

TT220 Isolated RTD Transmitter

Overview

Model TT220 is a rugged industrial transmitter designed for process control and other applications. It provides electrical isolation to 600 VRMS between the input and output.

The TT220 has a built-in LED indicator to help troubleshoot signal loops. A very bright LED indicates an open sensor; a dark LED signals a shorted sensor or loss of current loop power.

- 4 to 20 mA current signal
- 2 or 3-wire RTD input
- Input/output isolated to 600 VRMS
- Factory Mutual (FM) approved intrinsically safe, nonincendive for hazardous locations
- Ambient rated to 85°C (185°F)
- Optional high-accuracy calibration to Minco RTDs for improved accuracy; see next page and page 5-22 for more information

Specifications

Output: 4 to 20 mA over specified range, linear with temperature.

Calibration accuracy: ±0.1% of span (0.2% of span for spans less than 10 Ω).

Linearity: ±0.1% of span, referenced to actual sensor temperature.

Adjustments: Zero and span, ±5% of span, non-interacting. Factory set.

Ambient temperature:

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

Storage: -55 to 100°C (-67 to 212°F). Ambient temperature effects: ±0.018% of span per °C.

Warmup drift: ±0.1% of span max., with $V_{supply} = 24$ VDC and $R_{loop} = 250 \Omega$. Stable within 15 minutes.

Input/output isolation: 600 VRMS.



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Supply voltage: 13 to 45 VDC. Voltage effect ±0.001% of span per volt. Reverse polarity protected.

Maximum load resistance: The maximum allowable resistance of the signal carrying loop is:

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

Example: With supply voltage 24 VDC, maximum loop resistance is 550 Ω.

Minimum span: 10°C (18°F).

Minimum output current: 2.5 mA.

Maximum output current: 28 mA.

Leadwire compensation: (3-wire RTD) ±0.05% of span per Ω up to 25 Ω in each leg.

Hazardous atmospheres: Model TT220 may be used with Minco explosionproof connection heads. This model is Factory Mutual (FM) approved nonincendive for use in Class I, Division 2 areas and intrinsically safe for Class I, Division 1 areas (requires approved barrier). Transmitter entity parameters: $V_{max} = 35$ volts; $I_{max} = 150$ mA; $C_i = 0 \mu F$ and $L_i = 0$ mH.

Connections: Terminal block for wires AWG 22 to AWG 14.

Physical: Polycarbonate case, epoxy potted for moisture resistance. Weight: 3.0 oz. (85 g).

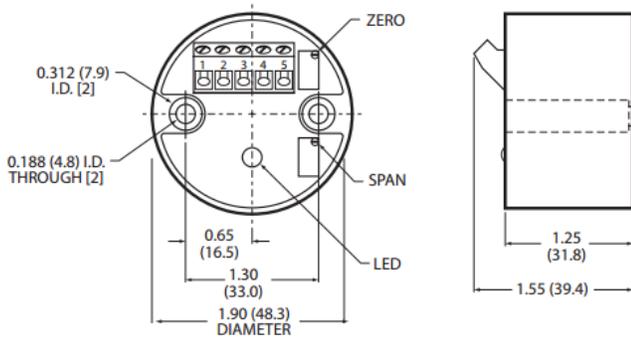
Weight: 3.0 oz. (85 g).

RTD input types

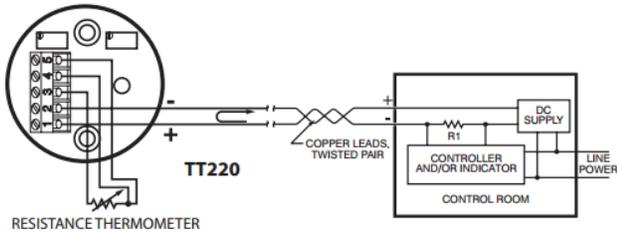
2 or 3-wire resistance thermometer:

Element	Code
Platinum (0.00392 TCR) 100 Ω at 0°C	PA
Platinum (0.00391 TCR) 100 Ω at 0°C	PB
Platinum (0.00385 TCR) 100 Ω at 0°C	PD, PE
Platinum (0.00385 TCR) 1000 Ω at 0°C	PF
Platinum (0.00375 TCR) 1000 Ω at 0°C	PW

Dimensions in inches (mm)



Wiring Diagram



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

TT220	Model Number
PA	RTD element code from table
1	Output: 4 to 20 mA DC
GH	Temperature range code starting on page 5-20 [Ex: GH = -40 to 100°C (-40 to 212°F)]
TT220PA1GH = Sample part number	

Hazardous area requirements

Refer to Minco's Application Aid #19 entitled "Specifying Temperature Sensors for Hazardous Areas" for more information on how to classify a hazardous area, methods of protection, and the various standards and agencies (including FM, CSA, CENELEC and ATEX). Application Aid #19 is available at www.minco.com/sensoraid/.