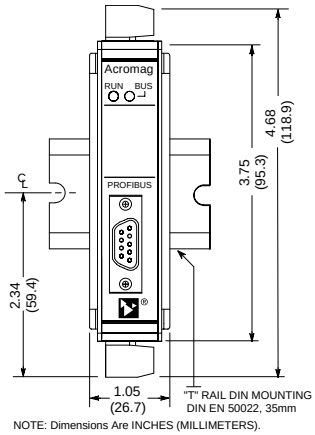
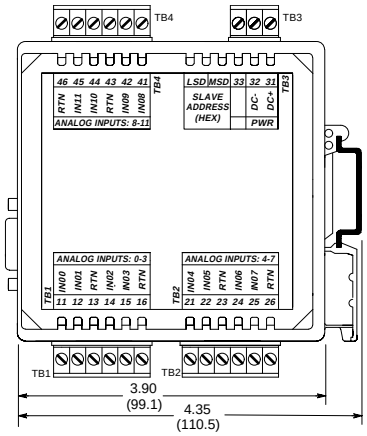
## Profibus-DP / RS485


NOTE: Dimensions Are INCHES (MILLIMETERS).




# 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
0 to 20 amps AC (with optional AC sensor)

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

## Performance

### General Specifications

See Page 17 for communication and other specs.

### 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.

### 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

**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.

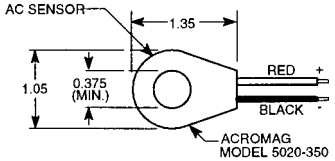
### Accessories (see Page 18)

**5020-350**
AC current sensor. Used with 963PB DC current input models. One sensor per channel is required.

**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.

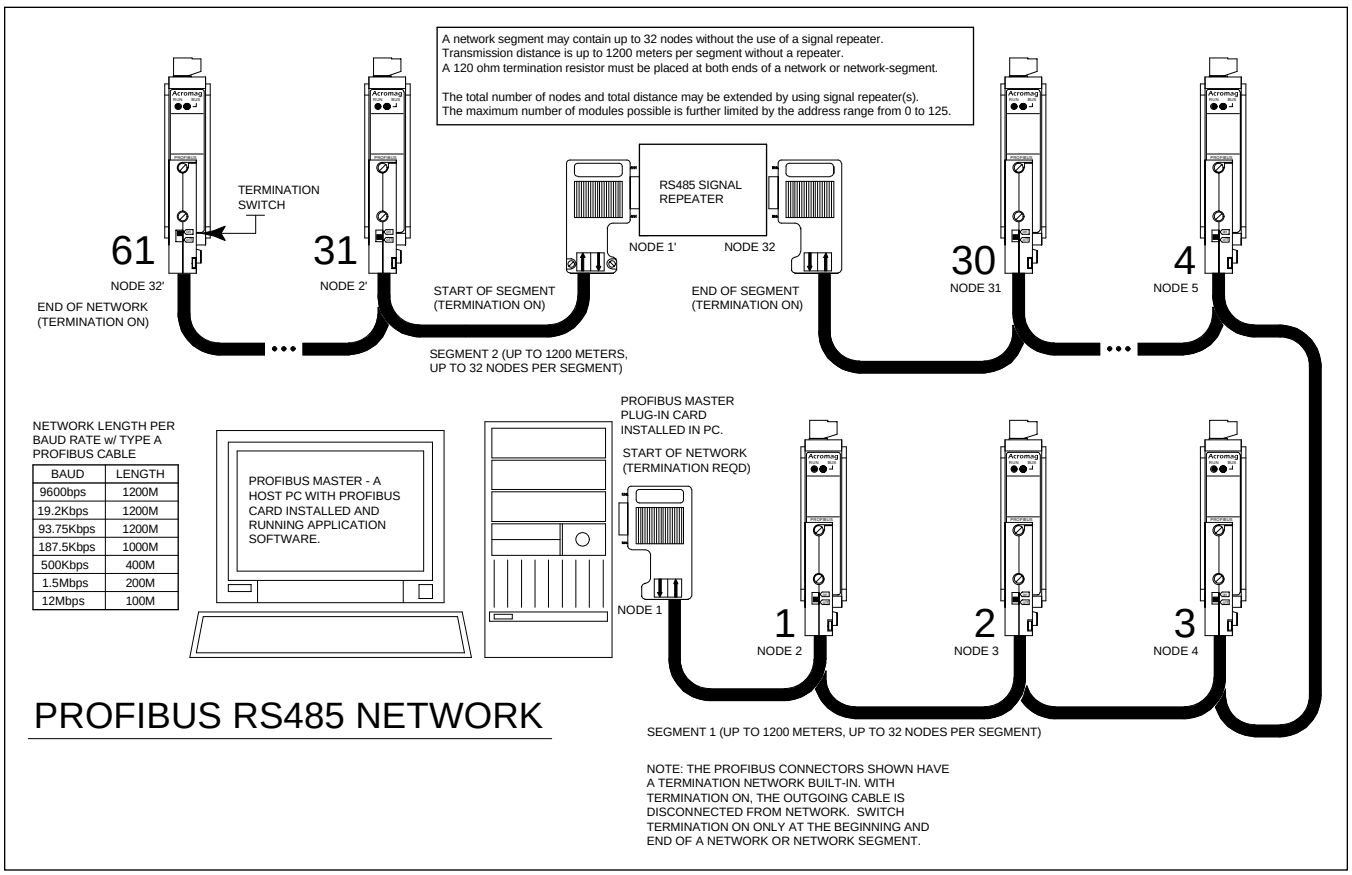
### Radiated Field Immunity (RFI)
Per EN61000-4-3 and ENV50204.

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

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

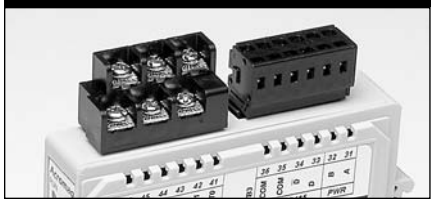
### Surge Immunity
Per EN61000-4-5.

### Radiated Frequency Emissions
Per EN55022 Class B.



# Accessories

## Terminal Blocks

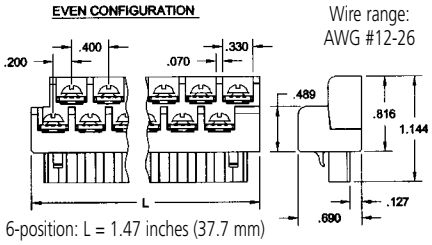


Barrier strip (left) and spring clamp (right).

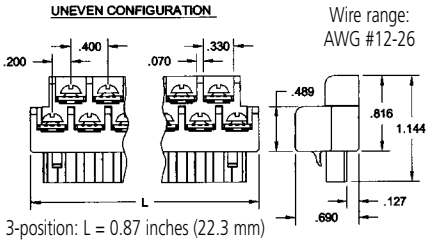
### Ordering Information

See individual I/O modules for compatibility.

#### Barrier Strip Terminal Blocks




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



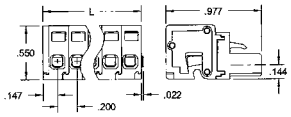

3-position: L = 0.87 inches (22.3 mm)

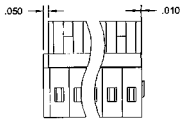
**TBK-B01**
Terminal block kit,
two 6-position pieces

**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

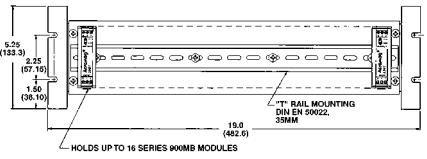
### DIN-Rail Mounting

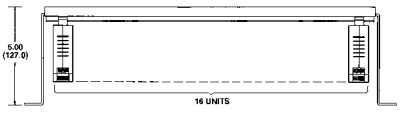
For your convenience, Acromag offers several mounting accessories to simplify your system installation. Our 19" rack-mount kit provides a clean solution for mounting your I/O modules and a power supply. Or you can buy precut DIN rail strips for mounting on any flat surface.

### Ordering Information

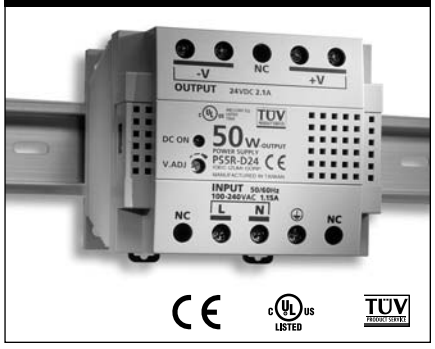
**20RM-16-DIN**
19" rack-mount kit with DIN rail.

**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

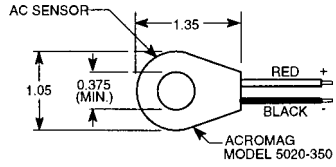
**Output**
24V DC, 2.1A (50W)

### 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