- System Design: Fanless design with no internal cabling

System Hardware
- CPU: BEMG-4221: Intel® Atom™ D510 Dual Core 1.67GHz
- BEMG-4222: Intel® Atom™ N450 1.67GHz
- 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: 1 x front-accessible type I/II CompactFlash® slot
- Display: DB15 VGA connector
- Watchdog Timer: Programmable 256 levels timer interval, from 1 to 255 sec
- Printer Port: 1 x Printer port (BEMG-4222)

I/O Interface
- Serial Port Speed: 50-115,2 kbps (COM 1-6 in RS-232/485 mode)
- 50-501.6 kbps (COM A/B in RS-232/485 mode)
- LAN: 2 x 10/100/1000 Base-T RJ-45 port (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: 9 ~ 36 Vdc (e.g. +24 V @ 1.5 A) (Min. 36 W), ATX
- Ingress Protection: IP40
- Shock Protection: IEC 60068-2-77
- Vibration Protection: CompactFlash®: 2 Gms @ 5 ~ 500 Hz, HDD: 1 Gms @ 5 ~ 500 Hz

Ordering Information
- BEMG-4221-P21C-AE: Energy Data Controller, Atom N450 1.67GHz, 2GB RAM
- BEMG-4222-P31C-AE: Energy Data Controller, Atom D510 1.67GHz, 2GB RAM

Accessories
- UNO-FFM21-AE: UNO-2000 series VESA mount kit
- 908EMW0021: Mini PCIe card for WLAN
- 1700001854: SMA/IE-PEX cable 11CM
- 1750003222: 5dBi Dipole Antenna
- PCLS-DIAGAW10: Advantech Remote Monitoring & Diagnosis Utility
Introduction
The PME-1130 is a 3-phase KW/KWH energy meter for sub-metering applications, ranging from power distribution, small motor control to lighting load circuit. It measures KW and kwh values. The measurement data can be viewed directly from local display, and also can be transmitted through a RS-485 using the Modbus protocol.

Specifications

Voltage & Current Measurement
- Voltage: 80 ~ 350 VAC, 45 ~ 65 Hz
- Current: 5 mA ~ 5 A

Overload Protection (Std. 5A CT)
- Permanent Voltage: 2 x Vin
- Permanent Current: 2 x Iin
- Transient Voltage: 2 x Vin (1 sec)
- Transient Current: 20 x Iin (1 sec)

Power Measurement (Total, Std. 5A CT)
- Resolution: 1W (per phase)
- Accuracy: 1% Full Scale

Energy Measurement (Total, Std. 5A CT)
- Display Resolution: 0.1 kWh (Range from 0 to 9,999,999.9kWh)
- Record Resolution: 0.01 kWh (Range from 0 to 9,999,999.99kWh)
- kWh Accuracy: 1% with PF 0.5 ~ 1.0

Front Panel Interface
- Display: 6 digit 7 segment LED
- Indicators: 5 LED, pulse LED for calibration
- Mode: Display and Setting
- Setting: 3 Function Key, ID address, Baud Rate, PT Ratio, CT Ratio, Phase/Wire.

Reliability
- Communication: IEC61000-4-4 1kV
- Surge Test: IEC61000-4-5 4kV
- EFT Test: IEC61000-4-4 1kV

AC Insulation
- Aux. Power: 4.0 kV
- Current Input: 4.0 kV

Power Supply
- AC 110V: 93 ~ 126 VAC
- AC 220V: 187 ~ 253 VAC

Physical
- Operating Temperature: -10 ~ 70°C (32 ~ 158°F)
- Operating Humidity: 0 ~ 90% RH (Non-condensing)
- Storage Humidity: 0 ~ 95% (Non-condensing)
- Weight: 425g (Std. 5A CT)
- Panel Cut: 92 x 46 mm
- Dimensions (W x H x D): 110 x 50 x 115 mm

Ordering Information
- PME-1130-AE: 3-phase KW & KWH Energy Meter

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Introduction

The PME-1210 is a 1-phase multi-function power meter for sub-metering applications, ranging from power distribution, small motor control to lighting load circuit. It measures current & voltage, KW, kwh, kwh and PF values. The measurement data can be viewed directly from local display, and also can be transmitted through a RS-485 using the Modbus protocol.

Specifications

Voltage Measurement
- **Voltage**: 80 ~ 350 VAC
- **Resolution/Accuracy**: 0.1V/0.5% full scale
- **Permanant overload**: 450 VAC
- **Transient Voltage**: 2 x Vin (1sec)

Current Measurement (Std. 5A CT)
- **Range**: 5 mA ~ 5 A
- **Resolution**: 1 mA
- **Starting Current**: 5 mA
- **Permanent Overload**: 10 A
- **Transient current**: 20 x Iin (1sec)
- **Accuracy**: 0.5% full scale

Power Measurement
- **Resolution**: 1W
- **Accuracy**: 1% full scale

Energy Measurement
- **Display Resolution**: 0.1 kWh (Range from 0 to 9,999,999.9kWh)
- **Record Resolution**: 0.01 kWh (Range from 0 to 9,999,999.99kWh)
- **kWh Accuracy**: 1% with PF 0.5 ~ 1.0

Frequency Measurement
- **Range**: 45.0 to 65.0 Hz
- **Resolution/Accuracy**: 0.1 Hz

PF Measurement
- **Range**: 0.000 to 1.000
- **Resolution**: 0.001 (polarized)
- **Accuracy**: 1% (PF 0.5 ~ 1.0)

Features

- Small size with 100mm depth
- Panel cut 92 x 46 mm
- Multi-function power measurement
- Modbus RTU protocol over RS-485

Front Panel Interface
- **Display**: 6 digit 7 segment LED
- **Indicators**: 8 LED
- **Mode**: Display and Setting
- **Setting**: 3 Function Key, ID address, Baud Rate, PT Ratio, CT Ratio

Communication Interface
- **Bus**: RS-485, Photo Isolated
- **Protocol**: Modbus/RTU (format: B/N/1)
- **Baud Rate**: 1200/2400/4800/9600
- **Meter ID**: 0 ~ 254

Reliability
- **Communication**: IEC61000-4-4 1 kV
- **Surge Test**: IEC61000-4-5 4 kV
- **EFT Test**: IEC61000-4-4 1 kV

AC Insulation
- **Aux. Power**: 4.0 kV
- **Current Input**: 4.0 kV

Power Supply
- **AC 110V**: 93 – 126 Vac
- **AC 220V**: 187 – 253 Vac

Physical
- **Operating Temperature**: -10 ~ 70°C (32 ~ 158°F)
- **Operating Humidity**: 0 ~ 90% RH non-condensing
- **Storage Humidity**: 0 ~ 95% (Non-condensing)
- **Weight**: 425g (Std. 5A CT)
- **Panel Cut**: 92 x 46 mm
- **Dimensions (W x H x D)**: 110 x 50 x 115 mm

Ordering Information

- **PME-1210-AE**: 1-phase Multifunction Power Meter
- **NEW**
- **Small size with 100mm depth**
- **Panel cut 92 x 46 mm**
- **Multi-function power measurement**
- **Modbus RTU protocol over RS-485**
- **NEW**
- **RoHS COMPLIANT 2002/95/EC"
Introduction

The PME-1230 is a 3-phase multi-function power meter for sub-metering applications, ranging from power distribution, small motor control to lighting load circuit. It measures individual current & voltage, KW, kwh, kvarh, PF and kVAR values. The measurement data can be viewed directly from local display, and also can be transmitted through a RS-485 using the Modbus protocol.

Specifications

Voltage Measurement
- Phase/Wire: 1P3W or 3P3W-2CT or 3P3W-3CT or 3P4W
- Phase Voltage (3P4W): 80 to 350 Vac
- Line Voltage (3P3W)
- Resolution/Accuracy: 0.1 V/0.5% full scale
- Permanent Overload: 450 VAC
- Transient Voltage: 2 x Vin (1sec)

Current Measurement (Std. 5A CT)
- Range: 5 mA – 5 A
- Resolution: 1 mA
- Starting Current: 5 mA
- Permanent Overload: 10 A
- Transient current: 20 x Iin (1sec)
- Accuracy: 0.5% full scale

Power Measurement (total)
- Resolution: 1W (per phase)
- Accuracy: 1% full scale

Energy Measurement (total)
- Display Resolution: 0.1 kWh (Range from 0 to 9,999,999.99kWh)
- Record Resolution: 0.01 kWh (Range from 0 to 9,999,999.99kWh)
- kWh Accuracy: 1% with PF 0.5 – 1.0

Frequency Measurement
- Range: 45.0 to 65.0 Hz
- Resolution/Accuracy: 0.1 Hz

PF Measurement
- Range: 0.000 to 1.000
- Resolution: 0.001 (polarized)
- Accuracy: 1% (PF 0.5 – 1.0)

Front Panel Interface
- Display: 6 digit 7 segment LED
- Indicators: 8 LED
- Mode: Display and Setting
- Setting: 3 Function Key, ID address, Baud Rate, PT Ratio, CT Ratio, Phase/Wire.

Communication Interface
- Bus: RS-485, Photo Isolated
- Protocol: Modbus/RTU (format: B/N/1)
- Baud Rate: 1200/2400/4800/9600
- Meter ID: 0 – 254

Reliability
- Communication: IEC61000-4-4 1kV
- Surge Test: IEC61000-4-5 4kV
- EFT Test: IEC61000-4-4 1kV

AC Insulation
- Aux. Power: 4.0kV
- Current Input: 4.0kV

Power Supply
- AC 110V: 93 – 126 Vac
- AC 220V: 187 – 253 Vac

Physical
- Operating Temperature: -10 ~ 70°C
- Operating Humidity: 0 ~ 90% RH (Non-condensing)
- Storage Humidity: 0 ~ 95% (Non-condensing)
- Weight: 425g (Std. 5A CT)
- Panel Cut: 92 x 46 mm
- Dimensions (W x H x D): 110 x 50 x 115 mm

Ordering Information
- PME-1230-AE 3-phase Multifunction Power Meter

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