

# DI-5B36 Potentiometer Input Modules

## FEATURES

- Interfaces to Potentiometer up to 10,000 Ohms.
- High Level Voltage Outputs
- 1500 Volt Transformer Isolation
- ANSI/IEEE C37.90.1-1989 Transient Protection
- Input Protected to 240VAC Continuous
- 160dB CMR
- 95dB NMR at 60Hz, 90dB at 50Hz
- CSA Certified
- Mix and Match DI-5B Types

## DESCRIPTION

Each DI-5B36 Potentiometer input module provides a single channel of Potentiometer 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, which allows 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  $\pm 50V$  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.

Excitation for the potentiometer is provided from the module by two matched current sources. When using a three-wire potentiometer, this method allows cancellation of the effects of lead resistances. The excitation currents are very small (less than 1.0mA) which minimizes self-heating of the potentiometer.

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 in the output stage. 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-5B36 module provides protection against accidental connection of power-line voltages up to 240VAC.

## SPECIFICATIONS

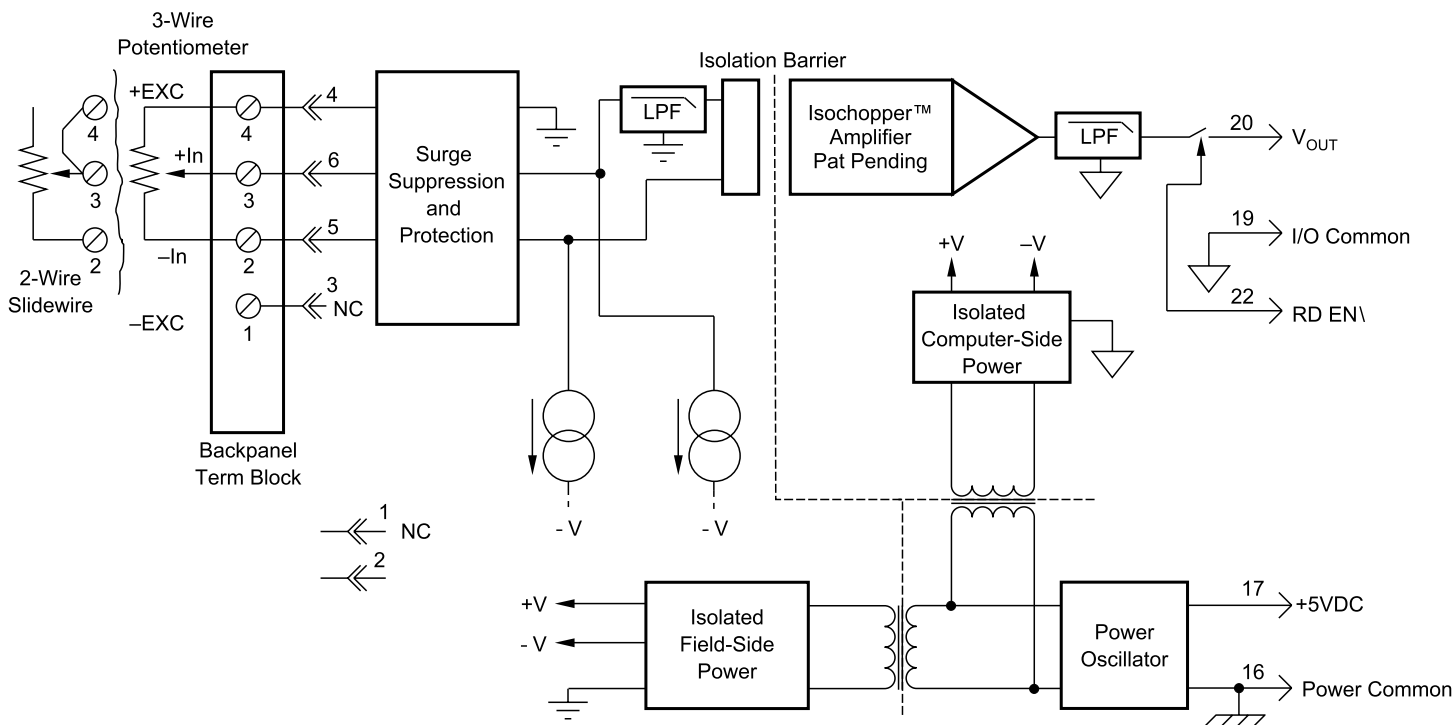
Typical at  $T_A = +25^\circ C$  and +5V Power

		<b>DI-5B36</b>
Input Range		0 to 10K $\Omega$
Input Resistance	Normal Power Off Overload	50M $\Omega$ 40K $\Omega$ 40K $\Omega$
Input Protection	Continuous Transient	240Vrms max ANSI/IEEE C37.90.1-1989
Sensor Excitation Current		0.25mA; 100 $\Omega$ , 500 $\Omega$ , 1K $\Omega$ sensor 0.10mA; 10K $\Omega$ sensor
Lead Resistance Effect		$\pm 0.01\Omega/\Omega$ ; 100 $\Omega$ , 500 $\Omega$ , 1K $\Omega$ sensor $\pm 0.02\Omega/\Omega$ ; 10K $\Omega$ sensor
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*		$\pm 0.08\%$ span
Stability	Input Offset  Output Offset Gain	$\pm 0.004\Omega/^\circ C$ ; 100 $\Omega$ , 500 $\Omega$ , 1K $\Omega$ sensor $\pm 0.010\Omega/^\circ C$ ; 10K $\Omega$ sensor $\pm 20\mu V/^\circ C$ $\pm 50$ ppm of reading/ $^\circ C$
Noise	Input, 0.1Hz to 10Hz Output, 100kHz	0.2 $\mu$ Vrms RTI** 200 $\mu$ Vrms RTO**
Bandwidth, -3dB		4Hz
Response Time, 90% Span		0.2s
Output Range		0 to +5V
Output Resistance		50 $\Omega$
Output Protection		Continuous Short to Ground
Output Selection Time (to $\pm 1mV$ of $V_{out}$ )		6 $\mu$ s at $C_{load} = 0$ to 2000pF
Output Current Limit		$\pm 14mA$ max
Output Enable Control	Max Logic "0" Min Logic "1" Max Logic "1" Input Current, "0,1"	+0.8V +2.4V +36V 0.5 $\mu$ A
Power Supply Voltage		+5VDC $\pm 5\%$
Power Supply Current		30mA
Power Supply Sensitivity		$\pm 20\mu V/\%$ 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 $^\circ C$ to +85 $^\circ C$ -40 $^\circ C$ to +85 $^\circ C$ 0 to 95% Noncondensing $\pm 0.5\%$ Span Error at 400MHz, 5W, 3ft

\*Includes nonlinearity, hysteresis and repeatability. \*\*RTI/O=Referenced to input/output.

# DI-5B36 Potentiometer Input Modules

## Block Diagram



## Ordering Information

Model Number	Input Range	Output Range
DI-5B36-01	0 to 100Ω	0V to +5V
DI-5B36-02	0 to 500Ω	0V to +5V
DI-5B36-03	0 to 1kΩ	0V to +5V
DI-5B36-04	0 to 10kΩ	0V to +5V



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