



Input Modules



A5B40/41 Units Wide-bandwidth Millivolt and Voltage Input

A5B40/41 modules plug into a backpanel to provide a single channel of analog input which is isolated, amplified, and converted to a proportional DC voltage output signal.

The input signal is processed through a preamplifier on the field side of the isolation barrier. This preamplifier has a gain-bandwidth product of 5MHz and is bandwidth limited to 10KHz. 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
A5B40-01	DC mV input	-10 to 10mV
A5B40-02	DC mV input	-50 to 50mV
A5B40-03	DC mV input	-100 to 100mV
A5B40-04	DC mV input	-10 to 10mV
A5B40-05	DC mV input	-50 to 50mV
A5B40-06	DC mV input	-100 to 100mV
A5B41-01	DC voltage in	-1 to 1V
A5B41-02	DC voltage in	-5 to 5V
A5B41-03	DC voltage in	-10 to 10V
A5B41-04	DC voltage in	-1 to 1V
A5B41-05	DC voltage in	-5 to 5V
A5B41-06	DC voltage in	-10 to 10V

Performance

Input Range

A5B40: $\pm 10\text{mV}$ to $\pm 100\text{mV}$
A5B41: $\pm 1\text{V}$ to $\pm 10\text{V}$

Input Bias Current

A5B40: $\pm 0.5\text{nA}$
A5B41: $\pm 0.05\text{nA}$

Input Resistance

Normal A5B40: 200M ohms
Normal A5B41: 650K ohms
Power Off A5B40: 40K ohms
Power Off A5B41: 650K ohms
Overload A5B40: 40K ohms
Overload A5B41: 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)

A5B40: 100dB
A5B41: 90dB

NMR

-3dB at 10KHz, 120dB per decade above 10KHz

Accuracy

A5B40:
 $\pm 0.05\%$ (0.08% max) Span $\pm 10\mu\text{V}$ RTI $\pm 0.05\%$ (V_Z)*
A5B41:
 $\pm 0.05\%$ (0.08% max) Span $\pm 0.2\text{mV}$ RTI $\pm 0.05\%$ (V_Z)*

Nonlinearity

$\pm 0.02\%$ Span ($\pm 0.035\%$ Max)

Stability

Input Offset A5B40: $\pm 1\mu\text{V}/^\circ\text{C}$ ($\pm 2\mu\text{V}/^\circ\text{C}$ max)
Input Offset A5B41: $\pm 20\mu\text{V}/^\circ\text{C}$ ($\pm 25\mu\text{V}/^\circ\text{C}$ max)
Output Offset A5B40: $\pm 20\mu\text{V}/^\circ\text{C}$ ($\pm 30\mu\text{V}/^\circ\text{C}$ max)
Output Offset A5B41: $\pm 20\mu\text{V}/^\circ\text{C}$ ($\pm 30\mu\text{V}/^\circ\text{C}$ max)
Gain A5B40: $\pm 25\text{ppm}/^\circ\text{C}$ ($\pm 50\text{ppm}/^\circ\text{C}$ max)
Gain A5B41: $\pm 50\text{ppm}/^\circ\text{C}$ ($\pm 70\text{ppm}/^\circ\text{C}$ max)

Noise

A5B40 Input, 0.1 to 10Hz: 0.4μV_{RMS} (1μV_{RMS} max)
A5B41 Input, 0.1 to 10Hz: 2μV_{RMS} (4μV_{RMS} max)
A5B40 Output, V_{IN} = Full Scale: 20mV_{P-P} max
A5B41 Output, V_{IN} = Full Scale: 30mV_{P-P} max
Output, V_{IN} = 0V: 10mV_{P-P}

Bandwidth, -3dB

10KHz

Rise Time, 10 to 90% span

35μS

Output Range

$\pm 5\text{V}$ or 0 to +5V

Output Resistance

50 ohms

Output Protection

Continuous short to ground

Output Selection Time, (to $\pm 1\text{mV}$ 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 $\pm 5\%$

Power Supply Current

30mA (33mA max)

Power Supply Sensitivity

A5B40: $\pm 2\mu\text{V}/\%$ (RTI)
A5B41: $\pm 200\mu\text{V}/\%$ (RTI)

Environmental

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

Approvals (CSA, FM)

Class I; Division 2; Groups A, B, C, D.

NOTES

* V_Z is the input voltage that results in 0V output.
RTI is Referred To Input.



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 APB02 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)

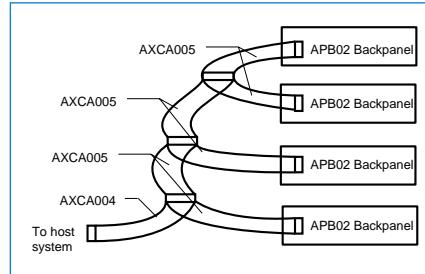
Cables

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

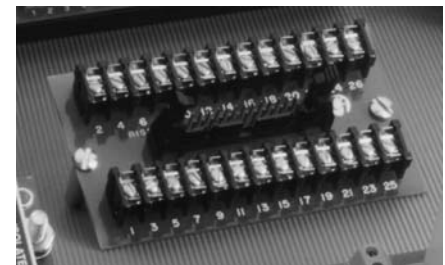
Fuses for backpanel, 4 amp, package of 10.

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

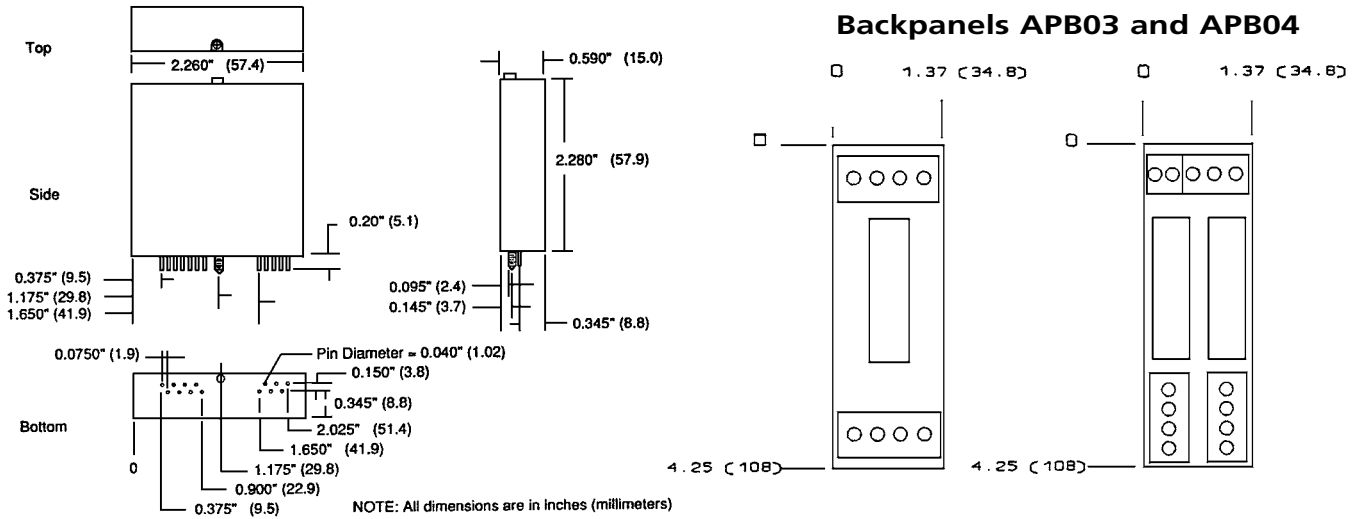
Current conversion resistor (precision 20 ohm 0.1%) for A5B32 current input module. Sockets are provided on APB01/02.



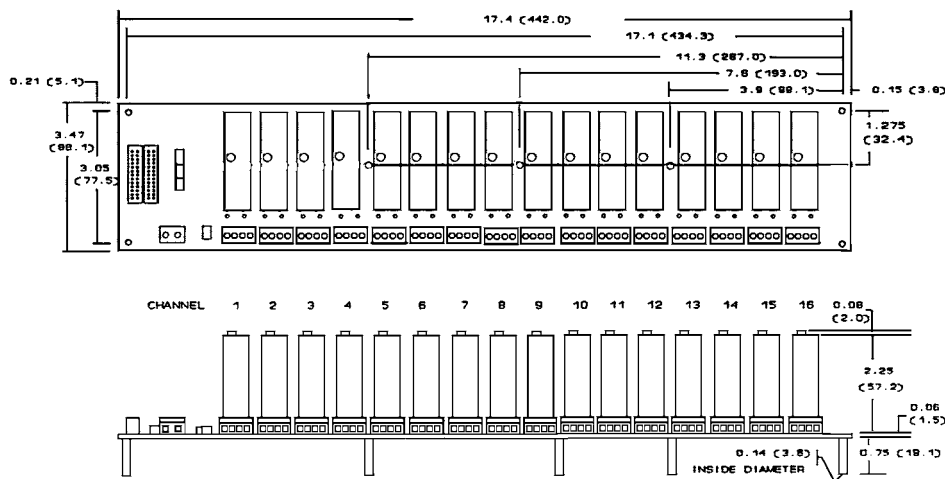
AXIF interface board



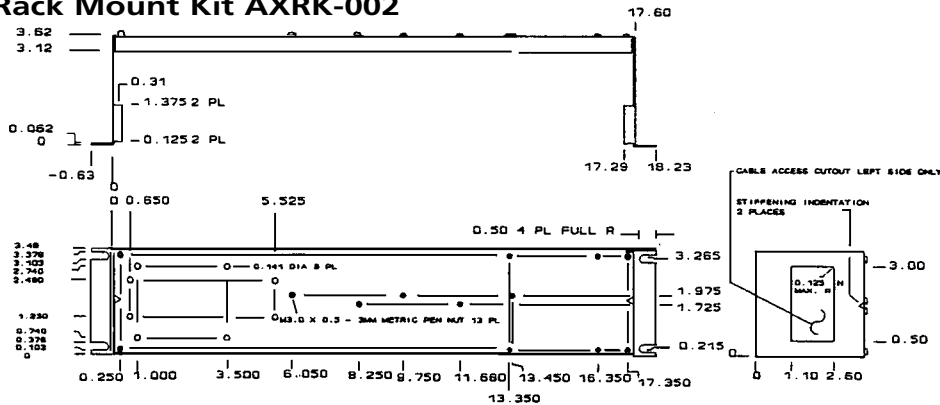
Dimensions



Backpanel APB01, APB02



Rack Mount Kit AXRK-002

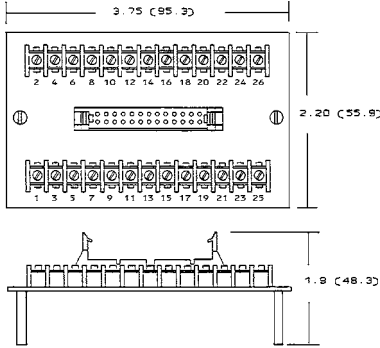


ASB Series

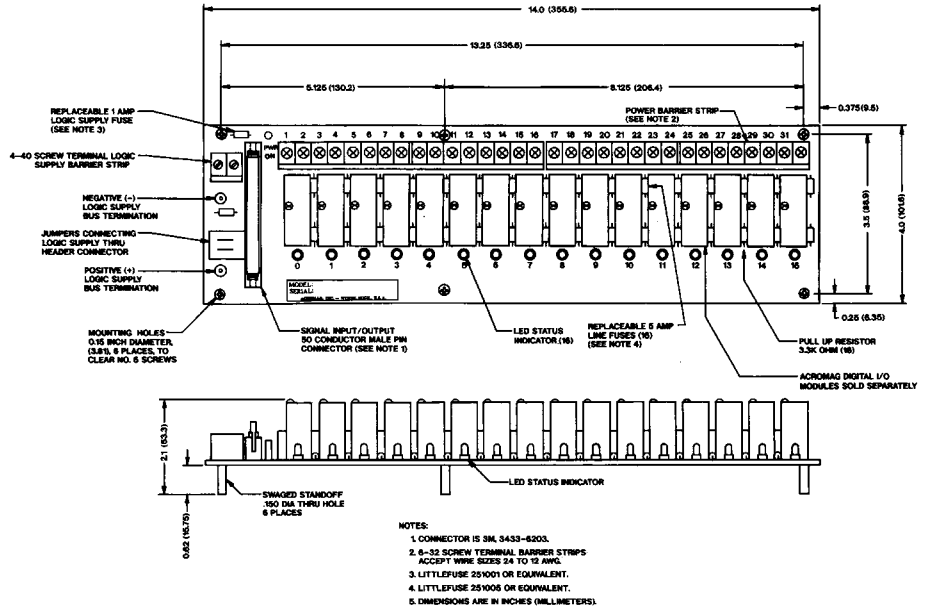


Dimensions

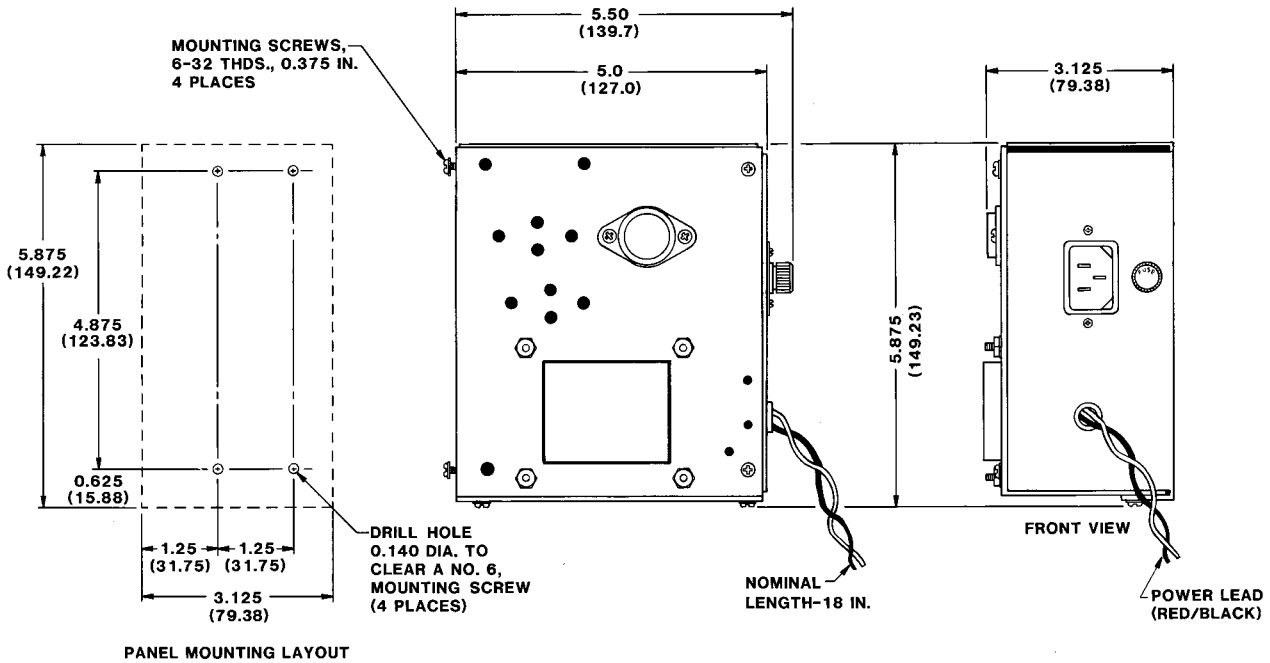
AXIF Outline Drawing



Digital I/O Panel APB16H-SSR



Power Supplies AXPRT-003 (115V) and AXPRE-003 (230V)



Dimensions are in inches (millimeters).