TT273 Field Rangeable 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: ±0.2% of span.
Linearity: ±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:
±0.018% of span/°C (±0.01% of span/°F).

Warmup drift: ±0.1% of span max., assuming
V_{supply} = 24 VDC and R_{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: ±0.001% of span per volt.

Lead wire compensation: (3-wire RTD)
±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:

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

Isolated:
R_{loop max} = \frac{V_{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.

<table>
<thead>
<tr>
<th>Element</th>
<th>Code</th>
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<tbody>
<tr>
<td>Platinum (0.00392 TCR)</td>
<td>PA</td>
</tr>
<tr>
<td>Platinum (0.00391 TCR)</td>
<td>PB</td>
</tr>
<tr>
<td>Platinum (0.00385 TCR)</td>
<td>PD, PE</td>
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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.

Dimensions in inches (mm)

Wiring diagram

Specification and order options

<table>
<thead>
<tr>
<th>TT273</th>
<th>Model number</th>
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<tbody>
<tr>
<td>PD</td>
<td>RTD element code from table</td>
</tr>
<tr>
<td>I</td>
<td>Output: 4 to 20 mA DC</td>
</tr>
</tbody>
</table>
| N     | Input/Output:  
| (-25/50) | Factory preset temp. range: (4 mA/20 mA temperature)  
| C     | Temperature scale:  
| TT273PD1N(-25/50)C = Sample part number |  

Specifications subject to change