BusWorks® I/O Modules for Profibus-DP

Acromag’s BusWorks 900PB series is a high-performance line of network-ready analog and discrete I/O modules. They feature universal input/output ranges and an intelligent microcontroller to provide extreme flexibility and powerful monitoring and control capabilities. Select from a variety of analog and discrete I/O models to meet your application requirements.

Each module provides a direct network interface for your I/O signals. Unlike “block I/O” devices that combine large, expensive processor blocks with snap-on I/O terminal blocks, 900PB modules handle the network interface and I/O processing in one, compact multi-channel module. This space-saving approach is very cost-effective for systems that need to add a small quantity of I/O channels at existing control sites or network to new remote sites.

To ensure high performance, modules feature an advanced microcontroller technology. On-board address switches and automatic baud rate detection (up to 12 Mbps) simplify installation. Four-way isolation prevents ground loops and increases noise immunity. Indicator LEDs and self-diagnostics help you quickly catch problems.

**Inputs**
- Thermocouple
- RTD/resistance
- Millivolt
- DC current/voltage
- AC current
- Discrete level/status

**Outputs**
- DC voltage
- DC current
- Discrete switches

**Power**
- 12-36V DC

**Approvals**
- Profibus PNO, CE, UL/cUL Class I Div 2

For more information, visit our website at www.acromag.com/profibus

Call 877-214-6267 or 248-295-0880 for technical assistance.
The 900PB series is a high-performance line of networked I/O modules. These units feature universal input/output ranges and an intelligent microcontroller to provide extreme flexibility and powerful monitoring and control capabilities. Select from a variety of analog and discrete I/O models to meet your application requirements.

Each module provides a direct network interface for your I/O signals. Unlike "block I/O" devices that combine a large and expensive processor block with snap-on I/O terminal blocks, 900PB modules handle the network interface and I/O processing in a single, compact multi-channel module. This space-saving approach is very cost-effective for systems that need to add some I/O channels at an existing control site or network new, remote sites.

To ensure unsurpassed performance, these I/O modules employ advanced microcontroller technology. Isolated input, output, power, and network circuits increase noise/transient immunity and prevent ground loops. Status LEDs provide diagnostic feedback.

Self-diagnostics and sophisticated watchdog timers simplify maintenance and troubleshooting. The watchdog timer invokes a failsafe condition if host communication is lost. For further security, a second watchdog monitors the microcontroller for failed operations or a "lock-up" condition and automatically resets the unit.

Ready to ship within 24-hours from stock. Backed by a 2-year warranty.

Special Features

- **Direct Network Interface:**
  Each module has a built-in microcontroller for communication. No bus coupler required.

- **RS485/ProfiBus Network Communication:**
  Highly immune to noise and operates over long distances.

- **Industry Standard ASIC:**
  Siemens SPC3 intelligent ASIC to talk ProfiBus.

- **High-Speed Data Rates:**
  Half-duplex RS485 with rates up to 12M baud.

- **Auto-Baud Rate Detection:**
  Baud rate is set automatically.

- **Fully Isolated:**
  I/O, network, and power circuits isolated from each other for safety and noise immunity.

- **Nonvolatile Reprogrammable Memory:**
  Allows the functionality of this device to be reliably reprogrammed thousands of times.

- **Self-Diagnostics & Watchdog Timers:**
  Self-test simplifies maintenance. Profibus has defined failsafe mode for lost communication.
**Discrete I/O**

These modules monitor discrete levels of various devices and/or provide on/off control capabilities depending on the model selected. Each module has up to twelve channels to save space and minimize costs. Models are available with input- or output-only, or bidirectional I/O configurations.

**Inputs**
- Active-low inputs, 0 to 35V DC

**Outputs**
- Sinking outputs, 0 to 35V DC, up to 500mA

**Functions**
- Monitor discrete state or level
- Control on/off, high/low, open/close switching
- Activate audible or visual alarms

**Analog Input**

These units monitor a wide variety of industrial machinery and equipment. They accept direct sensor inputs or DC process control signals from transducers, transmitters, and other instruments.

**Inputs**
- DC current
- DC voltage
- DC millivolts
- AC current

**Functions**
- Measure process variables
- Monitor machinery and industrial devices
- Acquire data from non-networked instruments

**Analog Output**

Analog output modules are ideal for controlling a wide variety of industrial equipment. The host defines the output of voltage or current signals to control speed, flow, temperature, frequency, level, force, torque, intensity, and many other physical properties.

**Outputs**
- DC voltage
- DC current

**Functions**
- Write data to local displays or recorders
- Control drives, valves, and positioners

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**Save 50% compared to “Block I/O”**

![Acromag 900PB Series](image)

**Block or Modular I/O Systems**

**Acromag 900PB Series I/O**

**Stand-alone I/O modules are very economical.**
- Direct connection to network
- Up to 12 channels on one module
- One inch wide for twelve channels
- Flexible 12-36V DC power requirement
- Pluggable terminal blocks on top and bottom

**Block and Modular I/O Systems**

**Block I/O systems have high start-up costs.**
- Expensive bus coupler required
- Plug-in I/O modules or terminal blocks required
- Five inches wide or more for twelve channels
- May require special 5V power supply
- Fixed wiring terminals on front of unit

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**Contact Information**

Tel: 248-295-0880  Fax: 248-624-9234  e-mail: sales@acromag.com  www.acromag.com
Easy to Use

Profibus-DP networks offer several advantages. They are proven, fast (up to 12Mbps without fiber optic cable), deterministic, and ideal for transmitting analog or discrete data. I/O devices are also easy to install and maintain. More than 1000 organizations worldwide, plus the Profibus Trade Organization (PTO), help nurture a growing user base, introduce new products, and provide technical support for this network technology.

Network devices, including Acromag's 900PB I/O modules, are easily installed and configured using network management software typically provided by the supplier of the host or master controller. The startup process is shown below.

**Step 1: Set the slave address**

Using two rotary switches, as shown, set the slave address between 0 and 125 (00 to 7DH). The factory default setting is 126 (7EH) which allows programming via the network. Once the address is set, the module may be physically connected to the network or master.

**Step 2: Add the I/O module to the network database**

Each I/O module, like all slave devices, is defined by a unique software file (*.gsd file). The GSD file for each module is installed (or imported) into a network database for identification by the network management software.

Acromag GSD files are supplied at no-charge with each module. They are also available for download on the Acromag website or from the PTO at www.profibus.com.

**Step 3: Configure the module**

Using the network management software, you configure each device as desired (address, ranges, sensor break detection, failure modes, etc.). When finished, the software will download the configuration to the master controller for communication.
961PB, 962PB
Analog Input:

6-Channel
Differential Input:
DC Current or
DC Voltage Signals

Models
961PB: 6 DC current input channels
962PB: 6 DC voltage input channels

Description
These modules provide an isolated Profibus-DP network interface for six analog input channels. Differential inputs eliminate ground loops and thus the need for isolators in many applications. Multi-range inputs accept signals from a variety of sensor and devices. High-resolution, low noise, A/D converters deliver high accuracy and reliability.

Input Ranges
DC Current (user-selectable ranges)
0 to 1mA, 0 to 11mA, 0 to 20mA, 4 to 20mA
0 to 20 amps AC (with optional AC sensor)

DC Voltage (user-selectable ranges)
±78mV to ±10V DC (eight range options)

Network Communication
Profibus-DP, RS-485 network up to 12Mbaud

Power Requirement
12 to 36V DC supply required

Approvals
Profibus PNO certified.
CE marked. UL, cUL listed.
Class I, Division 2, Groups A, B, C, D.

Special Features
- Standard Profibus-DP network communication with industry-standard ASIC (Siemens SPC3)
- 6-input stand-alone module is very economical
- Differential inputs eliminate ground loops
- Universal inputs support a variety of sensors
- High-resolution 16-bit A/D converters ensure precise, high accuracy measurements
- Compact packaging with pluggable terminals saves space and simplifies wiring
- Wide operational temperature range permits installation in extreme environments

Environmental
Ambient Temperature
Operating: -25 to 70°C (-13 to 158°F).
Storage: -40 to 85°C (-40 to 185°F).

Relative Humidity
5 to 95%, non-condensing.

Isolation
1500V AC for 60 seconds or 250V AC continuous.
3-way isolation between I/O, network, and power.

Ordering Info
Models
961PB-2006
DC current input module, 6 differential channels
962PB-2006
DC voltage input module, 6 differential channels

NOTE: Modules include GSD files on CD-ROM.

Accessories (see Page 48)
5020-350
AC current sensor. Used with 961PB DC current input models. One sensor per channel is required. See page 205.
PSSR-D24
Power supply (24V DC, 2.1A). See Power Supplies on Page 199.
TBK-B03
Optional terminal block kit, barrier strip style, 4 pcs.
TBK-S03
Optional terminal block kit, spring clamp style, 4 pcs.
963/964PB

**Analog Input:**

12-Channel
Single-Ended Input:
DC Current or
DC Voltage Signals

Models
963PB: 12 DC current input channels
964PB: 12 DC voltage input channels

**Description**

These modules provide an isolated Profibus-DP network interface for twelve analog input channels. Compact design saves space and lowers system costs. Multi-range inputs accept signals from a variety of sensors and devices. High-resolution, low noise, A/D converters deliver high accuracy and reliability.

**Input Ranges**

- **DC Current (user-selectable ranges):** 0 to 1mA, 0 to 11mA, 0 to 20mA, 4 to 20mA
- **DC Voltage (user-selectable ranges):** ±1V, ±5V, or ±10V DC

**Network Communication**

Profibus-DP, RS-485 network up to 12Mbaud

**Power Requirement**

12 to 36V DC supply required

**Approvals**

Profibus PNO certified.
CE marked. UL, cUL listed.
Class I, Division 2, Groups A, B, C, D.

**Special Features**

- Standard Profibus-DP network communication with industry-standard ASIC (Siemens SPC3)
- 12-input module has very low cost per channel
- Universal DC inputs support a wide variety of industrial sensors and signals
- High-resolution 16-bit Σ-Δ A/D converters ensure precise, high accuracy measurements
- Compact packaging with pluggable terminals saves space and simplifies wiring
- Wide operational temperature range permits installation in extreme environments

**Environmental**

- **Ambient Temperature**
  Operating: -25 to 70°C (-13 to 158°F).
  Storage: -40 to 85°C (-40 to 185°F).
- **Relative Humidity**
  5 to 95%, non-condensing.
- **Isolation**
  1500V AC for 60 seconds or 250V AC continuous.
  3-way isolation between I/O, network, and power. Inputs share a common.

**Performance**

**General Specifications**

See Page 47 for communication and other specs.

**Input**

- **Input Configuration**
  Input ranges are selectable on each terminal block for a group of four input channels (4-channel basis).
- **Accuracy**
  Better than ±0.05% of span for nominal input ranges.
- **Analog to Digital Converter (A/D)**
  16-bit Σ-Δ converter.
- **Resolution**
  0.005% or 1 part in 20000, typical.
- **Noise Rejection**
  Normal Mode: Better than 40dB @ 60Hz.
  Common Mode: Better than 140dB @ 60Hz.
- **Input Filter Bandwidth**
  -3dB at 3Hz, typical.
- **DC Current Input impedance**
  49.9 ohms.
- **DC Voltage Input impedance**
  Greater than 110.5K ohms.

**Ordering Info**

**Models**

- 963PB-2012 DC current input module, 12 single-ended channels
- 964PB-2012 DC voltage input module, 12 single-ended channels

**NOTE:** Modules include GSD files on CD-ROM.

**Accessories**

- 5020-350 AC current sensor. Used with 963PB DC current input models. One sensor per channel is required. See page 205.
- PS5R-D24 Power supply (24V DC, 2.1A). See Power Supplies on Page 199.
- TBK-B03 Optional terminal block kit, barrier strip style, 4 pcs.
- TBK-S03 Optional terminal block kit, spring clamp style, 4 pcs.
Profibus-DP / RS485

965PB
Analog Input:

4 or 6-Channel Input:
Thermocouple or Millivolt Signals

**Description**
These modules provide an isolated Profibus-DP network interface for up to six input channels. Differential inputs eliminate ground noise and each terminal block includes a cold junction compensation (CJC) sensor for more precise temperature measurements. Multi-range inputs accept signals from a variety of sensors and devices. High-resolution, low noise, A/D converters deliver high accuracy and reliability.

**Input Ranges**
Thermocouple (user-selectable type)
- Type J, K, T, R, S, E, B, or N
DC Millivolts (user-selectable range)
- ±100mV or ±1V DC

**Network Communication**
Profibus-DP, RS-485 network up to 12Mbaud

**Power Requirement**
12 to 36V DC supply required

**Approvals**
Profibus PNO certified.
CE marked. UL, cUL listed.
Class I, Division 2, Groups A, B, C, D.

**Special Features**
- Standard Profibus-DP network communication with industry-standard ASIC (Siemens SPC3)
- 6-input stand-alone module is very economical
- Universal inputs support a variety of sensors
- Built-in CJC sensor on each terminal block produces more precise temperature measurements
- Thermocouple break detection (upscale or downscale) identifies sensor wiring failures
- High-resolution 16-bit Σ-Δ A/D converters ensure precise, high accuracy measurements
- Compact packaging with pluggable terminals saves space and simplifies wiring
- Wide operational temperature range permits installation in extreme environments

**Performance**

**General Specifications**
See Page 47 for communication and other specs.

**Input**
Configuration
Input ranges are selectable for a 3-channel group.

<table>
<thead>
<tr>
<th>Input</th>
<th>Input Range</th>
<th>Accuracy (typical)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type J</td>
<td>-210 to 760°C</td>
<td>±0.5°C</td>
</tr>
<tr>
<td>Type K</td>
<td>-200 to 1372°C</td>
<td>±0.5°C</td>
</tr>
<tr>
<td>Type T</td>
<td>-260 to 400°C</td>
<td>±0.5°C</td>
</tr>
<tr>
<td>Type R</td>
<td>-50 to 1768°C</td>
<td>±1.0°C</td>
</tr>
<tr>
<td>Type S</td>
<td>-50 to 1768°C</td>
<td>±1.0°C</td>
</tr>
<tr>
<td>Type E</td>
<td>-200 to 1000°C</td>
<td>±0.5°C</td>
</tr>
<tr>
<td>Type B</td>
<td>260 to 1820°C</td>
<td>±1.0°C</td>
</tr>
<tr>
<td>Type N</td>
<td>-230 to -170°C</td>
<td>±1.0°C</td>
</tr>
<tr>
<td>Type N</td>
<td>-170 to 1300°C</td>
<td>±0.5°C</td>
</tr>
<tr>
<td>Voltage</td>
<td>±100mV or ±1V DC</td>
<td>±0.1% of span</td>
</tr>
</tbody>
</table>

Cold Junction Compensation (CJC) Accuracy
±0.5°C.

Thermocouple Break Detection
Upscale or downscale selection applies to all channels.

Analog to Digital Converter (A/D)
16-bit Σ-Δ converter.

Noise Rejection
Normal Mode: Better than 40dB @ 60Hz.
Common Mode: Better than 140dB @ 60Hz.

Input Filter Bandwidth
-3dB at 3Hz, typical.

**Environmental**

**Ambient Temperature**
Operating: -25 to 70°C (-13 to 158°F).
Storage: -40 to 85°C (-40 to 185°F).

**Relative Humidity**
5 to 95%, non-condensing.

**Isolation**
1500V AC for 60 seconds or 250V AC continuous.
3-way isolation between I/O, network, and power.

**Ordering Info**

**Models**
965PB-2004
4-channel thermocouple/millivolt input module
965PB-2006
6-channel thermocouple/millivolt input module

NOTE: Modules include GSD files on CD-ROM.

**Accessories (see Page 48)**
PSSR-D24
Power supply (24V DC, 2.1A).
See Power Supplies on Page 199.
966PB

Analog Input:

4 or 6-Channel Input: RTD or Resistance Signals

**Description**

These modules provide an isolated Profibus-DP network interface for up to six input channels. Multi-range inputs accept signals from a variety of sensors and devices. High-resolution, low noise, A/D converters deliver high accuracy and reliability. 3-way isolation further improves the system performance.

**Input Ranges**

- **RTD (user-selectable type)**
  - 2-wire and 3-wire RTDs are supported.
  - Platinum 100 ohm (alpha = 1.3850 or 1.3911)
  - Nickel 120 ohm
  - Copper 10 ohm
  - Resistance 0 to 500 ohms

**Network Communication**

Profibus-DP, RS-485 network up to 12Mbaud

**Power Requirement**

12 to 36V DC supply required

**Approvals**

- Profibus PNO certified.
- CE marked. UL, cUL listed.
- Class I; Division 2; Groups A, B, C, D.

**Special Features**

- Standard Profibus-DP network communication with industry-standard ASIC (Siemens SPC3)
- 6-input stand-alone module has much lower start-up cost than multi-piece block I/O systems
- Versatile RTD or ohmic inputs support a wide variety of industrial sensors and devices
- RTD break detection (upscale or downscale) identifies sensor wiring failures
- High-resolution 16-bit Σ-Δ A/D converters ensure precise, high accuracy measurements
- Compact packaging with pluggable terminals saves space and simplifies wiring
- Wide operational temperature range permits installation in extreme environments

**Noise Rejection**

- Normal Mode: Better than 40dB @ 60Hz.
- Common Mode: Better than 130dB @ 60Hz.

**Input Filter Bandwidth**

- 3dB at 3Hz, typical.

**Excitation Current**

- 1mA DC typical, all RTD types.

**Environmental**

- Ambient Temperature:
  - Operating: -25 to 70°C (-13 to 158°F).
  - Storage: -40 to 85°C (-40 to 185°F).
- Relative Humidity: 5 to 95%, non-condensing.
- Isolation: 1500V AC for 60 seconds or 250V AC continuous.
- 3-way isolation between I/O, network, and power.
- Inputs share a common.

**Ordering Info**

**Models**

- 966PB-2004 4-channel RTD/resistance input module
- 966PB-2006 6-channel RTD/resistance input module

**Accessories (see Page 48)**

- PS5R-D24 Power supply (24V DC, 2.1A).
- TBK-B03 Optional terminal block kit, barrier strip style, 4 pcs.
- TBK-S03 Optional terminal block kit, spring clamp style, 4 pcs.
Profibus-DP / RS485

972/973PB

Analog Output:

4 or 6-Channel Output:
DC Current or
DC Voltage Signals

Models
972PB: DC current output channels
973PB: DC voltage output channels

Description

These modules provide up to six channels of analog output. Multi-range outputs support a wide variety of industrial devices. They can drive displays and recorders, control drives, or send analog signals to other systems. High-resolution, low noise, D/A converters deliver high accuracy and reliability. 3-way isolation further improves system performance.

Output Ranges

DC Current (user-selectable ranges)
0 to 1mA, 0 to 20mA, or 4 to 20mA

DC Voltage (user-selectable ranges)
0 to 1V, 0 to 5V, or 0 to 10V DC

Network Communication

Profibus-DP, RS-485 network up to 12Mbaud

Power Requirement

16 to 36V DC supply required

Approvals

Profibus PNO certified.
CE marked. UL, cUL listed.
Class I; Division 2; Groups A, B, C, D.

Special Features

- Standard Profibus-DP network communication with industry-standard ASIC (Siemens SPC3)
- 6-input stand-alone module has much lower start-up cost than multi-piece block I/O systems
- Universal DC outputs support a wide variety of signals and industrial devices
- Three selectable failsafe modes (0%, last-state, or pre-defined) help prevent unsafe conditions
- Compact packaging with pluggable terminals saves space and simplifies wiring
- Wide operational temperature range permits installation in extreme environments

Environmental

Ambient Temperature
Operating:
972PB-200x models -25 to 60°C (-13 to 158°F).
973PB-200x models: -25 to 70°C (-13 to 140°F).
Storage: -40 to 85°C (-40 to 185°F).

Relative Humidity
5 to 95%, non-condensing.

Isolation
1500V AC for 60 seconds or 250V AC continuous.
3-way isolation between I/O, network, and power.
Outputs share a common.

Ordering Info

Models
972PB-2004
DC current output module, 4 channels
972PB-2006
DC current output module, 6 channels
973PB-2004
DC voltage output module, 4 channels
973PB-2006*
DC voltage output module, 6 channels

NOTE: Modules include GSD files on CD-ROM.
*Consult factory for long-term availability.

Accessories

P55R-D24
Power supply (24V DC, 2.1A).
See Power Supplies on Page 199.
TBK-B03
Optional terminal block kit, barrier strip style, 4 pcs.
TBK-S03
Optional terminal block kit, spring clamp style, 4 pcs.
981/982/983PB Discrete I/O:

12-Channel I/O: Active-Low Inputs, Sinking Outputs (Low-Side Switching)

Models
- 981PB: 12 input channels
- 982PB: 12 output channels
- 983PB: 12 input/output channels

Description
These modules provide an isolated Profibus-DP network interface for twelve discrete input and/or output channels. The outputs provide direct on/off, high/low, or open/close control of industrial devices. The inputs sense the status of motors, pumps, valves and other equipment. The 983PB model with tandem I/O provides output level control and status verification in one unit.

Input Range
0 to 35V DC

Output Range
0 to 35V DC

Network Communication
Profibus-DP, RS-485 network up to 12Mbaud

Power Requirement
12 to 36V DC supply required

Approvals
Profibus PNO certified.
CE marked. UL, cUL listed.
Class I; Division 2; Groups A, B, C, D.

Special Features
- Standard Profibus-DP network communication with industry-standard ASC (Siemens SPC3)
- 12-channel stand-alone module has far lower start-up cost than multi-piece block I/O systems
- 0-35V DC solid-state logic interface can monitor or control a wide variety of devices
- Bidirectional I/O models facilitate loopback monitoring of the output state
- Socketed SIP resistors provide input and output 5.6K ohm pull-ups to the excitation supply
- Three selectable failsafe modes (off, last-state, or pre-defined) help prevent unsafe conditions
- Compact packaging with pluggable terminals saves space and simplifies wiring
- Wide operational temperature range permits installation in extreme environments

Output (982 & 983 models)
- Output Type 12 independent, open-drain, DMOS MOSFET switches.
- Output Voltage Range 0 to 35V DC max. (0 to 500mA/channel continuous).
- Output ON Resistance 0.28 ohms maximum.

Environmental
- Ambient Temperature Operating: -25 to 70°C (-13 to 158°F).
- Storage: -40 to 85°C (-40 to 185°F).
- Relative Humidity 5 to 95%, non-condensing.
- Isolation 1500V AC for 60 seconds or 250V AC continuous.

Ordering Information
- Models
  - 981PB-2012 Discrete input module, 12 channels
  - 982PB-2012 Discrete output module, 12 channels
  - 983PB-2012 Discrete input/output module, 12 channels
- Accessories (see Page 48)
  - PSSR-D24 Power supply (24V DC, 2.1A).
  - TBK-B03 Optional terminal block kit, barrier strip style, 4 pcs.
  - TBK-S03 Optional terminal block kit, spring clamp style, 4 pcs.
The following specifications are common to all 900PB Series I/O modules.

**Communication**

**Interface Standard**
Isolated, 3-wire RS-485 multi-drop, half-duplex, asynchronous.

**Command/Response Protocol**
Standard ProfiBus DP (Master/Slave) protocol per European Norm EN50170.

**Baud Rate**
Supports rates of 9600, 19.2K, 44.45K, 93.75K, 187.5K, 500K, 1.5M, and 12M bits per second, auto-detected.

**Communication Distance**
Up to 1200 meters without a repeater using Type A wire (<30pF/m).
- 1200m @ 115Kbps or less
- 1000m @ 187.5Kbps
- 400m @ 500Kbps
- 200m @ 1.5Mbps
- 100m @ 12Mbps

**Address**
Set via two rotary hexadecimal switches or via the Set Slave Address command. Valid setting is 0-125. Address 126 (7EH) is factory default address.

**Maximum Message Size**
Up to 32 bytes recommended, extendable up to 244 bytes of data/node/message, plus 11 bytes of overhead (data frame).

**Network Capacity**
Multi-drop up to 31 modules, plus a host, without a repeater. Up to 125 modules plus a host if four repeaters are used (one for every 31 nodes).

**Environmental**

**Isolation**
I/O channel, power, and network circuits are isolated from each other for common-mode voltages up to 250VAC, or 354V DC off DC power ground, on a continuous basis (will withstand 1500VAC dielectric strength test for one minute without breakdown). Complies with test requirements of ANSI/ISA-82.01-1988 for voltage rating specified.

**Electromagnetic Compatibility (EMC)**
Immunity per European Norm EN50082-1.
- Electrostatic Discharge (ESD) Immunity
  - Per EN61000-4-2.
- Radiated Field Immunity (RFI)
  - Per EN61000-4-3 and ENV50204.
- Electrical Fast Transient Immunity (EFT)
  - Per EN61000-4-4.
- Conducted RF Immunity (CRFI)
  - Per EN61000-4-6.
- Surge Immunity
  - Per EN61000-4-5.
- Radiated Frequency Emissions
  - Per EN55022 Class B.

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A network segment may contain up to 32 nodes without the use of a signal repeater. Transmission distance is up to 1200 meters per segment without a repeater. A 120 ohm termination resistor must be placed at both ends of a network or network segment. The maximum number of modules possible is further limited by the address range from 0 to 125.

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**General Operation and Performance Specifications**
Accessories

Terminal Blocks

Barrier strip (left) and spring clamp (right).

**Ordering Information**
See individual I/O modules for compatibility.

**Barrier Strip Terminal Blocks**

**DIN-Rail Mounting**
For your convenience, Acromag offers several mounting accessories to simplify your system installation. Our 19" rack-mount kit provides a clean solution for mounting your I/O modules and a power supply. Or you can buy precut DIN rail strips for mounting on any flat surface.

**Ordering Information**
PS5R-D24
Universal 50W power supply

See Power Supplies on Page 199 for other models and more information.

**Spring Clamp Terminal Blocks**

**Ordering Information**
TBK-S01
Terminal block kit, two 6-position pieces
TBK-S02
Terminal block kit, four 6-position pieces

**AC Current Sensor**

**Ordering Information**
5020-350
AC current sensor (See page 205)