

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: $\pm 0.1\%$ of span (0.2% of span for spans less than 10 Ω).

Linearity: $\pm 0.1\%$ of span, referenced to actual sensor temperature.

Adjustments: Zero and span, $\pm 5\%$ 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: $\pm 0.018\%$ of span per °C.

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

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

Stable within 15 minutes.

Input/output isolation: 600 VRMS.

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



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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) $\pm 0.05\%$ 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).

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/.

Specifications subject to change

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
Copper (0.00427 TCR)	10 Ω at 25°C	CA
Nickel-iron (0.00518 TCR)	604 Ω at 0°C	FA
Nickel-iron (0.00527 TCR)	1000 Ω at 70°F	FB
Nickel-iron (0.00527 TCR)	2000 Ω at 70°F	FC
Nickel (0.00672 TCR)	120 Ω at 0°C	NA

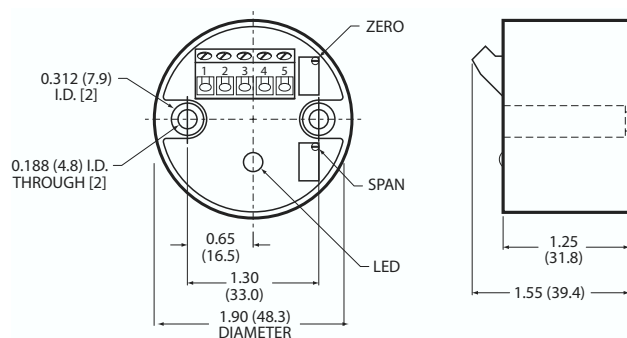
Special high-accuracy calibration

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

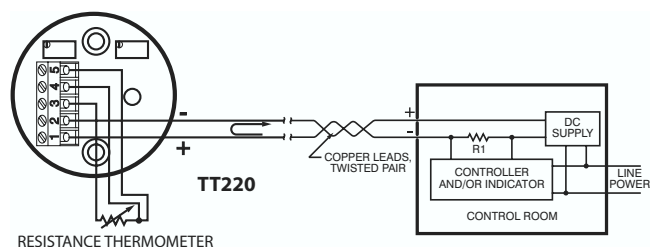
TT220	Model number
PA	RTD element code from table
1	Output: 4 to 20 mA DC
GH	Temperature range code starting on page 5-20 [Ex: GH = -40 to 100°C (-40 to 212°F)]
TT220PA1GH = Sample part number	

Dimensions in inches (mm)



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

Wiring Diagram



Specifications subject to change