

### FEATURES

**Mix and Match 5B Series I/O Module Capability**  
**Factory Mutual (FM) Approved**  
**Approved for Use in Class I, Division 2, Groups A, B, C, and D Locations.**  
**CE Certified: EMC Directive in Heavy Industrial Applications**  
**1500 V rms Channel/Channel and Input/Output Isolation**  
**16- channels**  
**-25°C to +85°C Temperature Range**  
**Single Threaded Insert for Module Hold Down**

### APPLICATIONS

**Industrial Signal Conditioning**  
**Industrial Signal Isolation**  
**Industrial Signal Filtering**

### PRODUCT OVERVIEW

To address diverse applications, the 5B Series includes a family of backplanes and mounting cards which provide a complete signal conditioning solution. The 16-channel backplane can be mounted in a 19" x 3.5" panel space, providing an economical means to handle signals.

### FUNCTIONAL BLOCK DIAGRAM

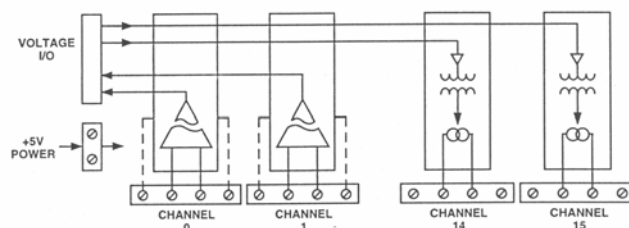


Figure 1 5B01 Functional Block Diagram

This backplane provides four screw terminals per channel for all field connections. These connections satisfy all transducer inputs, process current outputs and provide transducer excitation when necessary. A cold junction temperature sensor (model AC1361) sensor is also supplied on each channel to accommodate thermocouple input modules. A pair of pin sockets permits installation of the AC1362 current sensing resistor used with the 5B32 current input module on the 16-channel backplane, a 26-pin system interface connector provides high level I/O for all channels. The 5B01 Series backplane requires a regulated +5VDC external power source.

### Rev. 0

Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective companies.

## GENERAL DESCRIPTION

**Model 5B01 Backplane** - The 5B01 diagrammed in Figure 1, is a 16 channel backplane that provides single-ended, high level analog input/output pins on the system connector. It is pin compatible with Analog Devices' 3B Series applications. (Note, however, that 5B Series modules provide a +5V output swing rather than the +10V swing provided by 3B Series modules.)

**Model 5B01 System Connectors** – Signal connections between the 5B01 backplane and the associated measurement and control system are made at P1 and P2. These connectors are identical electrically. The redundant connectors may be useful if a 5B01 is used for both analog input and analog output and the data acquisition system has separate input and output connectors. A signal path is provided for each channel and, in addition, a number of grounding pins are present in the connector pin-out to provide inter-channel shield conductors in the ribbon cable. In some cases, discussed below, the ground conductors will not provide an accurate signal reference, so a SENSE pin is also provided in the pin-out. Several jumper and component options on the backplane provide optimum ground connections for various circumstances.

**Model 5B01 Grounding** – Each 5B01 backplane is factory configured with Jumpers W1, W3, and W4 installed. Jumper W1 grounds the shield wires in the ribbon cable (Pins 3, 6, 12, 15, 18, 21, and 24) at the 5B01 backplane. This will usually be the primary ground connection between the 5B01 and the

measurement system. This connection is required if output modules will be used on the backplane. It is also required if there is no high impedance sense input (input Low of a differential or pseudo-differential system) available on the measurement system. Jumper W3 connects the sense input, if available, to Pin 25 so that the 5B01's ground is read. It can be left in place at all times. Jumper W4 connects +5VDC power common to input/output common (backplane measurement ground). A connection between power common and input/output common is important for the 5B Series modules to function properly, however, if this connection is made elsewhere in your system the best place is usually near the A/D or D/A converters), W4 should be cut, since a ground loop could result.

**Model 5B01 Inter-channel Bridge Jumpers** – The 5B01 gives the user the capability of directing the voltage output of any input module to an adjacent output module (e.g., Model 5B39) simply by placing a jumper between the pins of the two modules (input to channel n, output from channel n+1). This feature can be used to provide an isolated current output from an isolated input module, giving two levels of 1500 V rms isolation. Model AC1344 provides ten jumpers.

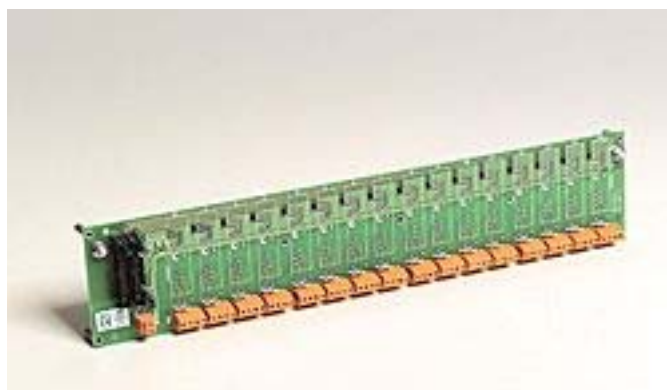


Figure 2

**5B01 Specifications**(typical @ +25°C and  $V_s = +5$  V dc Power)

Description	Model 5B01
<b>Number of Channels</b>	16
<b>ISOLATION</b>	
Input-to-Output Continuous	1500 V rms, Maximum
Channel-to-Channel Continuous	1500 V rms, Maximum
<b>MECHANICAL DIMENSIONS</b> – with modules	3.5" x 17.4" x 3.2" (88.9 mm x 442 mm x 81.3 mm)
<b>WEIGHT</b>	11.25 oz. (305 g)
<b>MOUNTING STANDOFFS</b>	7
<b>COLD JUNCTION TEMPERATURE SENSORS</b>	
Number provided on backplane	16
Type	Model AC1361
Initial Accuracy @ +25°C	$\pm 0.5^\circ\text{C}$
Accuracy +5°C to +45°C	$\pm 0.5^\circ\text{C}$ (+0.0125°C/°C)
<b>SYSTEM I/O CONNECTOR</b>	
Number	2, 26-pin
Type	Amp 746290-6
<b>POWER SUPPLY OPTIONS</b>	
Voltage; Operating	+5 VDC $\pm 5\%$
Voltage; Max Safe Limit – with modules	+6.0 VDC Max.
Current – without modules	<u>0</u>
Fuse; (F1)	4 Ampere Littelfuse © Type 252 004
<b>Environmental</b>	
<b>Temperature Range</b>	
Rated Performance	-25°C to +85°C
Operating	-40°C to +85°C
Storage	-40°C to +85°C
Relative Humidity, 24 hours	0 to 95% @ +60°C noncondensing

## PIN CONFIGURATION AND FUNCTIONAL DESCRIPTION

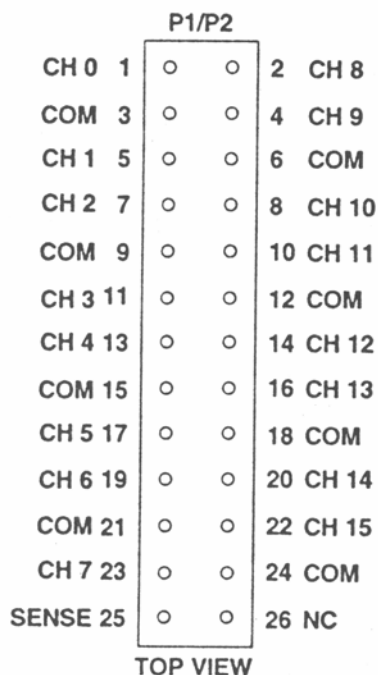


Figure 3 5B01 Pin-outs

Table 1. Pin Function Descriptions—

Pin No.	Description
1	CHANNEL 0
2	CHANNEL 8
3	COMMON
4	CHANNEL 9
5	CHANNEL 1
6	COMMON
7	CHANNEL 2
8	CHANNEL 10
9	COMMON
10	CHANNEL 11
11	CHANNEL 3
12	COMMON
13	CHANNEL 4
14	CHANNEL 12
15	COMMON
16	CHANNEL 13
17	CHANNEL 5
18	COMMON
19	CHANNEL 6
20	CHANNEL 14
21	COMMON
22	CHANNEL 15
23	CHANNEL 7
24	COMMON
25	SENSE 25
26	NO CONNECTION

### ESD CAUTION

ESD (electrostatic discharge) sensitive device. Electrostatic charges as high as 4000 V readily accumulate on the human body and test equipment and can discharge without detection. Although this product features proprietary ESD protection circuitry, permanent damage may occur on devices subjected to high energy electrostatic discharges. Therefore, proper ESD precautions are recommended to avoid performance degradation or loss of functionality.



## OUTLINE DIMENSIONS

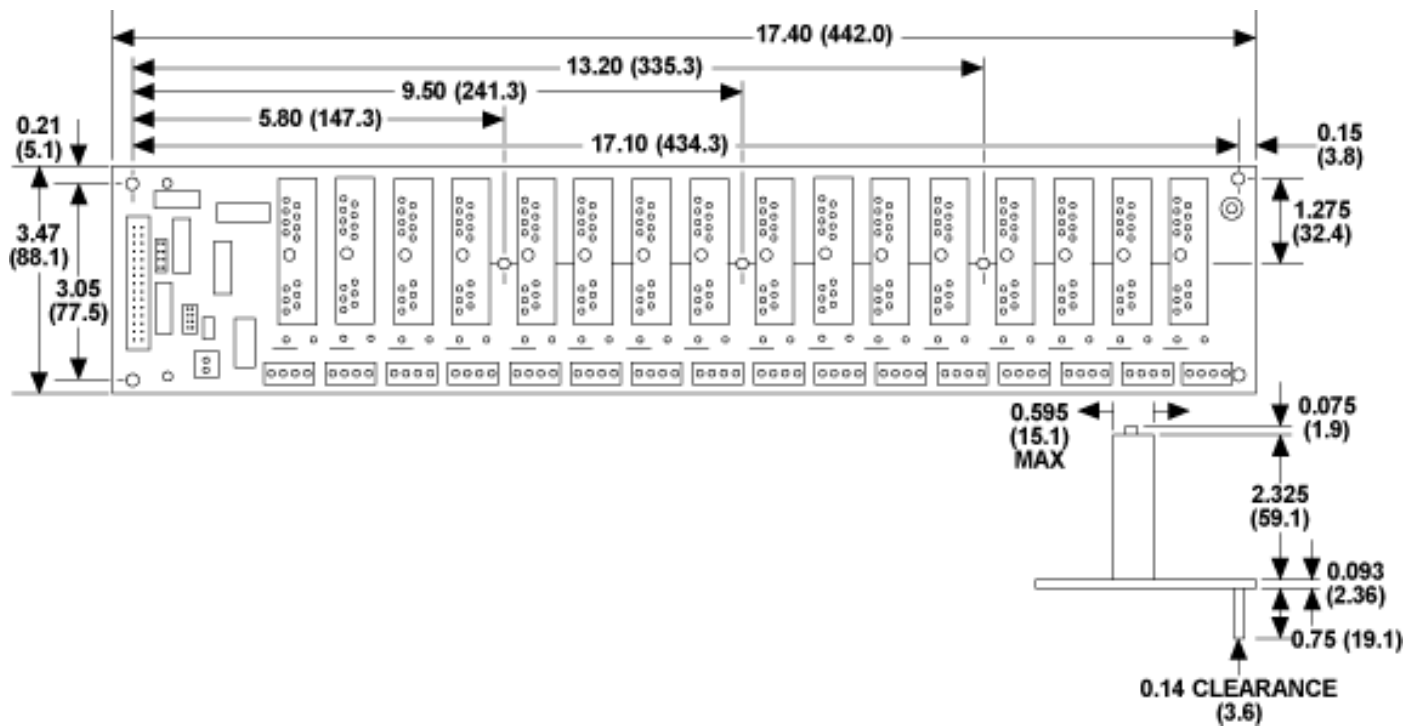


Figure 3 Outline Dimensions

## NOTES

NOTES