

# 8B36

## Potentiometer Input Modules

### Description

8B modules are an optimal solution for monitoring real-world process signals and providing high level signals to a data acquisition system. Each 8B36 input module isolates, filters and amplifies a single channel of potentiometer input and provides an analog voltage output.

Excitation for the potentiometer is provided by using two matched current sources. When using a 3-wire connection, this method allows equal currents to flow through the sensor leads, cancelling the effects of lead resistances. The excitation currents are small (0.25mA) which minimizes self-heating of the potentiometer.

Signal filtering is accomplished with a three-pole filter optimized for time and frequency response which provides 70dB of normal-mode-rejection at 60Hz. One pole of this filter is on the field side of the isolation barrier for anti-aliasing, and the other two are on the system side.

A special input circuit on the 8B36 module provides protection against accidental connection of power-line voltages up to 50VAC.

The modules are designed for installation in Class I, Division 2 hazardous locations and have a high level of immunity to environmental noise.

### ► Features

- Interfaces to Potentiometers up to 10,000Ω
- High Level Voltage Output
- 1500Vrms Transformer Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- Input Protected to 50VAC Continuous
- 120dB CMR
- 70dB NMR at 60Hz
- ±0.05% Accuracy
- ±0.02% Linearity
- Low Drift with Ambient Temperature
- CSA, FM and CE Certifications Pending
- Mix and Match Module Types on Backpanel

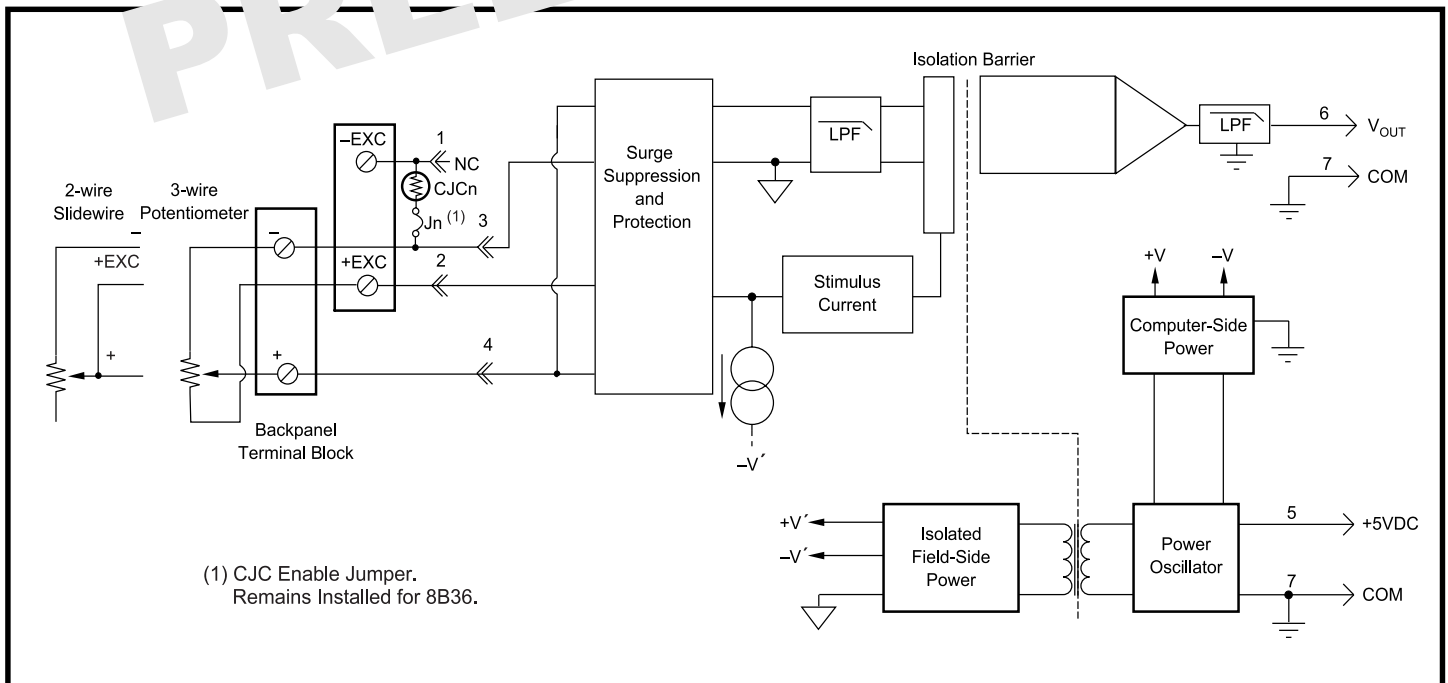


Figure 1: 8B36 Block Diagram

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

Module	8B36
Input Range	0 to 10k $\Omega$
Input Resistance	
Normal	50M $\Omega$
Power Off	450k $\Omega$
Overload	450k $\Omega$
Input Protection	
Continuous	50VAC
Transient	ANSI/IEEE C37.90.1
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	1500Vrms max
Transient, Input to Output	ANSI/IEEE C37.90.1
CMR (50 or 60Hz)	120dB
NMR	70dB at 60Hz
Accuracy <sup>(1)</sup>	$\pm 0.05\%$ Span
Nonlinearity	$\pm 0.02\%$ Span
Stability	
Output Offset	$\pm 20\text{ppm}/^\circ\text{C}$
Gain	$\pm 50\text{ppm}/^\circ\text{C}$
Noise	
Output, 100kHz	250 $\mu\text{Vrms}$
Bandwidth, -3dB	3Hz
Response Time, 90% Span	150ms
Output Range	0V to +5V
Output Protection	Continuous Short to Ground
Transient	ANSI/IEEE C37.90.1
Power Supply Voltage	+5VDC $\pm 5\%$
Power Supply Current	30mA
Power Supply Sensitivity	$\pm 25\text{ppm}/\%$
Mechanical Dimensions (h)(w)(d)	1.11" x 1.65" x 0.40" (28.1mm x 41.9mm x 10.2mm)
Environmental	
Operating Temp. Range	-40 $^\circ\text{C}$ to +85 $^\circ\text{C}$
Storage Temp. Range	-40 $^\circ\text{C}$ to +85 $^\circ\text{C}$
Relative Humidity	0 to 95% Noncondensing
Emissions EN61000-6-4	ISM, Group 1
Radiated, Conducted	Class A
Immunity EN61000-6-2	ISM, Group 1
RF	Performance A $\pm 0.5\%$ Span Error
ESD, EFT, Surge, Voltage Dips	Performance B

## NOTES:

(1) Includes nonlinearity, hysteresis and repeatability.

**Ordering Information**

Model	Input Range	Output Range
8B36-01	0 to 100 $\Omega$	0V to +5V
8B36-02	0 to 500 $\Omega$	0V to +5V
8B36-03	0 to 1k $\Omega$	0V to +5V
8B36-04	0 to 10k $\Omega$	0V to +5V

PRELIMINARY