



4120

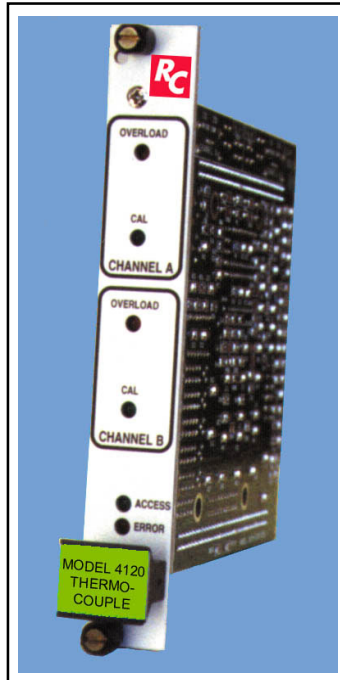
Automated Linearized Thermocouple Conditioner

Description

The Model RC 4120 Linearized Thermocouple Signal Conditioner is a dual-channel module that provides signal amplification, non-linearity correction, cold-junction compensation, and a programmable calibration voltage source. The RC 4120 converts the millivolt output of a thermocouple to a 0 to 10V signal that is linearly proportional to temperature. With the ability to configure each channel individually for use with any of eight thermocouple types and twelve ranges, the RC 4120 is ideal for applications that require versatility. A cold-junction compensation circuit corrects for voltage errors created at the thermocouple connection terminals, while a calibration voltage generator sets and verifies the system gain and offset.

High frequency noise is significantly reduced using a 4 pole low pass filter with programmable cutoffs at 1, 10, or 100 Hz. A bypass mode in this filter allows for utilization of the full 50 kHz bandwidth of the amplifier if desired.

To simplify the setup of a large number of channels, the RC 4120 features Zero and Calibrate functions that can be controlled locally from the front panel or remotely via the RS-232 serial link. The Zero function provides the ability to determine the baseline noise. The Calibrate function applies a simulated reference temperature (100° increments within the selected thermocouple temperature range) to the input of the selected channel to allow a quick check of amplifier gain accuracy. These two features allow quick troubleshooting of large channel count systems.



4120 Thermocouple

Features

- Accepts Thermocouples: B, E, J, K, N, R, S, T
- Cold Junction Compensation: -50°C to 150°C
- Selectable Low Pass Filtering
- Real Time Temperature Linearization
- Programmable On-board Cal Voltage Source
- Programmable Output Voltage Overload Detector

Specifications

Thermocouple Input

Type B	500-1750°C
Type E	0 to 1000°C
Type J	0 to 750°C
	0 to 500°C
	-100 to 300°C
Type K	0 to 1000°C
	0 to 500°C
Type N	-250-1250°C
Type R	500-1750°C
Type S	500-1750°C
Type T	-100 to 400°C
	0 to 200°C
Accuracy	±0.1%
Linearity	±0.025%
Noise RTO	0.5 mV rms
Input Impedance	1 Meg
Max Input Voltage	50V rms

Output

Voltage Range	±10V @ 15 mA
Stability	±100 ppm/°C
Short Circuit Protection	Yes
Overload Indicator Settings	0.1V to 10V in 0.1V increments

Low Pass Filter

Type	Fixed 4 pole Butterworth
Frequencies	1 Hz, 10 Hz, 100 Hz

Cold Junction Compensation

Range	-50 to 150°C
Accuracy	±1%

Calibration Source

User Selectable	-100°C, 0°C, 100°C, 200°C, 300°C, 400°C, 500°C, 600°C, 700°C, 800°C
Accuracy	0.1%

Environmental

Power Requirements	+15V, 40 mA (plus 15V excitation current)
	-15V, 20 mA
	+5V, 285 mA
Temperature Range	0°C to 50°C

Signal Conditioning 4000 Series