

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.

Signal filtering is accomplished with a five-pole filter optimized for time and frequency response which provides 100dB per decade of 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 optical 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 Protected to 240VAC Continuous
- 100dB CMR
- 20kHz Signal Bandwidth
- $\pm 0.10\%$ Accuracy
- $\pm 0.05\%$ Linearity
- Low Drift with Ambient Temperature
- UL Listing Pending
- Mix and Match Module Types on Backpanel

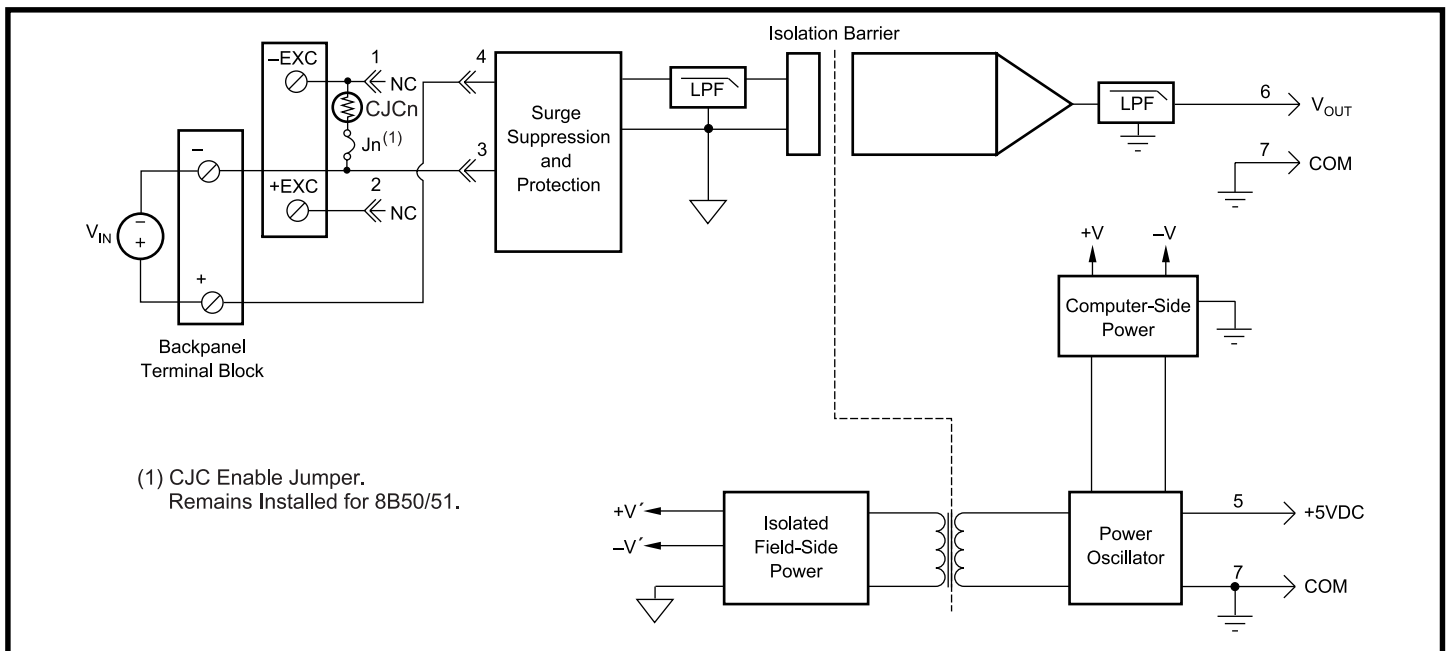


Figure 1: 8B50/51 Block Diagram

Specifications

Typical at T_A = +25°C and +5V power

Module	8B50	8B51
Input Range	±20mV to ±100mV	±1V to ±60V
Input Bias Current	±0.5nA	±0.05nA
Input Resistance		
Normal	50MΩ	180kΩ
Power Off	>130kΩ	180kΩ
Overload	>130kΩ	180kΩ
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⁾	±0.10% Span	*
Nonlinearity	±0.05% Span	*
Stability		
Offset	±10ppm/°C	*
Gain	±50ppm/°C	±75ppm/°C
Noise		
Output, 100kHz	5mVrms	*
Bandwidth, –3dB	20kHz	*
Rise Time, 10 to 90% Span	15μs	*
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	225mA	*
Power Supply Sensitivity	±50ppm/%	*
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,Surge,Voltage Dips	Performance B	*

NOTES:

* Same specification as 8B50.

(1) 240VAC between + and –/+EXC/–EXC terminals. 120VAC between – and +EXC/–EXC terminals and between +EXC and –EXC terminals.

(2) Includes nonlinearity, 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
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