

8B40/41

Voltage Input Modules, 1kHz 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 8B40 or 8B41 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 normal-mode-rejection above 1kHz. 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 8B40 and 8B41 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 Transformer Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- Input Protected up to 240VAC Continuous
- 100dB CMR
- 1kHz Signal Bandwidth
- ±0.05% Accuracy
- ±0.02% Linearity
- Low Drift with Ambient Temperature
- UL and CE Certifications Pending
- Mix and Match Module Types on Backpanel

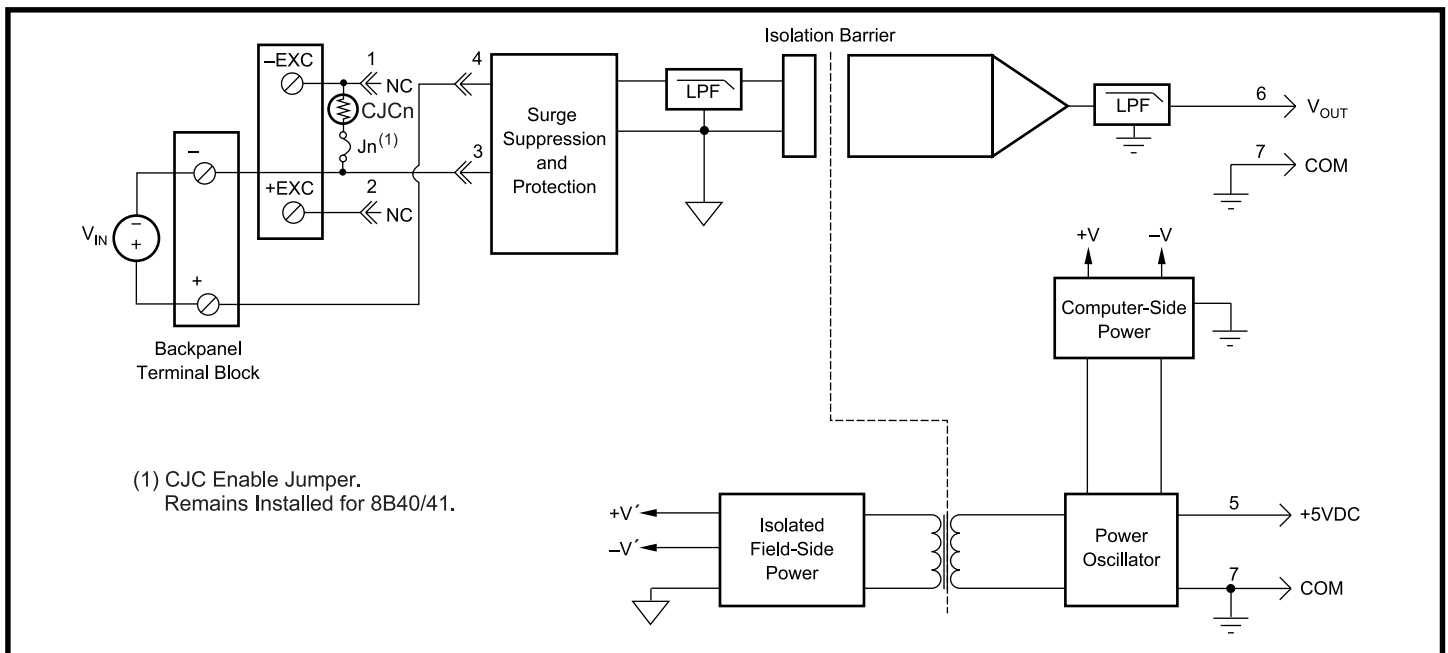


Figure 1: 8B40/41 Block Diagram

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

Module	8B40	8B41
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	>250k Ω (50M Ω , 41-01,-04)
Power Off	>200k Ω	>250k Ω
Overload	>200k Ω	>250k Ω
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 1kHz)	100dB per decade above 1kHz	*
Accuracy ⁽²⁾	$\pm 0.05\%$ Span	*
Nonlinearity	$\pm 0.02\%$ 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	500 μVrms	*
Bandwidth, -3dB	1kHz	*
Response Time, 90% Span	350 μs	*
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	30mA	*
Power Supply Sensitivity	$\pm 50\text{ppm}/\%$	*
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,Surge,Voltage Dips	Performance B	*

NOTES:

* Same specification as 8B40.

(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
8B40-01	-10mV to $+10\text{mV}$	-5V to +5V
8B40-02	-50mV to $+50\text{mV}$	-5V to +5V
8B40-03	-100mV to $+100\text{mV}$	-5V to +5V
8B41-01	-1V to $+1\text{V}$	-5V to +5V
8B41-02	-5V to $+5\text{V}$	-5V to +5V
8B41-03	-10V to $+10\text{V}$	-5V to +5V
8B41-04	-1V to $+1\text{V}$	0V to +5V
8B41-05	-5V to $+5\text{V}$	0V to +5V
8B41-06	-10V to $+10\text{V}$	0V to +5V
8B41-07	-20V to $+20\text{V}$	-5V to +5V
8B41-08	-20V to $+20\text{V}$	0V to +5V
8B41-09	-40V to $+40\text{V}$	-5V to +5V
8B41-10	-40V to $+40\text{V}$	0V to +5V
8B41-12	-60V to $+60\text{V}$	-5V to +5V
8B41-13	-60V to $+60\text{V}$	0V to +5V