

## 7B SERIES BACKPLANES

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**General Description**  
To complement the 7B Series signal conditioners, Analog Devices offers a variety of multi-channel backplanes and a single-channel DIN rail mounting card, designed for 7B modules. Backplanes are presently available in 4-, 8- and 16-channel configurations (model numbers 7BP04-1, 7BP08-1 and 7BP16-1, respectively). The 7BP04-1, 7BP08-1 and 7BP16-1 backplanes may be mounted in a 19" x 3.5" panel space via rack-mount hardware kit (Model AC1383) available from Analog Devices. The backplanes are also designed to mount on a flat surface with standoffs provided with each backplane - mounting screws are provided with the AC1383 rack-mount kit. For smaller applications, the single channel mounting card, Model AC1387, is provided with DIN rail mounting hardware.



**Models:**  
Order Now [7BP08-1](#)  
and  
Order Now [7BP04-1](#)



Order Now [Model 7BP16-1](#)

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**Field and System Connections**  
Field connections for transducers/signal inputs, 2-wire transmitter loop power inputs and current outputs, are made through a three-screw terminal block - refer to the Field Connection figures shown in each model section. On all backplanes, the interface to the user's system is accomplished by a standard 25-pin D-type connector. Two identical 25-pin male connectors located on the backplane provide a means of laboratory testing separately input and output connections when input and output modules are being used on the same backplane. Figure 1 illustrates the functional block diagram for the Model 7BP16-1 backplane, indicating the terminal designations for the power supply and field connectors. On the AC1387 mounting card, system interface is made with screw terminal connectors.

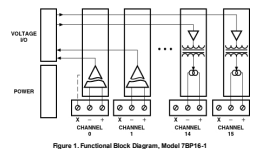


Figure 1. Functional Block Diagram, Model 7BP16-1

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**Application Reliability**  
To insure the reliability of the module's electrical connection to the backplane, gold-plated sockets are provided on each channel. To accommodate thermocouple signal inputs, a miniature cold junction compensation (CJC) thermistor is mounted under the input terminal block of each backplane and mounting card channel. The thermistors are embedded in the circuitry under the CJC screw terminal blocks and are not visible on the backplane or mounting card. For users constructing their own backplanes or mounting card, the thermistor is commercially available from the manufacturer, Belstar Corp., part number 100K6A1. Refer to the 7B Series User manual for additional information. In addition to the CJC temperature sensor for each input channel on the backplanes, a pair of pin sockets permits installation of the AC1391 current sensing resistor used with the Models 7010 and 7011 voltage input modules for process current inputs. (Not available on Model AC1387).



Order Now [Model AC1387](#)

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**Powering Flexibility**  
The 7B Series are powered by a single +24 Vdc power supply. Linear supplies, whether regulated or unregulated, are recommended. Most modules operate between +14 Vdc and +35 Vdc. Four screw terminals are provided on the backplane to allow several ways of supplying power to the 7B Series backplane. Figure 2 defines the terminals and illustrates how a redundant power supply scheme can be implemented. As illustrated, three power supply terminals are provided for connecting the high side of the power supply to the backplane. This allows three different connection schemes.

1. A single power supply can be connected to either V-A or V-B terminals.
  2. Redundant supplies are connected to V-A and V-B terminals.
  3. A low voltage power supply of +14 Vdc or +15 Vdc can be connected to the Vn terminal, thereby avoiding the voltage drop across the diodes that are in series with the V-A and V-B terminals.
- The backplane diodes serve two purposes. One is to provide the means of switching redundant power supplies; the other is to protect 7B Series modules from a reverse polarity connection. A single LED on each backplane indicates the power ON status.

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**Features**

- Mix and Match 7B Series I/O Module Capability
- CE Certified
- 1500 V rms Channel/Channel and Input/Output Isolation
- Three Backplanes; 4-, 8-, 16-channel capacity
- Single Channel, DIN-Rail Mounting Card
- Redundant Power Supply Connectors on all Backplanes
- Dual System Connectors on all Backplanes
- 25°C to +85°C Temperature Range
- Single Threaded Insert for Module Hold Down

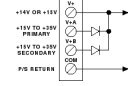


Figure 2. Wiring Diagram of Backplane Power Input Terminals - Note: Diodes are provided on the backplane.

**7B Series Backplane Specifications**  
(typical @ +25°C and  $V_{in}$  = +5 Vdc)

Description	7BP04-1	7BP08-1	7BP16-1
<b>Analog I/O Channels</b>	4	8	16
	Interface		
Analog Sensor Input/Output	1500 V rms, maximum	-	-
Connector Type	3-Screw Terminals	-	-
Screw Connectors	2	-	-
Connector Type	25-pin D Connector	-	-
<b>Number provided on backplane</b>	4	8	16
Type	Thermistor	-	-
Accuracy over -4°C to +45°C ambient	±1.0°C, maximum	-	-
Precision for mounting AC1387 resistors	Yes	-	-
<b>Backplane Mounting Standoffs</b>	4	5	7
	Isolation		
Input-to-Output, Channel-to-Channel	1500 V rms, max, continuous	-	-
Input/Transient Protection	ANSI/IEEE C37.00.1-1999	-	-
	Power Supply		
Voltage, Operating	+14 Vdc to +35 Vdc	-	-
Voltage, Max. Safe Limit with module	Dependent on 7B Module <sup>1</sup>	-	-
Reverse Voltage Protection	Yes <sup>2</sup>	-	-
Current	20 mA <sup>3</sup>	-	-
Fuse	5 ampere, slow-blow, Littelfuse <sup>4</sup> 201 005	-	-
<b>Mechanical Dimensions</b>	3.47" x 3.30" (88.14 mm x 83.82 mm)	3.47" x 10.37" (88.14 mm x 264 mm)	3.47" x 17.47" (88.14 mm x 441.9 mm)
	Environmental		
Temperature Range	-25°C to +85°C	-	-
Rated Performance	25°C to +85°C	-	-
Operating	-25°C to +85°C	-	-
Storage	-40°C to +85°C	-	-
Relative Humidity	0 to 85% ② -40°C noncondensing	-	-

<sup>1</sup> Specifications are as model 7011.  
<sup>2</sup> Mounting hardware is provided with the backplane kit, Model AC1383.  
<sup>3</sup> Maximum supply voltage varies for Models 7021 and 7022 at +29 Vdc, +35 Vdc for all others.  
<sup>4</sup> Reverse voltage polarity protection is provided when using either the V-A or V-B power input terminals.  
<sup>5</sup> Current drawn by LED On light.  
Specifications subject to change without notice.

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