



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, ±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
- C-UL-US Listed
- CE Compliant
- ATEX Compliance Pending
- Mix and Match Module Types on Backpanel

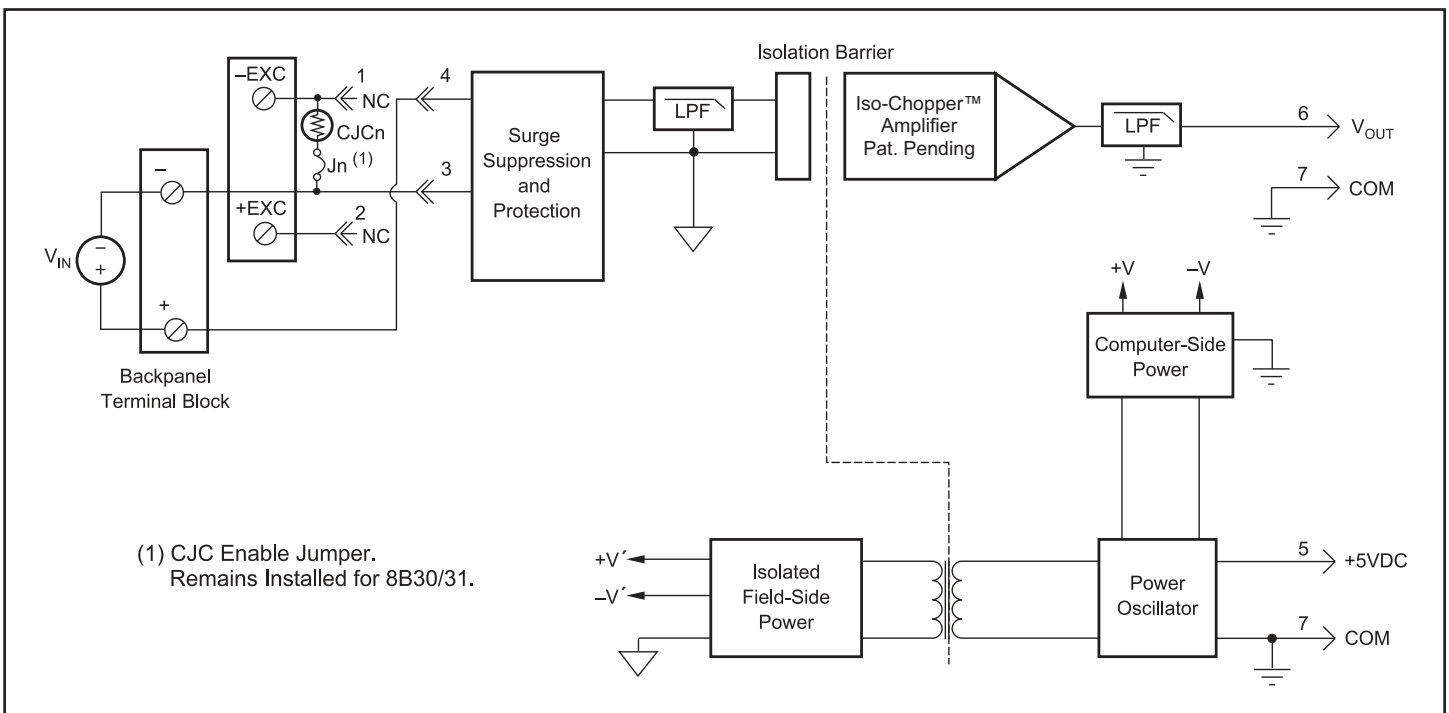


Figure 1: 8B30/31 Block Diagram

Specifications Typical* at $T_A = +25^\circ\text{C}$ and +5VDC 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 | 70dB 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:

*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.