

8B30/31



Voltage Input Modules, Narrow Bandwidth

Description

8B modules are an optimal solution for monitoring real-world process signals and providing high-level signals to a data acquisition system. Each 8B30 or 8B31 module isolates, filters, and amplifies a voltage input signal and provides an analog voltage output.

Signal filtering is accomplished with a 5-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 four are on the system side.

A special input circuit on the 8B30 and 8B31 modules provides protection against accidental connection of power-line voltages up to 240VAC. Clamp circuits on the I/O and power terminals protect against harmful transients.

Isolation is provided by optical coupling to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.

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

► Features

- Accepts Millivolt and Voltage Level Signals
- High-Level Voltage Outputs
- 1500Vrms Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- Input Protection to 240VAC Continuous
- 120dB CMR
- 70dB NMR at 60Hz
- ±0.05% Accuracy
- ±0.02% Linearity
- Low Drift with Ambient Temperature
- CE Compliant
- UL Listing Pending
- Mix and Match Module Types on Backpanel

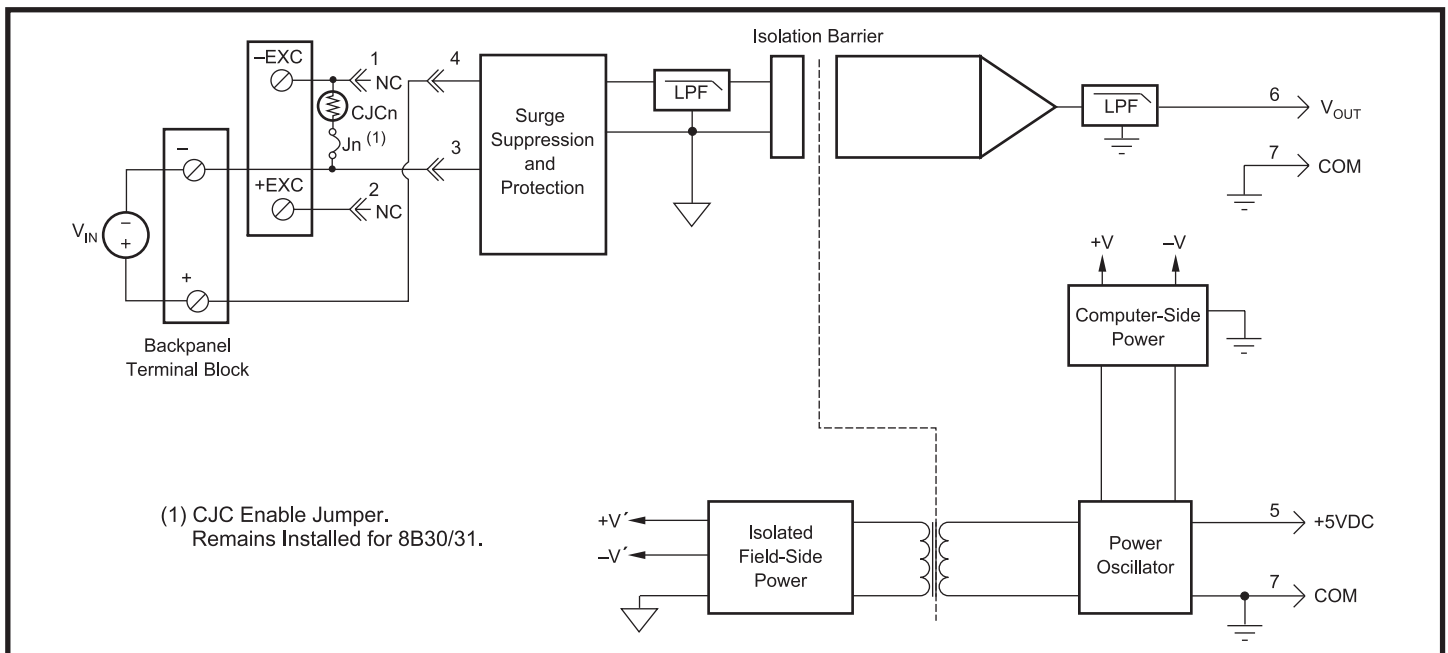


Figure 1: 8B30/31 Block Diagram

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

Module	8B30	8B31
Input Range	$\pm 10\text{mV}$ to $\pm 100\text{mV}$	$\pm 1\text{V}$ to $\pm 60\text{V}$
Input Bias Current	$\pm 0.5\text{nA}$	$\pm 0.05\text{nA}$
Input Resistance		
Normal	50M Ω	500k Ω (minimum)
Power Off	100k Ω	500k Ω (minimum)
Overload	100k Ω	500k Ω (minimum)
Input Protection		
Continuous ⁽¹⁾	240VAC	240VAC
Transient	ANSI/IEEE C37.90.1	*
CMV, Input to Output	1500Vrms max	*
Transient, Input to Output	ANSI/IEEE C37.90.1	*
CMR (50Hz or 60Hz)	120dB	*
NMR	85dB at 60Hz	*
Accuracy ⁽²⁾	$\pm 0.05\%$ Span	*
Linearity	$\pm 0.02\%$ Span	*
Stability		
Offset	$\pm 10\text{ppm}/^\circ\text{C}$	*
Gain	$\pm 50\text{ppm}/^\circ\text{C}$	$\pm 75\text{ppm}/^\circ\text{C}$
Noise		
Output, 100kHz	250 μVrms	*
Bandwidth, -3dB	3Hz	*
Response Time, 90% Span	160ms	*
Output Range	See Ordering Information	*
Output Protection	Continuous Short to Ground	*
Transient	ANSI/IEEE C37.90.1	*
Power Supply Voltage	+5VDC $\pm 5\%$	*
Power Supply Current	25mA	*
Power Supply Sensitivity	$\pm 75\text{ppm}/\%$	*
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°C to $+85^\circ\text{C}$	*
Storage Temp. Range	-40°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	Performance B	*

NOTES:

* Same specification as 8B30.

(1) 240VAC between +Input terminal and -Input, +EXC, or -EXC terminals.

120VAC between -Input and +EXC or -EXC terminals.

120VAC between +EXC and -EXC terminals.

(2) Includes linearity, hysteresis and repeatability.

Ordering Information

Model	Input Range	Output Range
8B30-01	-10mV to $+10\text{mV}$	-5V to $+5\text{V}$
8B30-02	-50mV to $+50\text{mV}$	-5V to $+5\text{V}$
8B30-03	-100mV to $+100\text{mV}$	-5V to $+5\text{V}$
8B31-01	-1V to $+1\text{V}$	-5V to $+5\text{V}$
8B31-02	-5V to $+5\text{V}$	-5V to $+5\text{V}$
8B31-03	-10V to $+10\text{V}$	-5V to $+5\text{V}$
8B31-04	-1V to $+1\text{V}$	0V to $+5\text{V}$
8B31-05	-5V to $+5\text{V}$	0V to $+5\text{V}$
8B31-06	-10V to $+10\text{V}$	0V to $+5\text{V}$
8B31-07	-20V to $+20\text{V}$	-5V to $+5\text{V}$
8B31-08	-20V to $+20\text{V}$	0V to $+5\text{V}$
8B31-09	-40V to $+40\text{V}$	-5V to $+5\text{V}$
8B31-10	-40V to $+40\text{V}$	0V to $+5\text{V}$
8B31-12	-60V to $+60\text{V}$	-5V to $+5\text{V}$
8B31-13	-60V to $+60\text{V}$	0V to $+5\text{V}$