

TT273 Field Rangeable RTD Temperature Transmitter



TT273 RTD
Temperature Transmitter

Overview

Model TT273 is a 2-wire temperature transmitter for 2 or 3-lead 100 Ω platinum RTDs. The transmitter converts the RTD temperature into a linearized 4 to 20 mA DC current signal. Because this current signal is immune to leadwire and electrical noise, the TT273 lets you obtain accurate temperature readings from RTDs thousands of feet away. An ordinary twisted pair of wires carries both the temperature signal and power for the transmitter's electronics.

An LED conveniently indicates the status of the control loop. The brightness is directly proportional to the loop current. A very bright LED indicates an open RTD; a dark LED signals a shorted RTD or loss of current loop power.

- 4 to 20 mA current signal
- Fits standard 35 mm DIN rail
- Field-calibrate to your temperature range
- Optional high-accuracy calibration to Minco RTDs for improved accuracy; see next page and page 5-22 for more information
- Optional Input/Output isolation to 600 VRMS

Specifications

Output: 4 to 20 mA DC over specified range.

Calibration accuracy: $\pm 0.2\%$ of span.

Linearity: $\pm 0.2\%$ of span, reference to actual sensor temperature.

Adjustments:

Zero: -50 to 150°C (-58 to 302°F).

Span: 50 to 600°C (90 to 1080°F).

Ambient temperature:

Operating: -40 to 85°C (-40 to 185°F).

Storage: -55 to 100°C (-67 to 212°F).

Ambient temperature effects:

$\pm 0.018\%$ of span/ $^{\circ}\text{C}$ ($\pm 0.01\%$ of span/ $^{\circ}\text{F}$).

Warmup drift:

$\pm 0.1\%$ of span max., assuming

$V_{\text{supply}} = 24$ VDC and $R_{\text{loop}} = 250$ Ω .

Stable within 15 minutes.

Input/output isolation (optional):

600 VRMS, 1 minute.

Supply voltage:

Non-Isolated: 10 to 45 volts DC with no load.

Isolated: 13 to 45 volts DC with no load.

Reverse polarity protected.

Voltage effect:

$\pm 0.001\%$ of span per volt.

Lead wire compensation:

(3-wire RTD)

$\pm 0.05\%$ of span per Ω , up to 25 Ω in each leg.

Maximum load resistance: The maximum allowable resistance of the signal-carrying loop is given by this formula:

$$\text{Non-Isolated: } R_{\text{loop max}} = \frac{V_{\text{supply}} - 10}{0.020 \text{ amps}}$$

$$\text{Isolated: } R_{\text{loop max}} = \frac{V_{\text{supply}} - 13}{0.020 \text{ amps}}$$

Maximum output current:

28 mA.

Connections: Terminal block accepts wires from AWG 22 to AWG 14.

Physical: Polycarbonate, DIN rail enclosure.

Weight: 4.2 oz. (119 g).

Specifications subject to change

RTD input types

2 or 3-wire 100 Ω platinum RTD.

Element		Code
Platinum (0.00392 TCR)	100Ω at 0°C	PA
Platinum (0.00391 TCR)	100Ω at 0°C	PB
Platinum (0.00385 TCR)	100Ω at 0°C	PD, PE

Special high-accuracy calibration

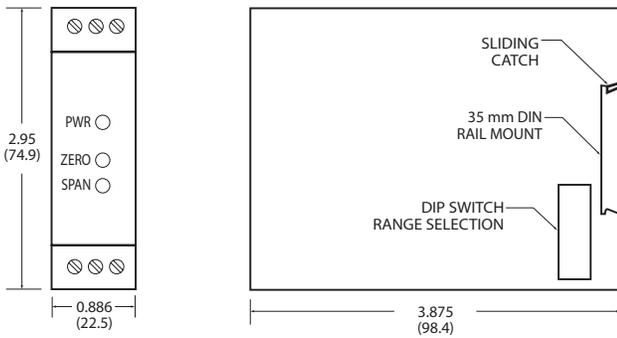
For high system accuracy, specify transmitters with matched calibration. Temptrans match calibrated to a sensor are always ordered as assemblies. Common examples are shown in Section 2.

Specification and order options

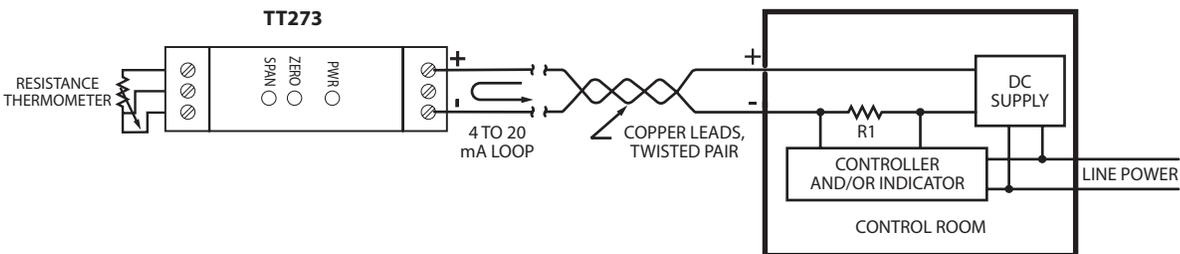
TT273	Model number
PD	RTD element code from table
1	Output: 4 to 20 mA DC
N	Input/Output: N = Non-isolated I = Isolated
(-25/50)	Factory preset temp. range: (4 mA/20 mA temperature) Range is user adjustable. Refer to the Zero and Span specifications.
C	Temperature scale: F = Fahrenheit C = Celsius
TT273PD1N(-25/50)C = Sample part number	

Specify and order products at:
www.minco.com/sensors_config

Dimensions in inches (mm)



Wiring diagram



Specifications subject to change

TT274 Field Rangeable Thermocouple Temperature Transmitter

Overview

Model TT274 is a 2-wire temperature transmitter for types J and K thermocouples. The transmitter converts the thermocouple's millivolt signal to a 4 to 20 mA DC current signal. Because this current signal is immune to leadwire and electrical noise, the TT274 lets you obtain accurate temperature readings from thermocouples thousands of feet away. An ordinary twisted pair of wires carries both the temperature signal and power for the transmitter's electronics.

With the isolation option, the mV input signal from the thermocouple is electrically isolated from the 4 to 20 mA output, allowing use of grounded thermocouples with multiple TT274s operating from the same power supply.

An LED conveniently indicates the status of the control loop. The brightness is directly proportional to the loop current. A dark LED signals an open sensor or loss of current loop power.

- 4 to 20 mA current signal
- Fits standard 35 mm DIN rail
- Field-calibrate to your thermocouple type and temperature range
- Optional Input/Output isolation to 600 VRMS

Specifications

Input: Type J or K thermocouple (field selectable).

Output: 4 to 20 mA DC over specified range.

Accuracy: $\pm 0.2\%$ of span.

Linearity: Voltage linear.

The output signal of the TT274 is voltage linear (not temperature linear) and is intended for use with instruments which compensate for the nonlinear signal output of the thermocouple sensor.

Adjustments:

Zero: -50°C to 150°C (-58°F to 302°F).

Span: Type J: 125 to 850°C (225 to 1530°F).

Type K: 150 to 1200°C (270 to 2160°F).



TT274 Thermocouple Temperature Transmitter

Ambient temperature:

Operating: -40 to 85°C (-40 to 185°F).

Storage: -55 to 100°C (-67 to 212°F).

Ambient temperature effects: $\pm 0.036\%$ of span/ $^{\circ}\text{C}$ ($\pm 0.02\%$ of span/ $^{\circ}\text{F}$).

Cold junction compensation drift: $\pm 0.03^{\circ}\text{C}/^{\circ}\text{C}$ for -25 to 70°C ambients. $\pm 0.06^{\circ}\text{C}/^{\circ}\text{C}$ for -40 to -25°C and 70 to 85°C ambients.

Warmup drift: $\pm 0.1\%$ of span max., assuming

$V_{\text{supply}} = 24$ VDC and $R_{\text{loop}} = 250 \Omega$.

Stable within 15 minutes.

Input/output isolation (optional): 600 VRMS, 1 minute.

Supply voltage:

Non-Isolated: 10 to 45 volts DC with no load.

Isolated: 13 to 45 volts DC with no load.

Reverse polarity protected.

Voltage effect: $\pm 0.001\%$ of span per volt.

Maximum load resistance: The maximum allowable resistance of the signal-carrying loop is given by this formula:

$$\text{Non-Isolated: } R_{\text{loop max}} = \frac{V_{\text{supply}} - 10}{0.020 \text{ amps}}$$

$$\text{Isolated: } R_{\text{loop max}} = \frac{V_{\text{supply}} - 13}{0.020 \text{ amps}}$$

Maximum output current: 28 mA.

Connections: Terminal block accepts wires from AWG 22 to AWG 14.

Physical: Polycarbonate, DIN rail enclosure.

Weight: 4.2 oz. (119 g).

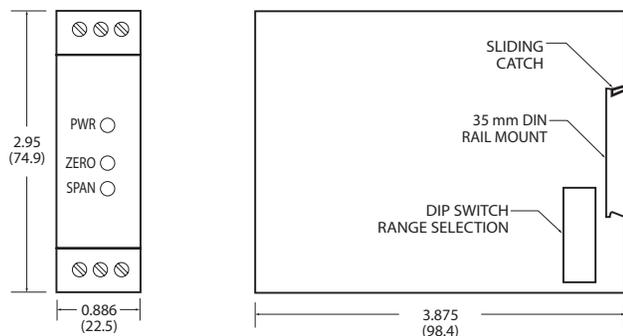
Specifications subject to change

Specification and order options

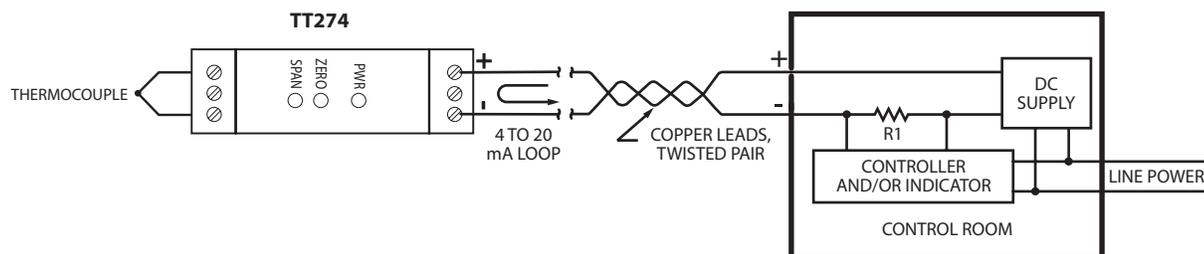
TT274	Model number
K	T/C element code J = Type J thermocouple K = Type K thermocouple
1	Output: 4 to 20 mA DC
N	Input/Output: N = Non-isolated I = Isolated
(-25/200)	Factory preset temp. range: (4 mA/20 mA temperature) Range is user adjustable. Refer to the Zero and Span specifications.
C	Temperature scale: F = Fahrenheit C = Celsius
TT274K1N(-25/200)C = Sample part number	

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www.minco.com/sensors_config

Dimensions in inches (mm)



Wiring diagram



Specifications subject to change