DI-5B40/41 Analog Voltage Input Modules, Wide Bandwidth

FEATURES

- Accepts Millivolt and Voltage Level Signals
- High Level Voltage Outputs
- 1500Vrms Transformer Isolation
- ANSI/IEEE C37.90.1-1989 Transient Protection
- Input Protected to 240VAC Continuous
- 100dB CMR
- 10kHz Signal Bandwidth
- ±0.05% Accuracy
- ±0.02% Linearity
- ±1µV/°C Drift
- CSA Certified
- Mix and Match DI-5B Types

DESCRIPTION

Each DI-5B40 and DI-5B41 wide bandwidth voltage input module provides a single channel of analog input which is amplified, isolated, and converted to a high level analog voltage output (see block diagram). This voltage output is logic-switch controlled, allowing these modules to share a common analog bus without the requirement of external multiplexers.

The DI-5B modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

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. After amplification, 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. The module is powered from +5VDC, ±5%.

A special input circuit on the DI-5B40 and DI-5B41 modules provides protection against accidental connection of power-line voltages up to 240VAC.

SPECIFICATIONS

Typical at T_A = +25ºC and +5V Power

	DI-5B40	DI-5B41
Input Range	±10mV to ±1V	±1V to ±40V
Input Bias Current	±0.5nA	±0.05nA
Input Resistance Normal Power Off Overload	 200MΩ 40kΩ 40kΩ	 650kΩ (minimum) 650kΩ (minimum) 650kΩ (minimum)
Input Protection Continuous Transient	 240Vrms max ANSI/IEEE C37.90.1-1989	
CMV, Input to Output Continuous Transient	 1500Vrms max ANSI/IEEE C37.90.1-1989	
CMR (50Hz or 60Hz)	100dB	
NMR (-3dB at 10kHz)	120dB per Decade above 10kHz	
Accuracy*	±0.05% Span ±10µV RTI ±0.05% (V_Z)	±0.05% Span ±0.2mV RTI ±0.05% (V_Z)
Nonlinearity	±0.02% Span	
Stability Input Offset Output Offset Gain	 ±1µV/ºC ±40µV/ºC ±25ppm/ºC	 ±20µV/ºC ±40µV/ºC ±50ppm/ºC
Noise Input, 0.1 to 10Hz Output, 100kHz	 0.4µVrms 10mVp-p	 2µVrms 10mVp-p
Bandwidth, -3dB	10kHz	
Rise Time, 10 to 90% Span	35µs	
Setting Time, to 0.1%	250µs	
Output Range	±5V	
Output Resistance	50Ω	
Output Protection	Continuous Short to Ground	
Output Selection Time (to ±1mV of V_{out})	6µs at C_{load} = 0 to 2000pF	
Output Current Limit	±20mA max	
Output Enable Control Max Logic "0" Min Logic "1" Max Logic "1" Input Current, "0", "1"	 +0.8V +2.4V +36V 0.5µA	
Power Supply Voltage	+5VDC ±5%	
Power Supply Current	30mA	
Power Supply Sensitivity	±2µV/%RTI*	±200µV/%RTI*
Mechanical Dimensions	2.28" × 2.26" × 0.60" (58mm × 57mm × 15mm)	
Environmental Operating Temperature Storage Temperature Relative Humidity RFI Susceptibility	 -40ºC to +85ºC -40ºC to +85ºC 0 to 95% Noncondensing ±0.5% Span Error at 400MHz, 5W, 3ft	

*Includes nonlinearity, hysteresis and repeatability; RTI=Referenced to input; V_Z is the input voltage that results in 0V output.

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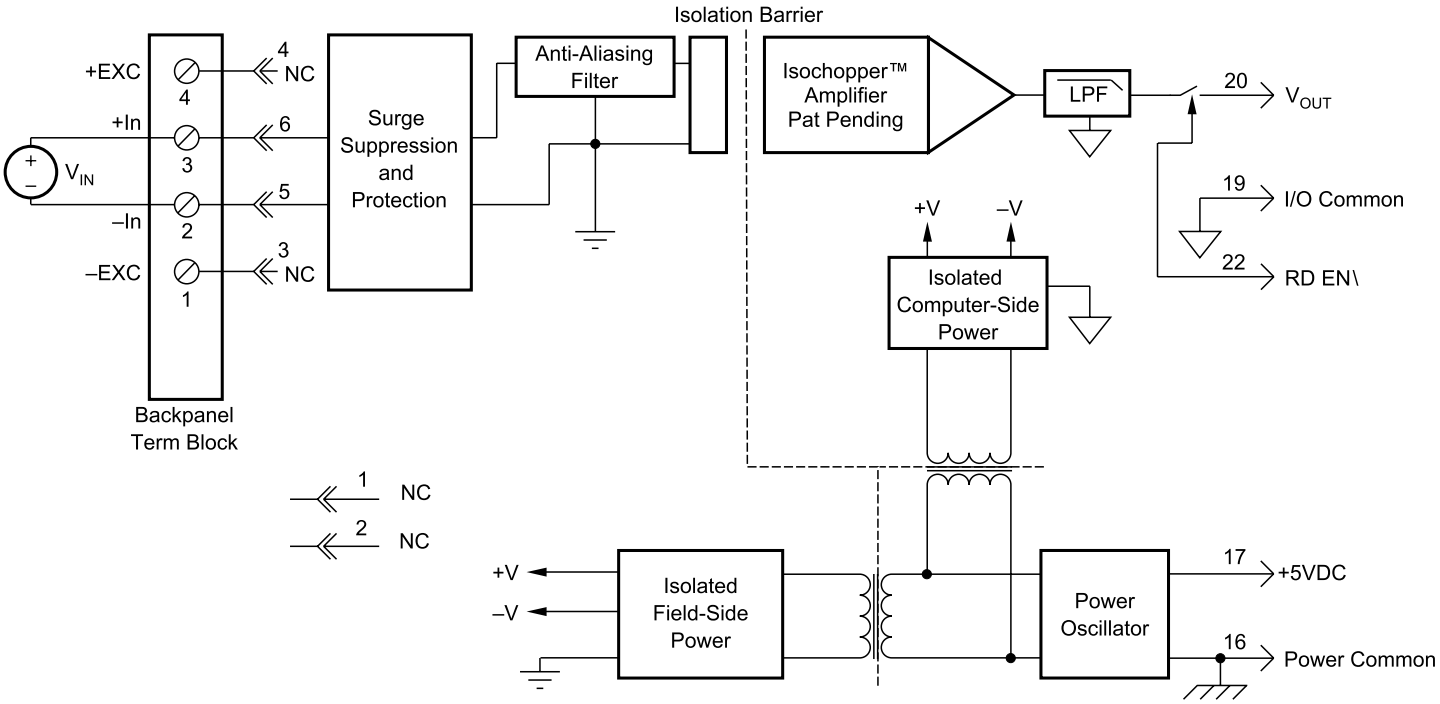
Block Diagram



Ordering Information

Model Number	Input Range	Output Range
DI-5B40-01	-10mV to +10mV	-5V to +5V
DI-5B40-02	-50mV to +50mV	-5V to +5V
DI-5B40-03	-100mV to +100mV	-5V to +5V
DI-5B40-1042*	-1V to +1V	-5V to +5V
DI-5B41-01	-1V to +1V	-5V to +5V
DI-5B41-02	-5V to +5V	-5V to +5V
DI-5B41-03	-10V to +10V	-5V to +5V
DI-5B41-07	-20V to +20V	-5V to +5V
DI-5B41-09	-40V to +40V	-5V to +5V
*Required for DI-500 High Voltage Option.		

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