

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 ASIC (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

Performance

General Specifications

See Page 47 for communication and other specs.

Input (981 & 983 models)

Input Type

Twelve active-low, buffered inputs, with a common connection. Built-in 5.6K ohm pullups to excitation terminal socketed for 4-channel groups.

Input Signal Voltage Range

0 to 35V DC, maximum.

Input Impedance

100K ohms, typical.

Input Signal Threshold

TTL compatible with 100mV of hysteresis, typical.

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 158F).
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 Information

Models

- 981PB-2012
Discrete input module, 12 channels
 - 982PB-2012
Discrete output module, 12 channels
 - 983PB-2012
Discrete input/output module, 12 channels
- NOTE: Modules include GSD files on CD-ROM.

Accessories (see Page 48)

- 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.



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 ($\leq 30\text{pF/m}$).

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 EN550204.

Electrical Fast Transient Immunity (EFT)

Per EN61000-4-4.

Conducted RF Immunity (CRFI)

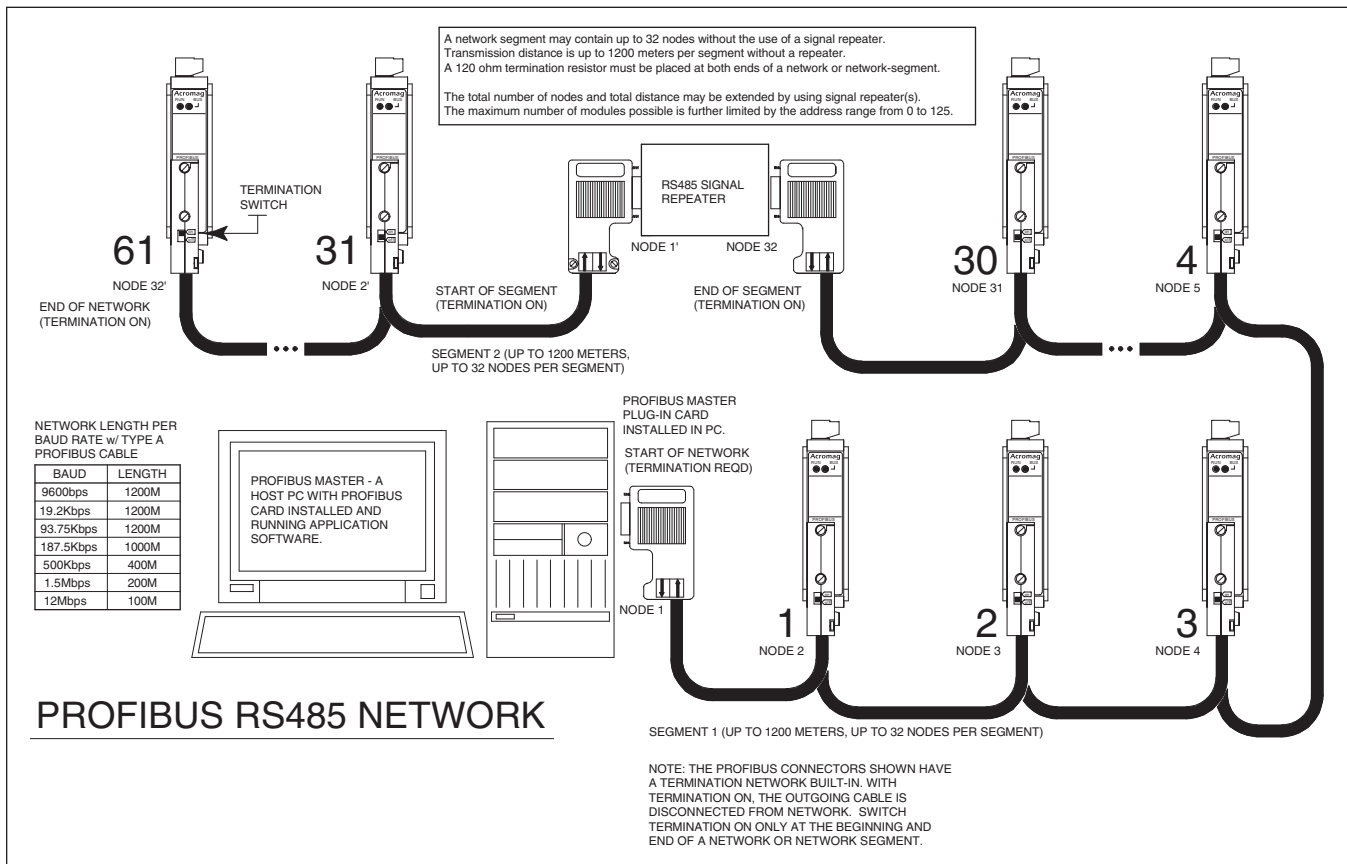
Per EN61000-4-6.

Surge Immunity

Per EN61000-4-5.

Radiated Frequency Emissions

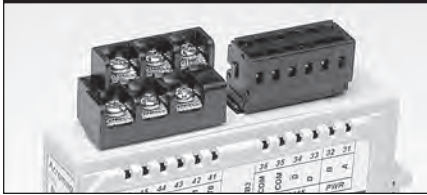
Per EN55022 Class B.





Accessories

Terminal Blocks

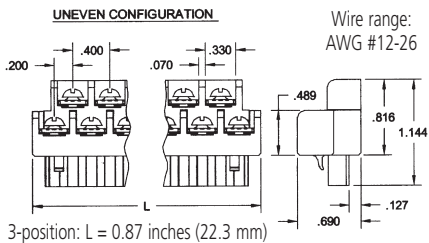
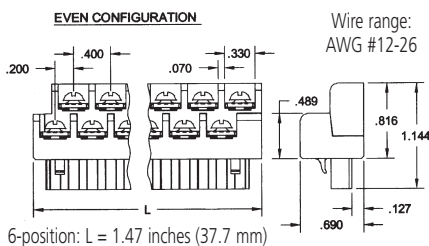


Barrier strip (left) and spring clamp (right).

Ordering Information

See individual I/O modules for compatibility.

Barrier Strip Terminal Blocks

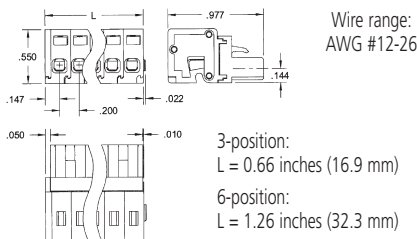


TBK-B01
Terminal block kit,
two 6-position pieces

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

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

Spring Clamp Terminal Blocks



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

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

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

Mounting Hardware



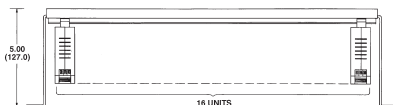
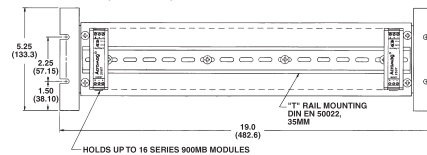
DIN-Rail Mounting

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

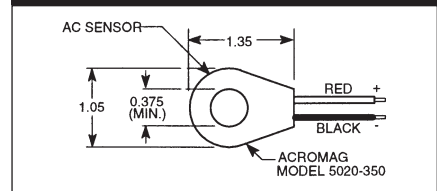
Output
24V DC, 2.1A (50W)

Ordering Information

P55R-D24
Universal 50W power supply

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

AC Current Sensor



Ordering Information

5020-350
AC current sensor (See page 205)