



FC-T1, THERMOCOUPLE/mV INPUT ISOLATED SIGNAL CONDITIONER



Overview

Description. The FC-T1 is a DIN rail or side mount, thermocouple/mV input signal conditioner with 1500VAC isolation between input and output.

The field configurable input allows a wide ranging capability for J, K, E, R, S, T, B, N and C type thermocouple, 0-156.25mV and ± 156.25 mV.

The FC-T1 has built-in self-calibration, but also has OFFSET (zero) and SPAN (full scale) potentiometers for adjustment of the output signal.

The FC-T1 is also equipped with cold junction compensation (CJC) circuitry to provide an internal ice-point reference.

The temperature calculation and linearization are based on data provided by the National Institute of Standards and Technology (NIST).

ALARM and RUN LED. This LED is bicolor (red and green). A red LED either indicates power up, a fault with internal calibration or a thermocouple burnout condition, while a green LED indicates normal operation.

Burnout Function. The output current can be selected to provide either upscale (20mA) or downscale (4mA) detection whenever thermocouple burnout occurs.

Specifications				
Input Ranges	T/C	°C	°F	Resolution ¹
	J	-190 to 760	-210 to 1400	0.23°C
	K	-150 to 1372	-238 to 2502	0.37°C
	E	-210 to 1000	-345 to 1832	0.295°C
	R	65 to 1768	149 to 3214	0.42°C
	S	65 to 1768	149 to 3214	0.42°C
	T	-230 to 400	-382 to 752	0.15°C
	B	529 to 1820	984 to 3308	0.315°C
	N	-70 to 1300	-94 to 2372	0.33°C
	C	65 to 2320	149 to 4208	0.55°C
	0 to 156.25mV			0.038mV
	-156.25mV to +156.25mV			0.078mV
Output Range		4 to 20mA		
External Power Supply		15mA, 22 to 26VDC		
Input Impedance		>5M Ω		
Absolute Maximum Rating		Fault protected input ± 50 V		
Maximum Inaccuracy		$\pm 3^\circ\text{C}$, Temperature Input $\pm 0.06\%$, Voltage Input		
Linearity Error		0.1%		
Over Temperature Error		$0.1 \times 10^{-5}\%$ (10 ppm)		
Insulation Resistance		$\geq 100\text{M}$ with 500VDC (Input to output power)		
Isolation		1500VAC @ 1 Sec. (Input to output commons)		
Sample Duration Time		120mS Voltage Input 250mS Thermocouple Input		
Common Mode Rejection		-100dB @ DC, -90dB @ 50/60Hz		
Input Filter (FIR)		-3dB @ 15Hz, -100dB@50Hz, -100dB@60Hz		
Broken Thermocouple		Up/Down Scale Red/Green LED		
Over Range		Up Scale		
Under Range		Down Scale		
Burnout Time		≤ 3 Seconds		
Cold Junction Compensation		Automatic		
Warm-up Time		30 min. typical $\pm 1^\circ\text{C}$ repeatability		
Operating Temperature		0 to 60°C (32 to 140°F)		
Storage Temperature		-20 to 70°C (-4 to 158°F)		
Relative Humidity		5 to 90% (non-condensing)		
Environmental Air		No corrosive gases permitted		
Vibration		ML STD 810C 514.2		
Shock		ML STD 810C 516.2		
Noise Immunity		NEMA ICS3-304		

Note:

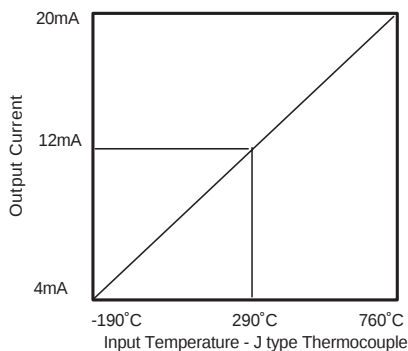
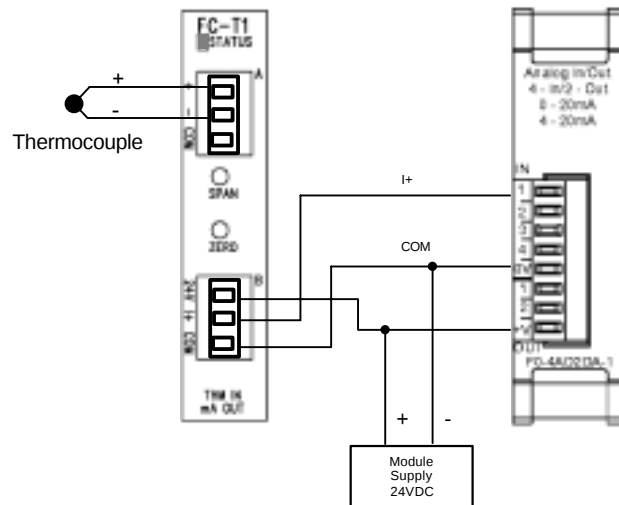
¹ Based on 12-bit (4095) analog input module

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Application

The FC-T1, field configurable thermocouple/mV signal conditioner is useful in eliminating ground loops and interfacing to our PLC analog input modules. If your requirements are only for one channel of temperature, you can add the signal conditioner to your 4-20mA input module. Or if your requirements are for a single millivolt signal source, you have the option of adding this input to your analog module.

Typical User Wiring



SIGNAL CONDITIONER DIMENSIONS

These dimensions are typical for all of the signal conditioners. All dimensions are in inches (millimeters).

