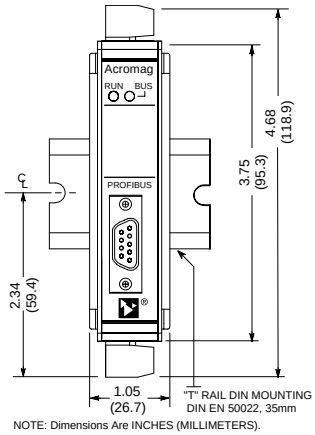
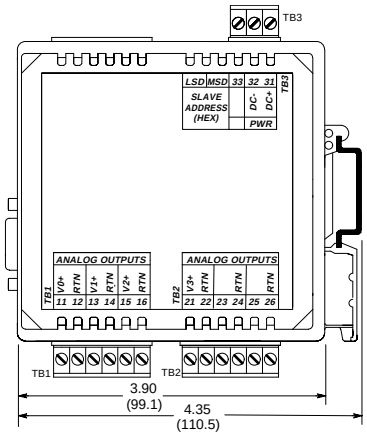
Profibus-DP / RS485



NOTE: Dimensions Are INCHES (MILLIMETERS).



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

Performance

General Specifications

See Page 17 for communication and other specs.

Configuration

Output ranges are selectable on a channel to channel basis.

Output

Accuracy

Better than ±0.1% of span, typical.
1.6% for 0 to 1mA range. 0.8% for 0 to 1V range.

Digital to Analog Converter (D/A)

12-bit converter.

Current Output Compliance

12V minimum, 13V typical.

Current Output Load Resistance Range

0 to 625 ohms, typical.

Voltage Output Source Current

0 to 10mA DC, maximum.

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.

Accessories (see Page 18)

PS5R-D24
Power supply (24V DC, 2.1A).
See Power Supplies on page 183.

TBK-B03
Optional terminal block kit, barrier strip style, 4 pcs.

TBK-S03
Optional terminal block kit, spring clamp style, 4 pcs.

General Operation and Performance Specifications

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.
Emissions per European Norm EN50081-1.

Electrostatic Discharge (ESD) Immunity
Per EN61000-4-2.

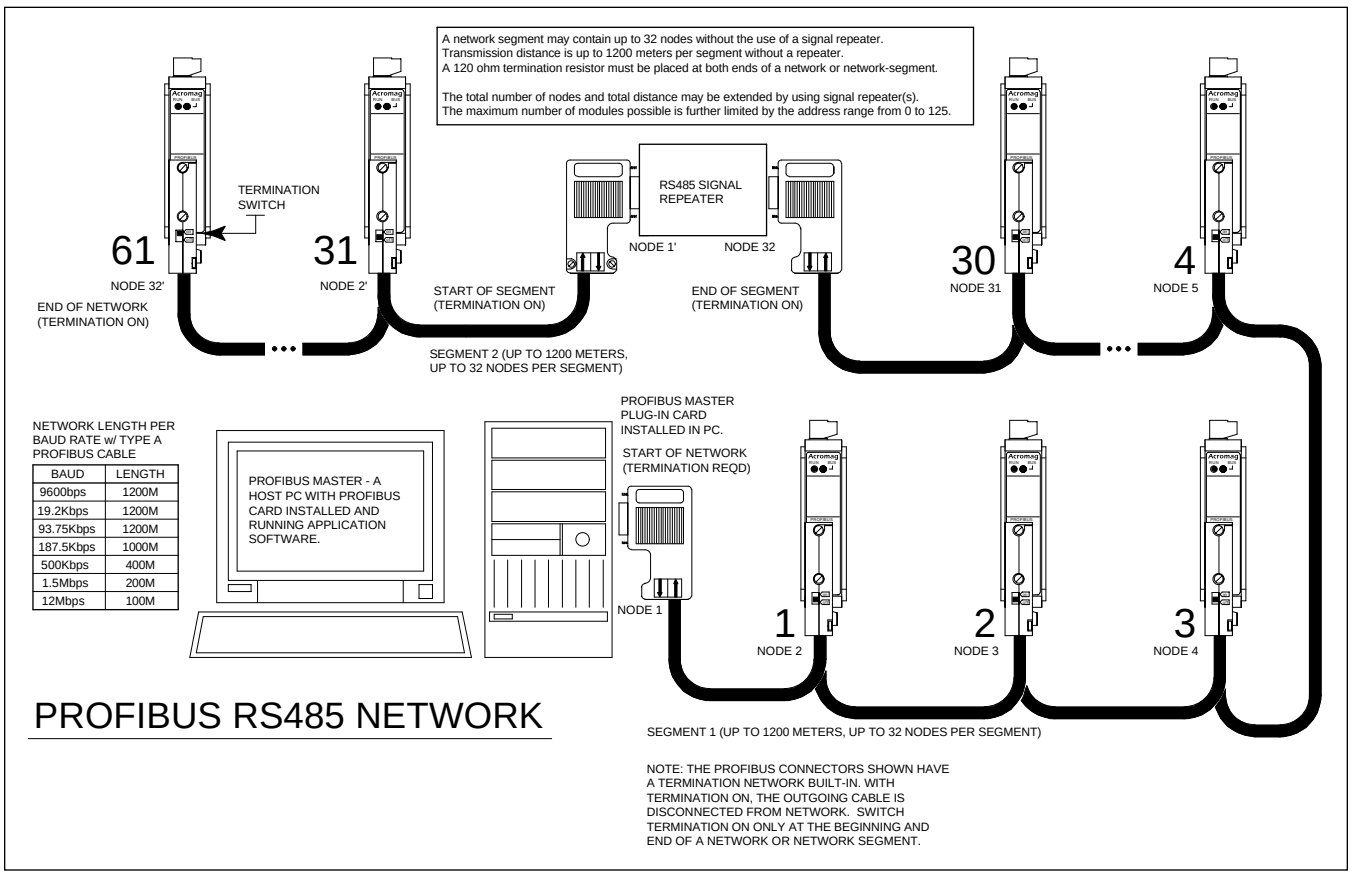
Radiated Field Immunity (RFI)
Per EN61000-4-3 and ENV50204.

Electrical Fast Transient Immunity (EFT)
Per EN61000-4-4.

Conducted RF Immunity (CRFI)
Per EN61000-4-6.

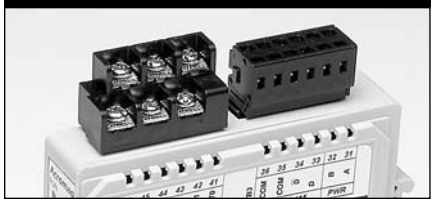
Surge Immunity
Per EN61000-4-5.

Radiated Frequency Emissions
Per EN55022 Class B.



Accessories

Terminal Blocks

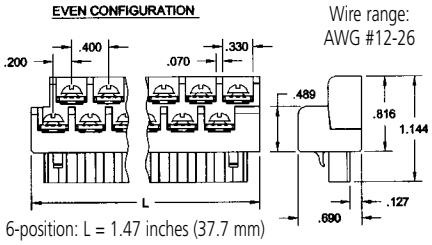


Barrier strip (left) and spring clamp (right).

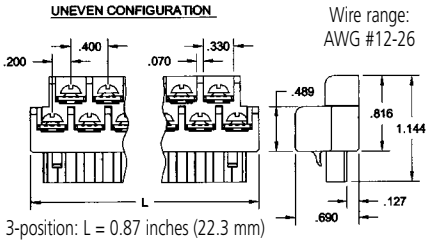
Ordering Information

See individual I/O modules for compatibility.

Barrier Strip Terminal Blocks



6-position: L = 1.47 inches (37.7 mm)



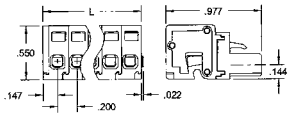
3-position: L = 0.87 inches (22.3 mm)

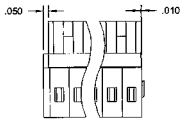
TBK-B01
Terminal block kit,
two 6-position pieces

TBK-B02
Terminal block kit,
four 6-position pieces

TBK-B03
Terminal block kit,
one 3-position and
three 6-position pieces

Spring Clamp Terminal Blocks





3-position:
L = 0.66 inches (16.9 mm)

6-position:
L = 1.26 inches (32.3 mm)

TBK-S01
Terminal block kit,
two 6-position pieces

TBK-S02
Terminal block kit,
four 6-position pieces

TBK-S03
Terminal block kit,
one 3-position and
three 6-position pieces

Mounting Hardware

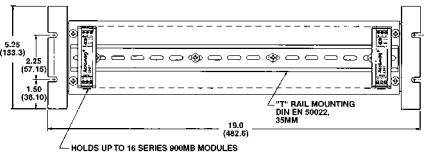
DIN-Rail Mounting

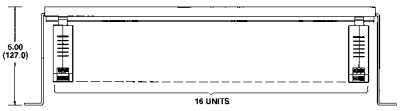
For your convenience, Acromag offers several mounting accessories to simplify your system installation. Our 19" rack-mount kit provides a clean solution for mounting your I/O modules and a power supply. Or you can buy precut DIN rail strips for mounting on any flat surface.

Ordering Information

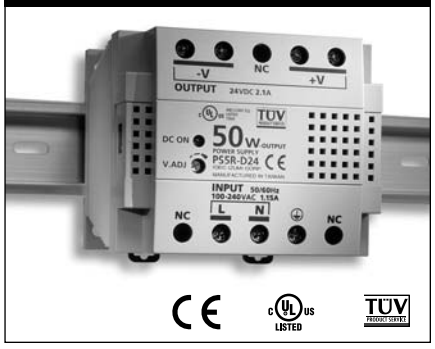
20RM-16-DIN
19" rack-mount kit with DIN rail.

DIN RAIL 3.0
DIN RAIL 16.7
DIN rail strip, Type T, 3 inches (75mm) or
16.7 inches (425mm)





Power Supplies



50W Supply

Input Power Requirement
85 to 264V AC or 105 to 370V DC

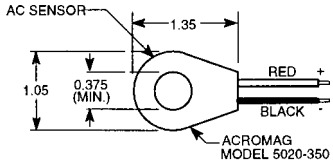
Output
24V DC, 2.1A (50W)

Ordering Information

PS5R-D24
Universal 50W power supply

See Power Supplies on page 183 for other models and more information.

AC Current Sensor



Ordering Information

5020-350
AC current sensor