

# 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 (Figure 1).

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 transformer coupling to suppress transmission of common mode spikes or surges. The module is powered from +5VDC,  $\pm 5\%$ .

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
- $\pm 0.05\%$  Accuracy
- $\pm 0.02\%$  Linearity
- Low Drift with Ambient Temperature
- C-UL-US Listed
- CE Compliant
- ATEX Compliance Pending
- Mix and Match Module Types on Backpanel

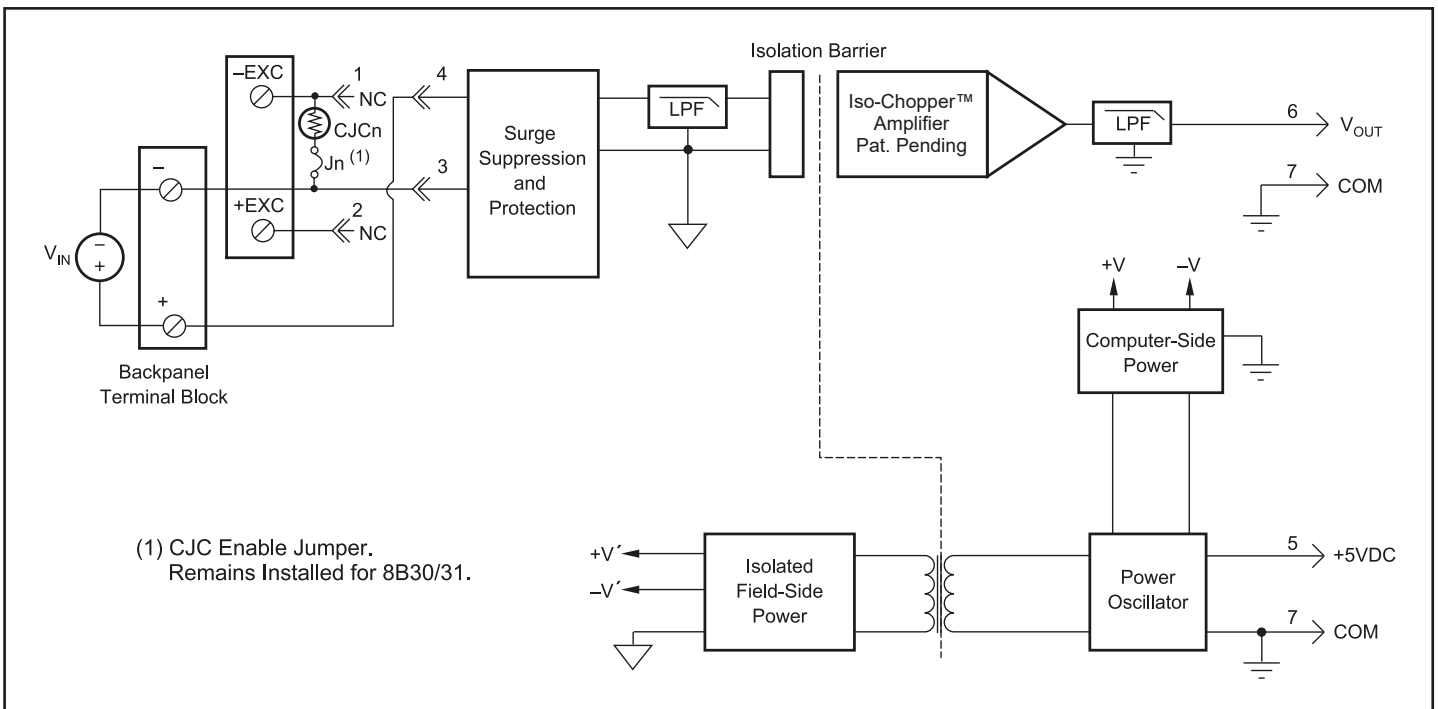


Figure 1: 8B30/31 Block Diagram

## Specifications

Typical\* at T<sub>A</sub> = +25°C and +5VDC power

Module	8B30	8B31
Input Range	±10mV to ±100mV	±1V to ±60V
Input Bias Current	±0.5nA	±0.05nA
Input Resistance		
Normal	50MΩ	500kΩ (minimum)
Power Off	100kΩ	500kΩ (minimum)
Overload	100kΩ	500kΩ (minimum)
Input Protection		
Continuous <sup>(1)</sup>	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	70dB at 60Hz	*
Accuracy <sup>(2)</sup>	±0.05% Span	*
Linearity	±0.02% Span	*
Stability		
Offset	±10ppm/°C	*
Gain	±50ppm/°C	±75ppm/°C
Noise		
Output, 100kHz	250μVrms	*
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 ±5%	*
Power Supply Current	25mA	*
Power Supply Sensitivity	±75ppm/%	*
Mechanical Dimensions	1.11" x 1.65" x 0.40"	*
(h)(w)(d)	(28.1mm x 41.9mm x 10.2mm)	
Environmental		
Operating Temp. Range	-40°C to +85°C	*
Storage Temp. Range	-40°C to +85°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 ±0.5% Span Error	*
ESD,EFT	Performance B	*

### NOTES:

\*Contact factory or your local Dataforth sales office for maximum values.

\*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 +10mV	-5V to +5V
8B30-02	-50mV to +50mV	-5V to +5V
8B30-03	-100mV to +100mV	-5V to +5V
8B30-04	-10mV to +10mV	0V to +5V
8B30-05	-50mV to +50mV	0V to +5V
8B30-06	-100mV to +100mV	0V to +5V
8B31-01	-1V to +1V	-5V to +5V
8B31-02	-5V to +5V	-5V to +5V
8B31-03	-10V to +10V	-5V to +5V
8B31-04	-1V to +1V	0V to +5V
8B31-05	-5V to +5V	0V to +5V
8B31-06	-10V to +10V	0V to +5V
8B31-07	-20V to +20V	-5V to +5V
8B31-08	-20V to +20V	0V to +5V
8B31-09	-40V to +40V	-5V to +5V
8B31-10	-40V to +40V	0V to +5V
8B31-12	-60V to +60V	-5V to +5V
8B31-13	-60V to +60V	0V to +5V

### Installation Notes:

- 1.) This Equipment is Suitable for Use in Class I, Division 2, Groups A, B, C, D, or Non-Hazardous Locations Only.
- 2.) WARNING - Explosion Hazard - Substitution of Any Components May Impair Suitability for Class I, Division 2.
- 3.) WARNING - Explosion Hazard - Do Not Disconnect Equipment Unless Power Has Been Switched Off or The Area is Known to be Non-Hazardous.