

Miniature Temptran™ RTD Transmitters



TT111, TT211

Overview

- Two models:
 - TT111: UL-recognized component for Canada and United States.
 - TT211: Wider ambient rating; Factory Mutual (FM) approved intrinsically safe and nonincendive.
- 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.

Linearity: Referenced to actual sensor temperature.

Platinum RTD input: $\pm 0.1\%$ of span.

Nickel and nickel-iron RTD input:

$\pm 0.25\%$ of span for spans less than 100°C.

$\pm 0.25\%$ of span per 100°C of span for spans greater than 100°C.

Adjustments: Zero and span, $\pm 5\%$ of span. Factory set.

Ambient temperature:

TT111: 0 to 50°C (32 to 122°F).

TT211: -25 to 85°C (-13 to 185°F).

Storage: -55 to 100°C (-67 to 212°F).

Ambient temperature effects:

$\pm 0.013\%$ of span per °C.

$\pm 0.025\%$ of span per °C for spans less than 55°C.

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

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

Stable within 30 minutes.

Supply voltage: 8.5 to 35 VDC. Voltage effect $\pm 0.001\%$ of span per volt. Reverse polarity protected.

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

$$R_{loop\ max} = \frac{V_{supply} - 8.5}{0.020\ \text{amps}}$$

Example: With supply voltage 24 VDC, maximum loop resistance is 775 Ω .

Minimum span: 27.8°C (50°F).

Hazardous atmospheres: All models may be used with Minco flameproof/explosionproof connection heads. Models TT211 is Factory Mutual 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; $C_i = 0 \mu\text{F}$ and $L_i = 0$ mH.

Connections:

Terminal block for wires AWG 22 to AWG 14.

Physical: Polycarbonate case, epoxy potted for moisture resistance.

Weight: 1.1 oz. (30 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

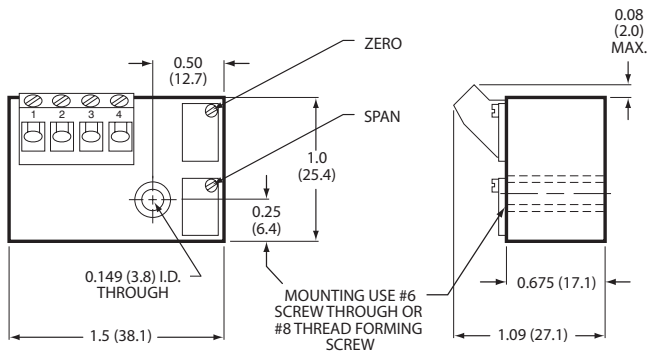
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RTD input types

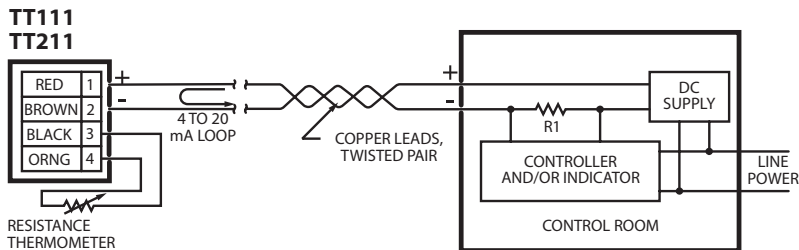
2-wire resistance thermometer:

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. Temtrans match calibrated to a sensor are always ordered as assemblies. Common examples are shown in Section 2.

Specification and order options:

TT111	Model number: TT111 or TT211
PD	RTD element code from table
1	Output: 4 to 20 mA DC
C	Temperature range code starting on page 5-20 [Ex: C = 0 to 100°C (32 to 212°F)]
TT111PD1C = Sample part number	