

8B43

DC LVDT Input Modules

Description

8B modules are an optimal solution for monitoring real-world process signals and providing high-level signals to a data acquisition system. Each 8B43 module isolates, filters, and amplifies a voltage input signal and provides an analog voltage output.

The 8B43 can interface to transducers that will operate on a 10V excitation voltage and up to 30mA of excitation current.

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 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 8B43 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

- Interfaces to DC Linear Voltage Displacement Transducers
- High-Level Voltage Outputs
- 1500Vrms Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- Input Protection to 240VAC Continuous
- 100dB CMR
- 1kHz Signal Bandwidth
- ±0.05% Accuracy
- ±0.02% Linearity
- Low Drift with Ambient Temperature
- CE Compliant
- C-UL-US Listed
- ATEX Compliance Pending
- Mix and Match Module Types on Backpanel

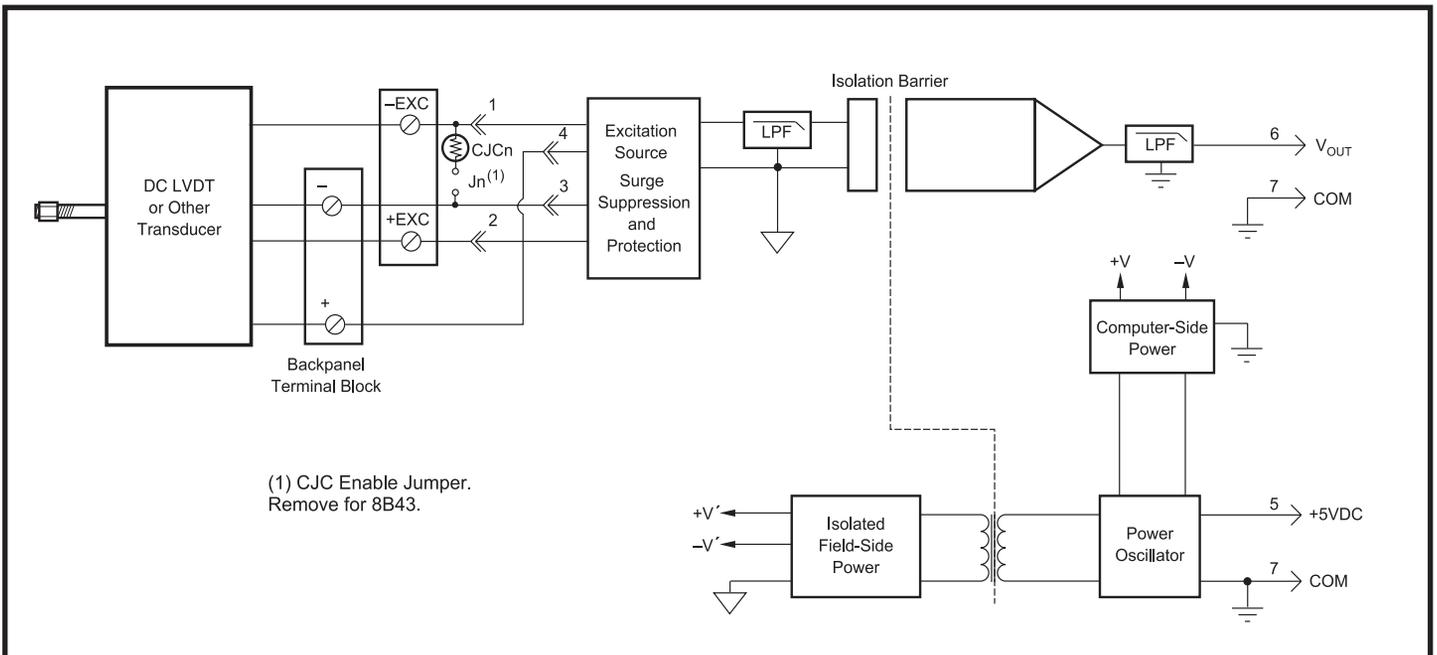


Figure 1: 8B43 Block Diagram

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

Module	8B43
Input Range	$\pm 1\text{V to } \pm 5\text{V}$
Input Bias Current	$\pm 0.05\text{nA}$
Input Resistance	
Normal	$2\text{M}\Omega$ (minimum)
Power Off	$2\text{M}\Omega$ (minimum)
Overload	$2\text{M}\Omega$ (minimum)
Input Protection	
Continuous ⁽¹⁾	240VAC
Transient	ANSI/IEEE C37.90.1
Excitation	
Voltage	$+10\text{V } \pm 5\text{mV}$
Current	5mA min, 30mA max
Load Regulation	15ppm/mA
Stability	50ppm/ $^\circ\text{C}$
Protection	120VAC
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
Linearity	$\pm 0.02\%$ Span
Stability	
Offset	$\pm 25\text{ppm}/^\circ\text{C}$
Gain	$\pm 100\text{ppm}/^\circ\text{C}$
Noise	
Output, 100kHz	500 μVrms
Bandwidth, -3dB	1kHz
Response Time, 90% Span	550 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	160mA Full Exc. Load
Power Supply Sensitivity	$\pm 100\text{ppm}/\%$
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	$-40^\circ\text{C to } +85^\circ\text{C}$
Storage Temp. Range	$-40^\circ\text{C to } +85^\circ\text{C}$
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:

- (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
8B43-01	-1V to +1V	-5V to +5V
8B43-02	-2V to +2V	-5V to +5V
8B43-03	-3V to +3V	-5V to +5V
8B43-04	-4V to +4V	-5V to +5V
8B43-05	-5V to +5V	-5V to +5V
8B43-11	-1V to +1V	0V to +5V
8B43-12	-2V to +2V	0V to +5V
8B43-13	-3V to +3V	0V to +5V
8B43-14	-4V to +4V	0V to +5V
8B43-15	-5V to +5V	0V to +5V