Input Modules

FM APPROVED CSA CE

A5B30/31 Units

DC Millivolt and Voltage Input

A5B30/31 modules plug into a backpanel to provide a single channel of analog input which is filtered, isolated, amplified, and converted to a proportional DC voltage output signal.

Signal filtering is accomplished with a six-pole filter. Two poles of this filter are on the field side of the isolation barrier and the other four are in the output stage. After the initial field-side filtering, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges.

■ Ordering Information

Model	Input	Output
A5B30-01 DC mV input	-10 to 10mV	-5 to 5V DC
A5B30-02 DC mV input	-50 to 50mV	-5 to 5V DC
A5B30-03 DC mV input	-100 to 100mV	-5 to 5V DC
A5B30-04 DC mV input	-10 to 10mV	0 to 5V DC
A5B30-05 DC mV input	-50 to 50mV	0 to 5V DC
A5B30-06 DC mV input	-100 to 100mV	0 to 5V DC
A5B31-01 DC voltage in	-1 to 1V	-5 to 5V DC
A5B31-02 DC voltage in	-5 to 5V	-5 to 5V DC
A5B31-03 DC voltage in	-10 to 10V	-5 to 5V DC
A5B31-04 DC voltage in	-1 to 1V	0 to 5V DC
A5B31-05 DC voltage in	-5 to 5V	0 to 5V DC
A5B31-06 DC voltage in	-10 to 10V	0 to 5V DC

■ Performance

Input Range
A5B30: ±10mV to ±100mV
A5B31: ±1V to ±10V

Input Bias Current
A5B30: ±0.5nA
A5B31: ±0.05nA

Input Resistance
Normal A5B30: 50M ohms
Normal A5B31: 650K ohms

Power Off A5B30: 40K ohms
Power Off A5B31: 650K ohms

Overload A5B30: 40K ohms
Overload A5B31: 650K ohms

Input Protection
Continuous: 240V$_{RMS}$ max
Transient: ANSI/IEEE C37.90.1-1989

CMV, Input to Output
Continuous: 1500V$_{RMS}$ max
Transient: ANSI/IEEE C37.90.1-1989

CMR (50 or 60Hz)
160dB

NMR
95dB @ 60Hz, 90dB @ 50Hz

Accuracy
A5B30:
±0.05% (0.08% max)
A5B31:
±0.05% (0.08% max)

Nonlinearity
±0.02% Span (±0.035% Max)

Stability
Input Offset A5B30: ±1µV/°C (±2µV/°C max)
Input Offset A5B31: ±20µV/°C (±25µV/°C max)

Output Offset A5B30: ±20µV/°C (±30µV/°C max)
Output Offset A5B31: ±20µV/°C (±30µV/°C max)

Gain A5B30: ±25ppm/°C (±50ppm/°C max)
Gain A5B31: ±50ppm/°C (±70ppm/°C max)

Noise
Input, 0.1 to 10Hz A5B30: 0.2µV$_{RMS}$ (0.6µV$_{RMS}$ max)
Input, 0.1 to 10Hz A5B31: 2µV$_{RMS}$ (3µV$_{RMS}$ max)

Output, 100KHz A5B30: 200µV$_{RMS}$ (400µV$_{RMS}$, 800µV$_{P-P}$ max)
Output, 100KHz A5B31: 200µV$_{RMS}$ (400µV$_{RMS}$, 800µV$_{P-P}$ max)

Bandwidth, -3dB
4Hz

Response Time, 90% span
200mS

Output Resistance
50 ohms

Output Protection
Continuous short to ground

Output Selection Time, (to ±1mV of V$_{OUT}$)
2.5µS @ 200pF, 3.5µS @ 500pF,
4.0µS @ 1000pF, 6.0µS @ 2000pF

Output Enable Control
Max Logic "0": +0.8V
Min Logic "1": +2.4V
Max Logic "1": +36V
Input Current, "0, 1": 0.5µA

Power Supply Voltage
+5V DC ±5%

Power Supply Current
30mA Max

Environmental
Operating Temperature Range: -40 to +85°C
Storage Temperature Range: -40 to +85°C
Relative Humidity: 0 to 95% noncondensing
RFI Susceptibility: ±0.5% span error @ 400MHz, 5W, 3 ft

Approvals (CSA, FM)
Class I; Division 2; Groups A, B, C, D.

■ Ordering Information

Backpanels and Accessories

■ User's Manual

8500-299
A5B User's Manual. Acromag provides (1) manual with first purchase order at NO CHARGE. Additional manuals must be purchased. The first manual must be specified on the purchase order to ensure delivery.

■ Backpanels

APB01
16-channel, non-multiplexed backpanel. Non-addressable analog I/O signal channels provide each module with its own analog bus. The module output switch is continuously "on" when using this backpanel. A temperature sensor is mounted on each channel to provide cold junction compensation for thermocouple modules. Field connections are terminated with four screw terminals at each module site.

APB02
16-channel, multiplexed backpanel. Has two analog buses; one for input, one for output. Two-bus configuration takes advantage of the switch-controlled outputs on the input modules and the track-and-hold inputs on the output modules. Up to four APBO2 backpanels can be daisy-chained. Includes temperature sensor and four screw terminals at each module site.

APB03
Single channel, non-multiplexed backpanel. See tables below for additional parts required.

APB04
Dual channel, non-multiplexed backpanel. See tables below for additional parts required.

The following parts are required for DIN rail mounting of one APB03 or APB04 backpanel:

Quantity	Part No.	Description
1	UM-BEFE35	Base element with snap foot
2	UM-SE	Side element

The following parts are required to DIN rail mount two or more APB03 or APB04 backpanels:

Quantity	Part No.	Description
2	UM-BEFE35	Base element with snap foot
2	UM-SE	Side element
Note 1	UM-BE35	Base element w/o snap foot
Note 2	UM-VS	Connection pin

Note 1: Quantity = # of panels - 2
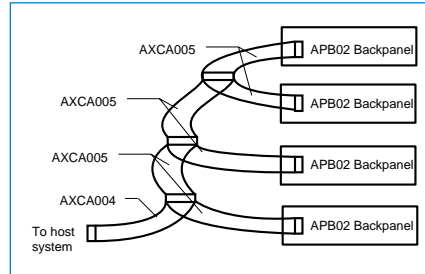Note 2: Quantity = 4 x (# of panels - 2)

■ Cables

AXCA004-xx
Interface cable for host system connection. General-purpose 26 conductor ribbon cable for use with APB01/02 backpanels. Specify length, -xx, in feet when ordering.

AXCA005
Daisy-chain cable, interconnects up to four APB02 backpanels.

■ Power Supplies

AXPRT-003
Power supply, 120V AC input (104 to 132V range).

AXPRE-003
Power supply, 220V AC input (207 to 265V range).

■ Interface Accessories

AXEV
Evaluation board (single channel) with a test socket. See table below for additional parts required.

The following parts are required for DIN rail mounting of one AXEV evaluation board:

Quantity	Part No.	Description
2	UM-BEFE35	Base element with snap foot
2	UM-SE	Side element
4	UM-VS	Connection pin

AXIF
Universal interface board. Converts a 26-pin ribbon cable to 26 screw terminals for discrete wire. Mounts on AXRK-002 rack (standoffs, mounting hardware included). Use AXCA004 cable.

AVMEIF
VMEbus interface board, 32 inputs. Interfaces APB01 backpanel with a 26-pin ribbon cable to Acromag VME A/D boards.

■ Mounting Accessories

AXRK-002
19-inch metal rack for mounting the backpanels, power supplies, and universal interface board.

UM-BEFE 35
Base element with snap foot (for DIN rail mounting).

UM-BE 35
Base element without snap foot (for DIN rail mounting).

UM-SE
Side element (for DIN rail mounting).

UM-VS
Connection pin (for DIN rail mounting).

■ Miscellaneous Accessories

AXFS-003
Fuses for backpanel, 4 amp, package of 10.

AXJP-003
Jumper strap, package of 10 jumpers. Connects I/O modules to direct the output of any input module to the adjacent output module on the APB01 backpanel. The jumpers can also be used to configure I/O addresses on APB02 backpanel.
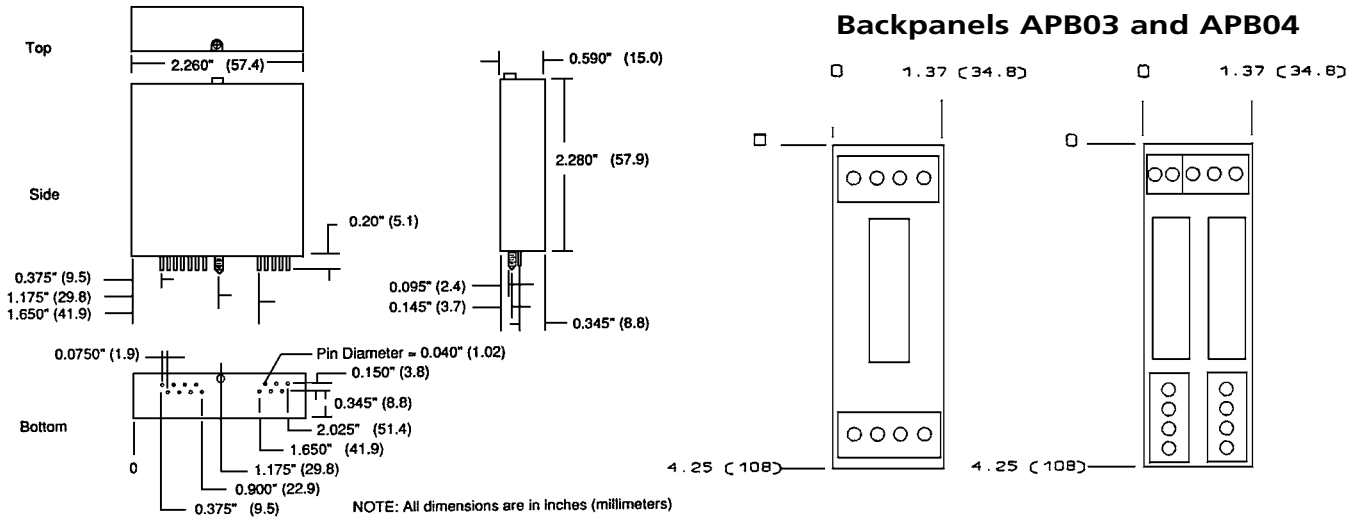
AXR1
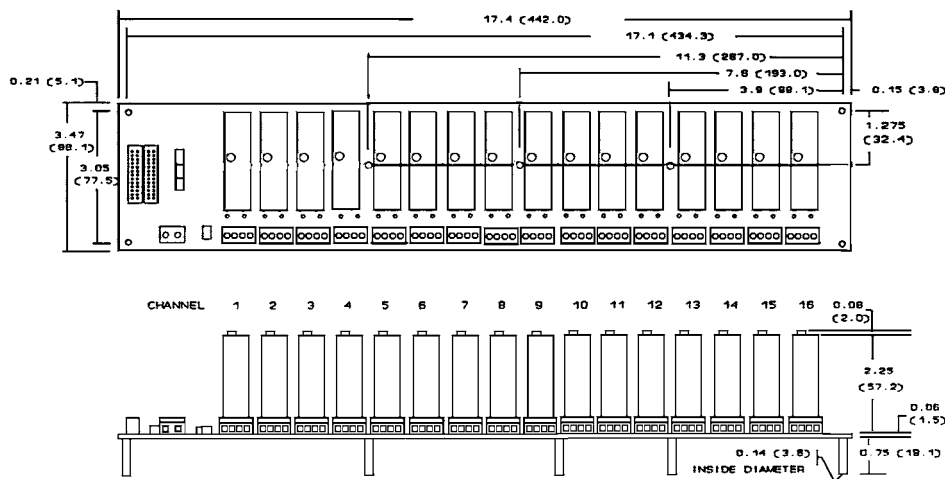Current conversion resistor (precision 20 ohm 0.1%) for A5B32 current input module. Sockets are provided on APB01/02.
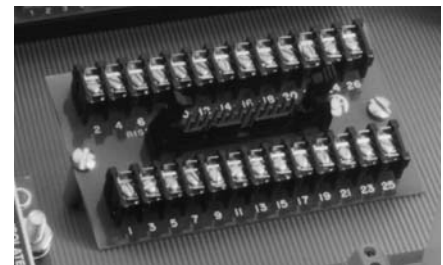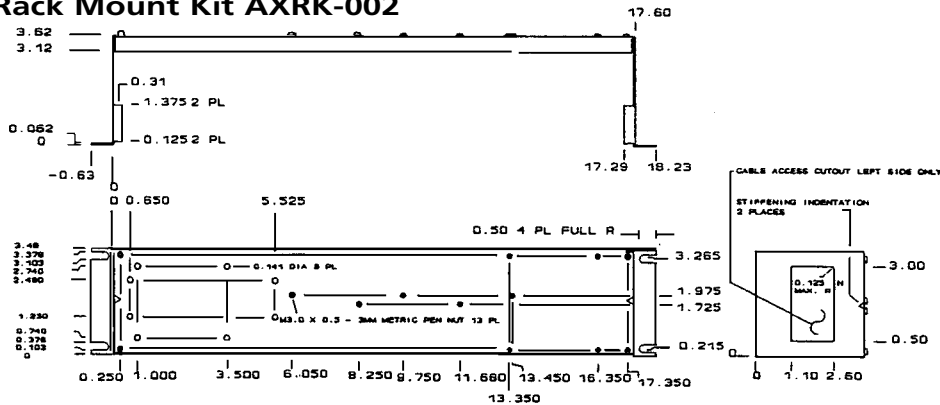

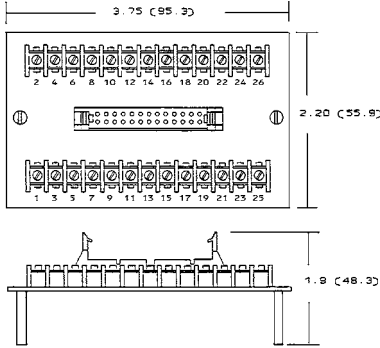*AXIF interface board*

Dimensions

Backpanels APB03 and APB04

NOTE: All dimensions are in inches (millimeters)

Backpanel APB01, APB02

Rack Mount Kit AXRK-002

A5B Series

Dimensions

AXIF Outline Drawing

Digital I/O Panel APB16H-SSR

NOTES:
1. CONNECTOR IS 3M, 3433–6203.
2. 6–32 SCREW TERMINAL BARRIER STRIPS ACCEPT WIRE SIZES 24 TO 12 AWG.
3. LITTLEFUSE 251001 OR EQUIVALENT.
4. LITTLEFUSE 251005 OR EQUIVALENT.
5. DIMENSIONS ARE IN INCHES (MILLIMETERS).
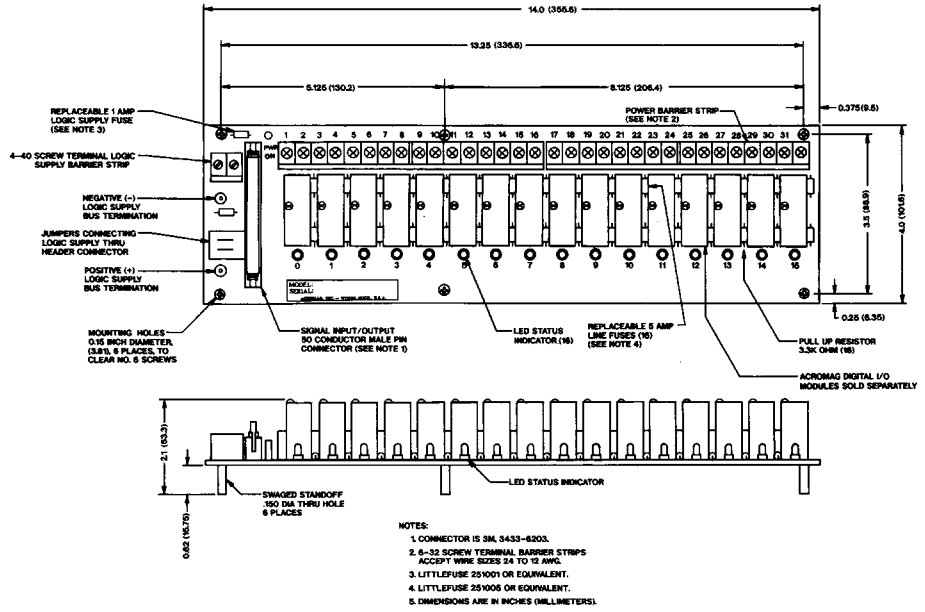
Power Supplies AXPRT-003 (115V) and AXPRE-003 (230V)

PANEL MOUNTING LAYOUT

FRONT VIEW

Dimensions are in inches (millimeters).