

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

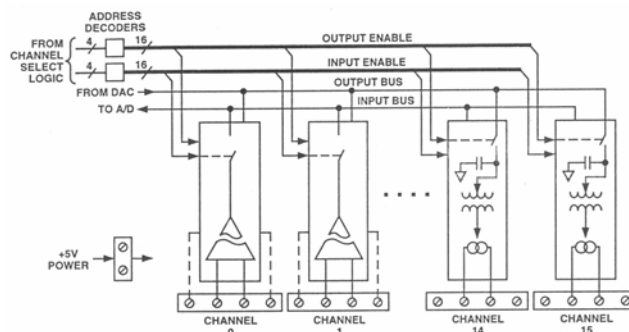


Figure 1 5B02 Functional Block Diagram

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 5B02 Series backplane requires a regulated +5VDC external power source.

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GENERAL DESCRIPTION

Model 5B02 Backplane - The 5B02 diagrammed in Figure 1, is a 16 channel backplane. It incorporates input and output buses that take advantage of the internal series output switches in the input modules and the track-and-hold in the output module. Designers integrating the 5B02 into a measurement and control system do not need external multiplexers and can use a single digital-to-analog converter to server numerous output channels. Digital outputs from the host data acquisition system are used to address the 5B Series modules and designate inputs and outputs. Only one analog input, one analog output, and a number of digital outputs are required to address up to 64 analog input/output channels.

Model 5B02 System Connectors – Signal connections between the 5B02 backplane and the associated measurement or control system are made at P1. One signal path is provided for inputs and one for outputs. Input and output modules are independently addressed by two sets of six address pins and an enable pin. In addition, a number of grounded pins are present in the connector pin-out to provide 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 in the backplane provide optimum ground connections for various circumstances.

Model 5B02 Grounding – Each 5B02 backplane is factory configured with Jumpers W1, W2, and W4 installed. Jumper W1 grounds the shield wires in the ribbon cable (Pins 2,5, and 6) at the 5B02 backplane. This will usually be the primary ground connection between the 5B02 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 W2 connects the sense input, if available, to Pin 25 so that the 5B02's ground is read. It can be left in place at all times. Jumper W4

connects +5 VDC 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 5B02 Address Selection Jumpers – The 5B02 backplane can hold 16 modules in any combination of inputs or outputs. Address decoders on the backplane (separate decoders are provided for inputs and outputs) determine which module is read (inputs) or driven (outputs). To permit system expansion, up to four backplanes can be daisy-chained on the system I/O ribbon cable for a total of 64 channels. Jumpers on each backplane (labeled SH1-5 and SH6-10) determine the block of 16 addresses assigned to each backplane. Input (read) and output (write) addressing are completely independent; in all cases, Jumpers 1-5 control inputs and 6-10 control outputs. Independent addressing might be used, for example, to update output modules without interrupting the monitoring of input modules.

Backplanes are factory configured with jumpers at Positions 1 and 6. This sets up the backplane as a stand-alone 16 –channel system; the two highest order address bits in the read and write addresses are ignored. Moving the jumpers to any other position in the two blocks enables decoding of the full six address bits. The exact position of the jumper determines address position for the backplane. To use multiple backplanes in this manner, connect the corresponding I/O connector pins of each backplane in parallel. CAB-01 is a ribbon cable with three 28-pin connectors designed for this purpose.

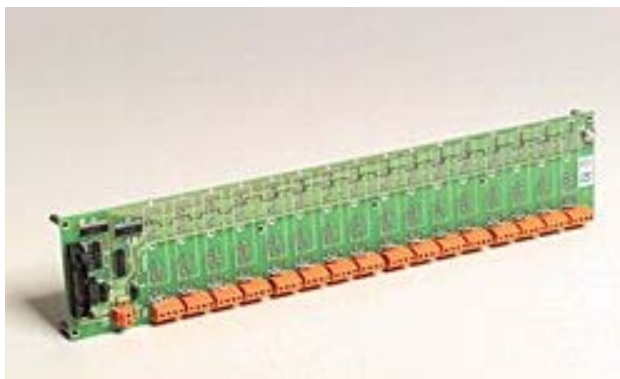


Figure 2

5B02 Specifications(typical @ +25°C and $V_s = +5$ V dc Power)

Description		Model 5B02
Number of Channels		16
ISOLATION		
Input-to-Output Continuous		1500 V rms, Maximum
Channel-to-Channel Continuous		1500 V rms, Maximum
MECHANICAL DIMENSIONS – with modules		3.5" x 17.4" x 3.2" (88.9 mm x 442 mm x 81.3 mm)
WEIGHT		11.25 oz. (305 g)
MOUNTING STANDOFFS		7
COLD JUNCTION TEMPERATURE SENSORS		
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)
SYSTEM I/O CONNECTOR		
Number		1, 26-pin
Type		Amp 746290-6
ADDRESS ENABLE INPUTS		
Max Logic "0"		+0.8 V
Min Logic "1"		+2.0 V
Max Logic "1"		+7.0 V
POWER SUPPLY OPTIONS		
Voltage; Operating		+5 VDC $\pm 5\%$
Voltage; Max Safe Limit – with modules		+6.0 VDC Max.
Current – without modules		32mA
Fuse; (F1)		4 Ampere Littlefuse © Type 252 004
Environmental		
Temperature Range		
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

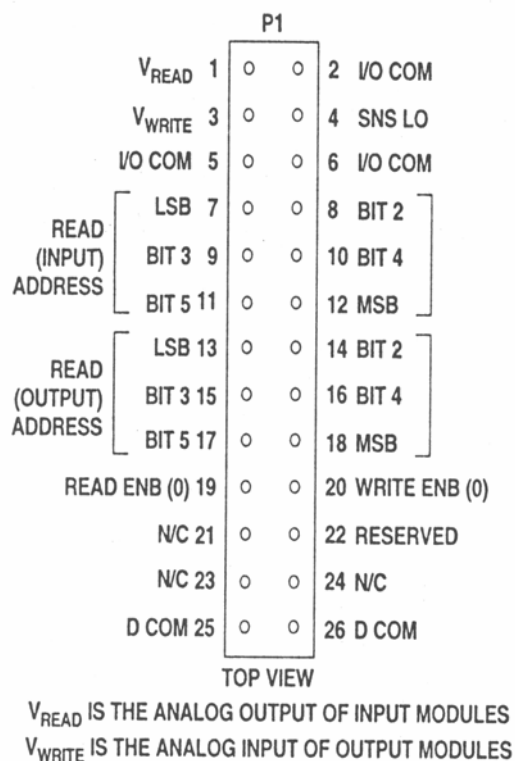


Figure 3 5B02 Pin-outs

Table 1. Pin Function Descriptions—

Pin No.	Description
1	V READ
2	I/O COM
3	V WRITE
4	SNS LO
5	I/O COM
6	I/O COM
7	READ (INPUT) ADDR LSB
8	READ (INPUT) ADDR BIT 2
9	READ (INPUT) ADDR BIT 3
10	READ (INPUT) ADDR BIT 4
11	READ (INPUT) ADDR BIT 5
12	READ (INPUT) ADDR MSB
13	READ (OUTPUT) ADDR LSB
14	READ (OUTPUT) ADDR BIT 2
15	READ (OUTPUT) ADDR BIT 3
16	READ (OUTPUT) ADDR BIT 4
17	READ (OUTPUT) ADDR BIT 5
18	READ (OUTPUT) ADDR MSB
19	READ ENB (0)
20	WRITE ENB (0)
21	NO CONNECTION
22	RESERVED
23	NO CONNECTION
24	NO CONNECTION
25	D COM
26	D COM

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

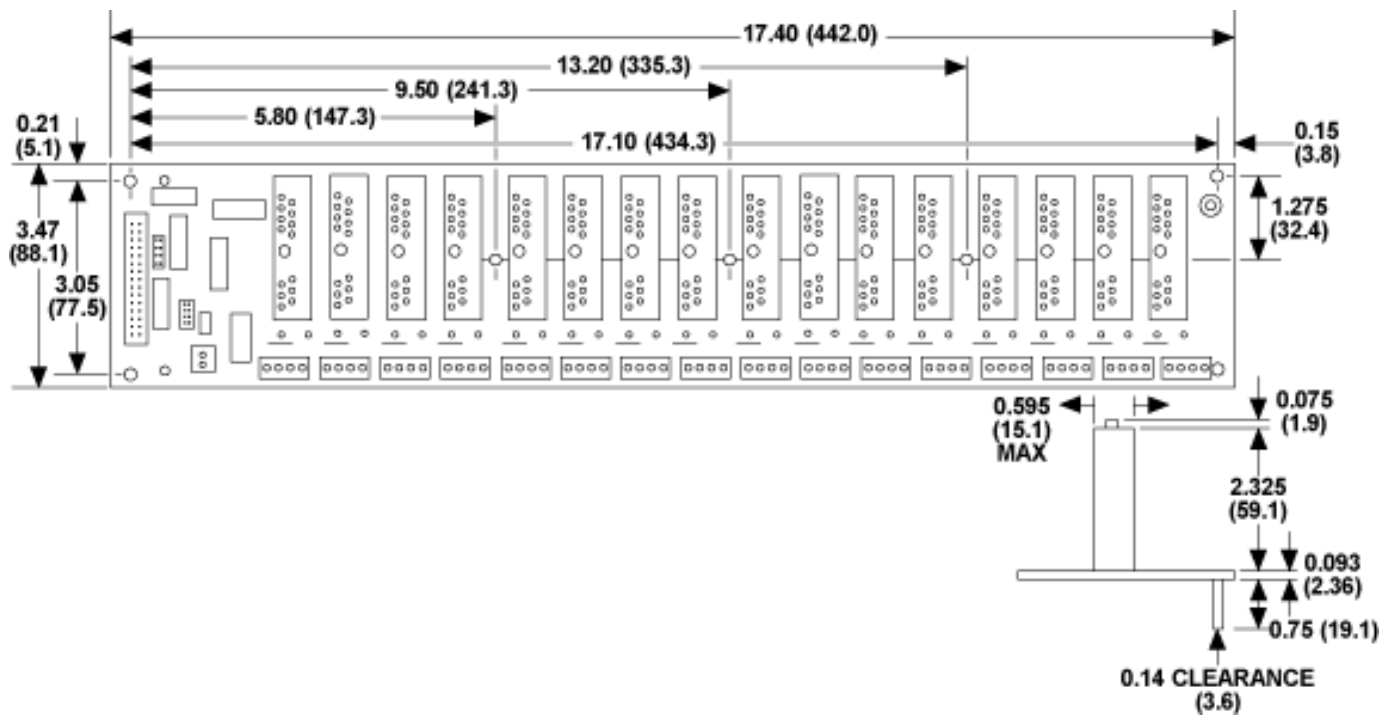


Figure 3 Outline Dimensions

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