

8B35

Linearized 4-Wire RTD 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 8B35 input module isolates, filters, amplifies and linearizes a single channel of temperature input from an RTD and provides an analog voltage output.

RTD excitation is provided from the module using a precision current source. Excitation current does not flow in the input signal leads, which allows RTD measurements to be made independent of lead resistance. The excitation currents are small (0.25mA) which minimizes self-heating of the RTD.

Signal filtering is accomplished with a three-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 two are on the system side.

A special input circuit on the 8B35 module 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.

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 100Ω Platinum RTDs
- Linearizes RTD Signal
- High Level Voltage Outputs
- 1500Vrms Transformer Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- Input Protected to 240VAC Continuous
- 120dB CMR
- 70dB NMR at 60Hz
- Low Drift with Ambient Temperature
- UL and CE Certifications Pending
- Mix and Match Module Types on Backpanel

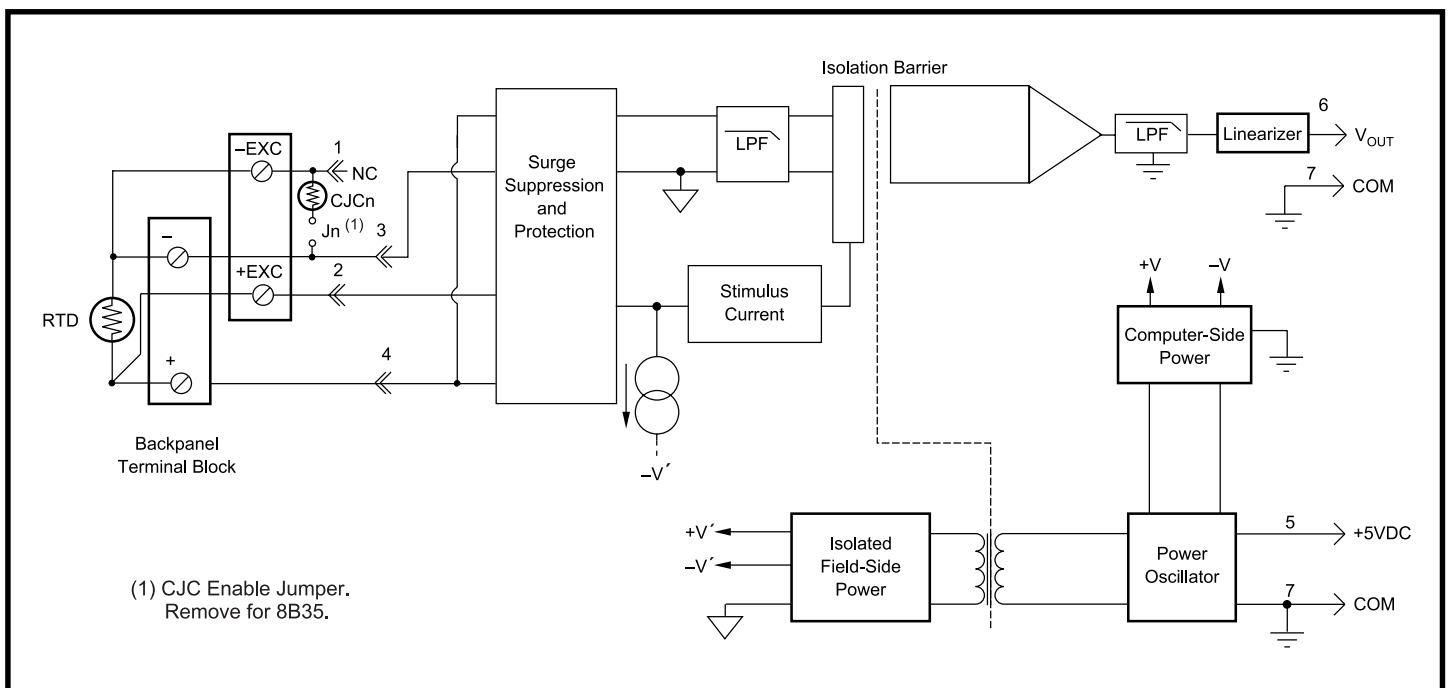


Figure 1: 8B35 Block Diagram

Specifications

Typical at T_A = +25°C and +5V power

Module	8B35
Input Range Limits	–200°C to +850°C (100Ω Pt)
Input Resistance	
Normal	50MΩ
Power Off	200kΩ
Overload	200kΩ
Input Protection	
Continuous ⁽¹⁾	240VAC
Transient	ANSI/IEEE C37.90.1
Sensor Excitation Current	0.25mA
Lead Resistance Effect	±0.001°C/Ω ⁽²⁾
CMV, Input to Output	1500Vrms max
Transient, Input to Output	ANSI/IEEE C37.90.1
CMR (50 or 60Hz)	120dB
NMR	70dB at 60Hz
Accuracy	See Ordering Information
Stability	
Output Offset	±20ppm/°C
Gain	±50ppm/°C
Noise	
Output, 100kHz	250μVrms
Bandwidth, –3dB	3Hz
Response Time, 90% Span	150ms
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	30mA
Power Supply Sensitivity	±25ppm/%
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:

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

(2) "Ω" refers to the resistance in one lead.

(3) Includes conformity, hysteresis and repeatability.

Ordering Information

Model	Input Range	Output Range	Accuracy ⁽³⁾
100Ω Pt **			
8B35-01	–100°C to +100°C (–148°F to +212°F)	0V to +5V	±0.20°C
8B35-02	0°C to +100°C (+32°F to +212°F)	0V to +5V	±0.15°C
8B35-03	0°C to +200°C (+32°F to +392°F)	0V to +5V	±0.20°C
8B35-04	0°C to +600°C (+32°F to +1112°F)	0V to +5V	±0.45°C

**RTD Standards

Type	Alpha Coefficient	DIN	JIS
100Ω Pt	0.00385	DIN 43760	JIS C 1604-1989