

8B50/51

Voltage Input Modules, 20kHz 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 8B50 or 8B51 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 100dB per decade of normal-mode rejection above 20kHz. 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 8B50 and 8B51 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
- 100dB CMR
- 20kHz Signal Bandwidth
- $\pm 0.05\%$ 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

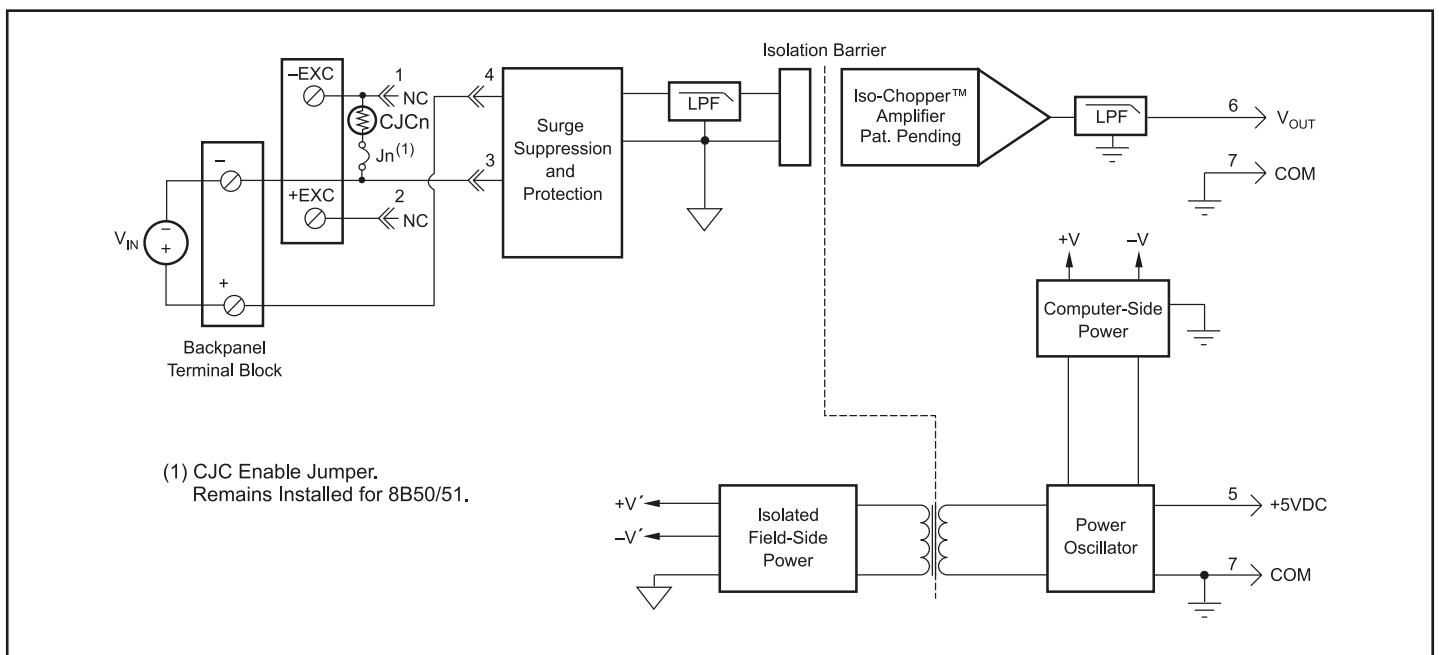


Figure 1: 8B50/51 Block Diagram

Specifications

Typical* at T_A = +25°C and +5VDC power

Module	8B50	8B51
Input Range	±20mV 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 ⁽¹⁾	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)	100dB	*
NMR (–3dB at 20kHz)	100dB per Decade above 20kHz	*
Accuracy ⁽²⁾	±0.05% Span	*
Linearity	±0.02% Span	*
Stability		
Offset	±10ppm/°C	*
Gain	±50ppm/°C	±75ppm/°C
Noise		
Output, 100kHz	500μVrms	*
Bandwidth, –3dB	20kHz (15kHz, 50-01)	*
Rise Time, 10 to 90% Span	25μs	*
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 (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°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 8B50.

(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
8B50-01	–20mV to +20mV	–5V to +5V
8B50-02	–50mV to +50mV	–5V to +5V
8B50-03	–100mV to +100mV	–5V to +5V
8B50-04	–20mV to +20mV	0 to +5V
8B50-05	–50mV to +50mV	0 to +5V
8B50-06	–100mV to +100mV	0 to +5V
8B51-01	–1V to +1V	–5V to +5V
8B51-02	–5V to +5V	–5V to +5V
8B51-03	–10V to +10V	–5V to +5V
8B51-04	–1V to +1V	0V to +5V
8B51-05	–5V to +5V	0V to +5V
8B51-06	–10V to +10V	0V to +5V
8B51-07	–20V to +20V	–5V to +5V
8B51-08	–20V to +20V	0V to +5V
8B51-09	–40V to +40V	–5V to +5V
8B51-10	–40V to +40V	0V to +5V
8B51-12	–60V to +60V	–5V to +5V
8B51-13	–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.