

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 (Figure 1).

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 independently of lead resistance. The excitation currents are small (0.25mA) which minimizes self-heating of the RTD.

Signal filtering is accomplished with a 3-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
- True 4-Wire Input
- Linearizes RTD Signal
- High-Level Voltage Outputs
- 1500Vrms Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- Input Protection to 240VAC Continuous
- 120dB CMR
- 70dB NMR at 60Hz
- Low Drift with Ambient Temperature
- · C-UL-US Listed
- CE Compliant
- ATEX Compliance Pending
- · Mix and Match Module Types on Backpanel

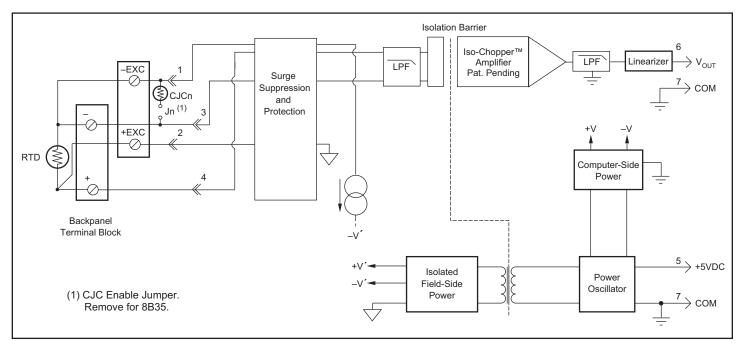


Figure 1: 8B35 Blok Diagram



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

Spooting Typical at IA	120 O dila 10100 power
Module	8B35
Input Range Limits Input Resistance Normal Power Off Overload Input Protection Continuous ⁽¹⁾ Transient	-200°C to +850°C (100Ω Pt) 50MΩ 200kΩ 200kΩ 240VAC ANSI/IEEE C37.90.1
Sensor Excitation Current Lead Resistance Effect CMV, Input to Output Transient, Input to Output CMR (50 or 60Hz) NMR	0.25mA $\pm 0.005^{\circ} \text{C}/\Omega^{(2)}$ 1500Vrms max ANSI/IEEE C37.90.1 120dB 70dB at 60Hz
Accuracy Stability Offset Gain Noise Output, 100kHz Bandwidth, –3dB Response Time, 90% Span	See Ordering Information ±20ppm/°C ±50ppm/°C 200µVrms 3Hz 150ms
Output Range Output Protection Transient Open Input Response +EXC, -EXC lead -IN lead +IN lead	See Ordering Information Continuous Short to Ground ANSI/IEEE C37.90.1 Downscale, 1s Downscale, 40s Upscale, 40s
Power Supply Voltage Power Supply Current Power Supply Sensitivity	+5VDC ±5% 25mA ±75ppm/%
Mechanical Dimensions (h)(w)(d)	1.11" x 1.65" x 0.40" (28.1mm x 41.9mm x 10.2mm)
Environmental Operating Temperature Range Storage Temperature Range Relative Humidity Emissions EN61000-6-4 Radiated, Conducted Immunity EN61000-6-2 RF ESD, EFT	-40°C to +85°C -40°C to +85°C 0 to 95% Noncondensing ISM, Group 1 Class A ISM, Group 1 Performance A ±0.5% Span Error Performance B

NOTES:

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	±0.10°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

Туре	Alpha Coefficient	DIN	JIS	IEC
100Ω Pt	0.00385	DIN 43760	JIS C 1604-1989	IEC 751

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.

^{*}Contact factory or your local Dataforth sales office for maximum values.

^{(1) 240}VAC between +Input terminal and -Input, +EXC, or -EXC terminals.

¹²⁰VAC between -Input and +EXC or -EXC terminals. 120VAC between +EXC and -EXC terminals.

^{(2) &}quot; Ω " refers to the resistance in one lead.

⁽³⁾ Includes conformity, hysteresis and repeatability.