

DI-5B30/31 Analog Voltage Input Modules, Narrow 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
- 160dB CMR
- 95dB NMR AT 60Hz, 90dB at 50Hz
- $\pm 0.05\%$ Accuracy
- $\pm 0.02\%$ Linearity
- $\pm 1\mu\text{V}/^\circ\text{C}$ Drift
- CSA Certified
- Mix and Match DI-5B Types

DESCRIPTION

Each DI-5B30 and DI-5B31 voltage input module provides a single channel of analog input which is filtered, isolated, amplified, 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 $\pm 50\text{V}$ 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.

Signal filtering is accomplished with a six-pole filter which provides 95dB of normal-mode-rejection at 60Hz and 90dB at 50Hz. Two poles of this filter are on the field side of the isolation barrier, and the other four are on the computer side.

After the initial field-side filtering, 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, $\pm 5\%$.

A special input circuit on the DI-5B30 and DI-5B31 modules provides protection against accidental connection of power-line voltages up to 240VAC.

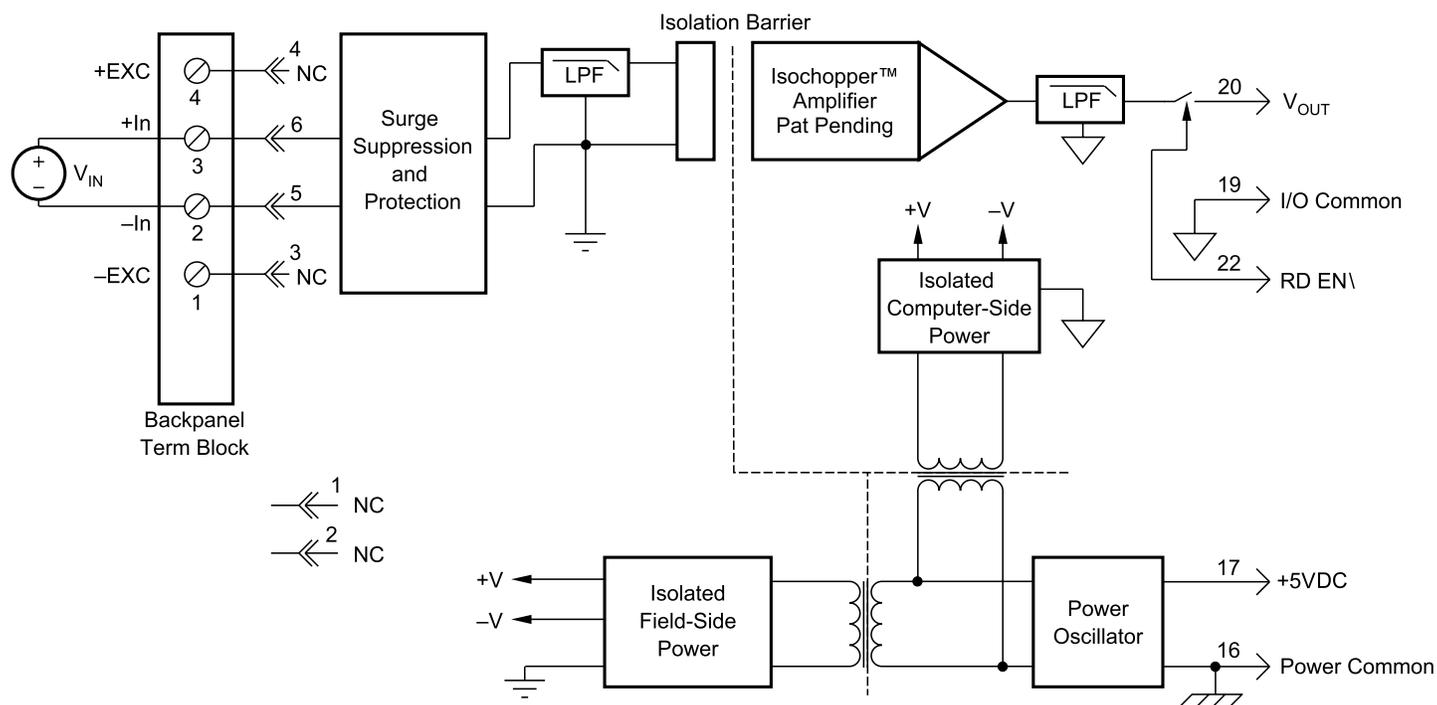
SPECIFICATIONS

Typical at $T_A = +25^\circ\text{C}$ and +5V Power

	DI-5B30	DI-5B31
Input Range	$\pm 10\text{mV}$ to $\pm 100\text{mV}$	$\pm 1\text{V}$ to $\pm 40\text{V}$
Input Bias Current	$\pm 0.5\text{nA}$	$\pm 0.05\text{nA}$
Input Resistance	Normal Power Off Overload	650k Ω (minimum) 650k Ω (minimum) 650k Ω (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)	160dB	
NMR	95dB at 60Hz, 90dB at 50Hz	
Accuracy*	$\pm 0.05\%$ Span $\pm 10\mu\text{V}$ RTI $\pm 0.05\%$ (V_Z)	$\pm 0.05\%$ Span $\pm 0.2\text{mV}$ RTI $\pm 0.05\%$ (V_Z)
Nonlinearity	$\pm 0.02\%$ Span	
Stability	Input Offset Output Offset Gain	$\pm 1\mu\text{V}/^\circ\text{C}$ $\pm 20\mu\text{V}/^\circ\text{C}$ $\pm 25\text{ppm}/^\circ\text{C}$
Noise	Input, 0.1 to 10Hz Output, 100kHz	0.2 μVrms 200 μVrms
Bandwidth, -3dB	4Hz	
Response Time, 90% Span	0.2s	
Output Range	$\pm 5\text{V}$	
Output Resistance	50 Ω	
Output Protection	Continuous Short to Ground	
Output Selection Time (to $\pm 1\text{mV}$ of V_{out})	6 μs at $C_{\text{load}} = 0$ to 2000pF	
Output Current Limit	$\pm 14\text{mA}$ max	
Output Enable Control	Max Logic "0" Min Logic "1" Max Logic "1" Input Current, "0", "1"	+0.8V +2.4V +36V 0.5 μA
Power Supply Voltage	+5VDC $\pm 5\%$	
Power Supply Current	30mA	
Power Supply Sensitivity	$\pm 2\mu\text{V}/\% \text{RTI}^{**}$	$\pm 200\mu\text{V}/\% \text{RTI}^{**}$
Mechanical Dimensions	2.28" \times 2.26" \times 0.60" (58mm \times 57mm \times 15mm)	
Environmental	Operating Temperature Storage Temperature Relative Humidity RFI Susceptibility	-40 $^\circ\text{C}$ to +85 $^\circ\text{C}$ -40 $^\circ\text{C}$ to +85 $^\circ\text{C}$ 0 to 95% Noncondensing $\pm 0.5\%$ 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.		
**RTI=Referenced to input.		

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Block Diagram



Ordering Information

Model Number	Input Range	Output Range
DI-5B30-01	-10mV to +10mV	-5V to +5V
DI-5B30-02	-50mV to +50mV	-5V to +5V
DI-5B30-03	-100mV to +100mV	-5V to +5V
DI-5B31-01	-1V to +1V	-5V to +5V
DI-5B31-02	-5V to +5V	-5V to +5V
DI-5B31-03	-10V to +10V	-5V to +5V
DI-5B31-07	-20V to +20V	-5V to +5V
DI-5B31-09	-40V to +40V	-5V to +5V



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