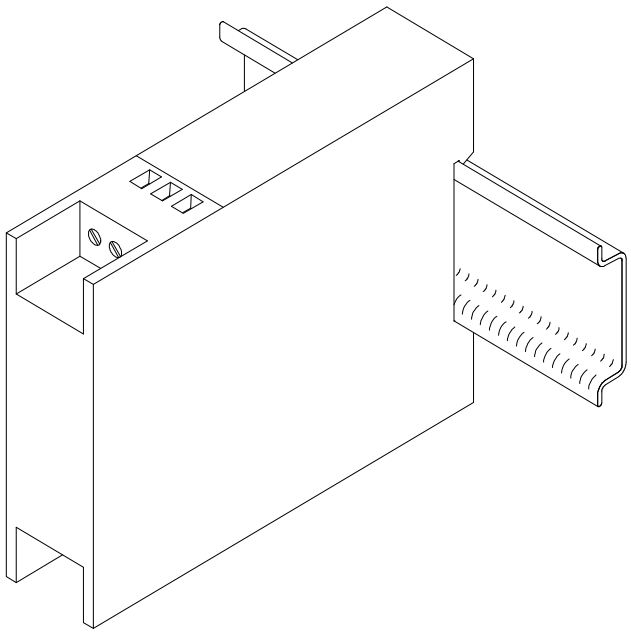
MINCO
TT273
2-wire Temperature Transmitter

Installation and Operating Instructions



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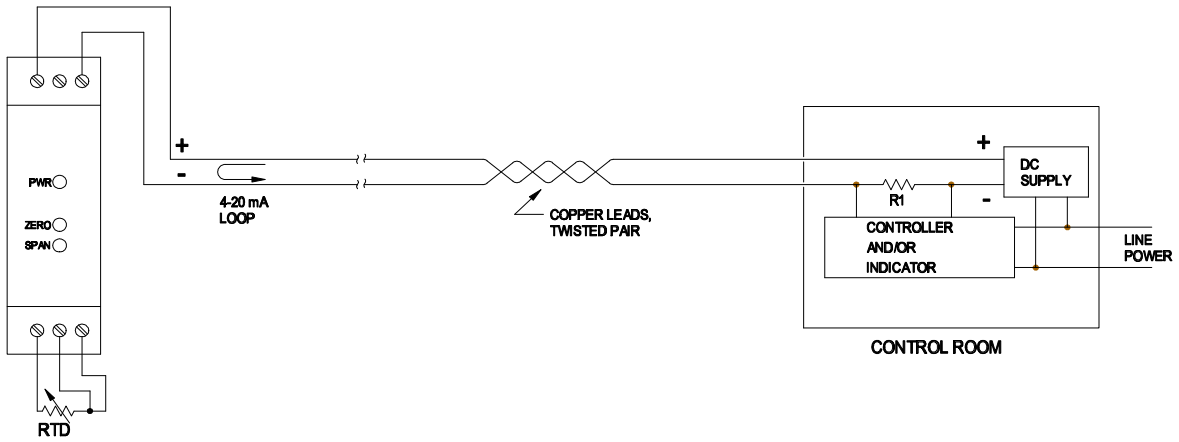
Description
Model TT273 is a 2-wire temperature transmitter for RTD (resistance temperature detector) thermometers. The Temptran™ converts the RTD's signal into a 4 to 20 mA current. The current changes according to the range marked on the Temptran: 4 mA at the lowest temperature of the range, rising to 20 mA at the top of the range. The leads that supply power also carry the current signal. Request Minco Application Aid 15 for more information.

Installation
Locate the Temptran near the RTD, in an area where the ambient temperature stays between -40 and 85 °C (-40 and 185 °F). If calibration will be necessary, set dip-switches before attaching unit to the DIN rail.

Connect the Temptran as shown below, observing the ± polarity of the current loop. Maximum DC supply voltage = 45 VDC. The RTD connections for the Temptran in the wiring diagram below must be connected as shown or the transmitter will not function properly.

Wiring Diagram



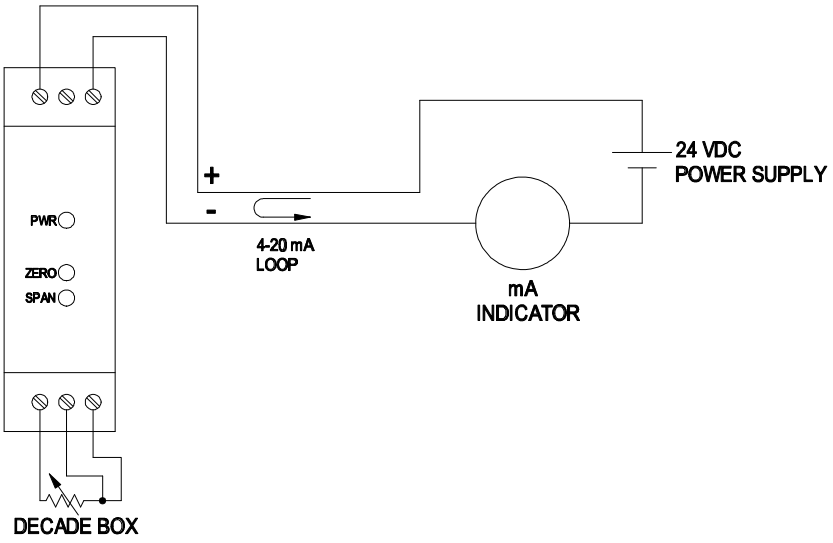
Calibration
1. Select desired Zero (4 mA temp.) temperature and Span (20 mA temp. - 4 mA temp.) range from the tables below. The Zero temperature must be within -50 to 150 °C, and the Span range must be within 50 to 600 °C. For example, for a -25 to 200 °C temperature range, the Zero temperature is -25 °C and the Span range is (200-(-25)) = 225 °C. According to the tables, switch positions 1 and 8 would be ON.

Zero (4 mA) coarse adjust	
Switch Position	**Zero Range / Ohm Setting**
1 ON 2,3 OFF	-50 to 0 °C (-58 to 32 °F) 80.306 Ω to 100.000 Ω
2 ON 1,3 OFF	0 to 50 °C (32 to 122 °F) 100.000 Ω to 119.397 Ω
3 ON 1,2 OFF	50 to 100 °C (122 to 212 °F) 119.397 Ω to 138.506 Ω
1,2,3 OFF	100 to 150 °C (212 to 302 °F) 135.506 Ω to 157.025 Ω

Span (20 mA - 4 mA) coarse adjust	
Switch Position	**Span Range / Ohm Setting**
4 ON 5-9 OFF	50 to 70 °C (90 to 126 °F) 119.397 Ω to 127.075 Ω
5 ON 4,6-9 OFF	70 to 100 °C (126 to 180 °F) 127.075 Ω to 138.506 Ω
6 ON 4,5,7-9 OFF	100 to 140 °C (180 to 252 °F) 138.506 Ω to 153.584 Ω
7 ON 4-6,8,9 ON	140 to 200 °C (252 to 360 °F) 153.584 Ω to 175.856 Ω
8 ON 4-7,9 OFF	200 to 300 °C (360 to 540 °F) 175.856 Ω to 212.052 Ω
9 ON 4-8 OFF	300 to 425 °C (540 to 765 °F) 212.052 Ω to 255.672 Ω
4-9 OFF	425 to 600 °C (765 to 1080 °F) 255.672 Ω to 313.708 Ω

2. Set dip-switches per values selected from tables.

4. Connect a power supply of 24 VDC, and a digital milliammeter (5-1/2 digit preferred) as shown in figure 1, or use a loop calibrator instead of the DC supply and milliammeter.



5. Connect a resistance decade box with a resolution of at least .01 ohms to the input of the transmitter. If unsure or concerned about the decade box's accuracy, measure the zero and span resistance settings using a known-accurate ohmmeter and record decade box settings before connecting decade box to the transmitter.

6. Set decade box resistance to simulate the 4 mA temperature. For the given example, the decade box resistance should be set to simulate -25 °C.

7. Adjust ZERO potentiometer on the transmitter until the meter reads 4 mA.

8. Set decade box resistance to simulate the 20 mA temperature. For the given example, the decade box resistance should be set to simulate 200 °C.

9. Adjust SPAN potentiometer on the transmitter until the meter reads 20 mA.

10. Repeat steps 6 - 9 until no further adjustment is necessary.

Warranty

Items returned within one year from the date of sale, transportation prepaid, which Minco Products, Inc. (The "Seller") reasonably determines to be faulty by reason of defective materials or faulty workmanship will be replaced or repaired at the Seller's discretion, free of charge.

This remedy is to be the sole and exclusive remedy available to the buyer in the event of a breach by the Seller. Items that show evidence of mishandling or misapplication may be returned by the Seller at the customer's expense.

Furthermore, the Seller is not to be held responsible for consequential damages caused by its product except as required under Minnesota Statutes, Section 336.1-719 (3).

This warranty is expressly in lieu of any other expressed warranty or implied warranty of merchantability or fitness for a particular purpose, and of any other obligations or liability on the part of the Seller or its employees or agents.

Specifications

Input: 2-, or 3-wire 100 ohm platinum RTD's.
Output: 4 to 20 mA DC over specified range.
Accuracy: +/- 0.2% of span.
Linearity: +/- 0.2% of span.
Adjustments: Zero: -50 °C to 150 °C
Span: 50 °C to 600 °C
Ambient Temperature:
Operating: -40 to 85 °C (-40 to 185 °F).
Storage: -55 to 100 °C (-67 to 212 °F).
Ambient Temperature Effects:
+/- 0.01% of span/°F (+/- 0.018% of span/°C).
Warmup Drift: +/- 0.1% of span max., assuming Vsupply = 24 VDC and Rloop = 250 ohms. Stable within 15 minutes.
Input/Output Isolation (Optional): 600 VRMS, 1 minute.

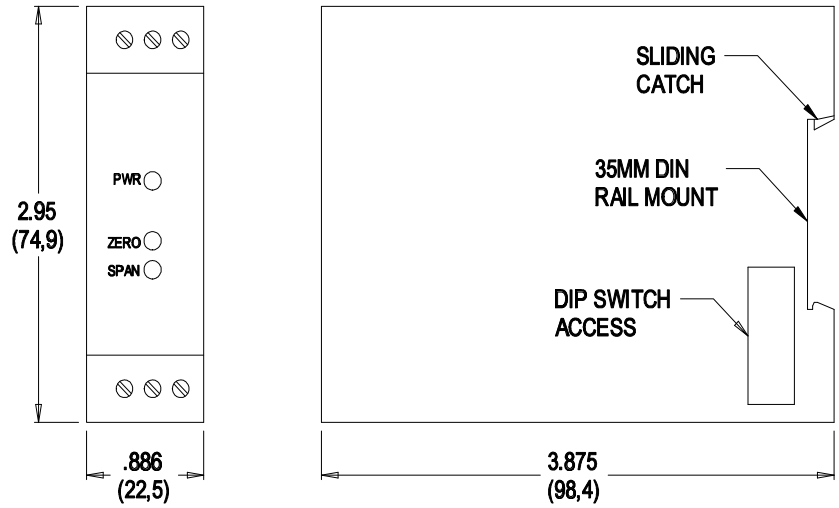
Supply Voltage:
Non-Isolated: 10 to 45 volts DC with no load.
Isolated: 13 to 45 volts DC with no load.
Reverse polarity protected.
Voltage effect: +/- 0.001% of span per volt.
Lead Wire Compensation (3-wire RTD): +/- 0.05% of span per ohm, up to 25 ohms in each leg.
Maximum Load Resistance: The maximum allowable resistance of the signal-carrying loop is given by this formula:
Non-Isolated: Rloop max = (Vsupply-10)/.02 amps)
Isolated: Rloop max = (Vsupply-13)/.02 amps)
Maximum Output Current: 28 mA.
Connections: Terminal block accepts wires from AWG 22 to AWG 14.
Weight: 4.2 oz. (119 grams).

Model Number Coding:

TT273 PD 1 I (-25/+50) C . . . Sample part number

Temperature Scale: F = Fahrenheit, C = Celsius
Temperature Range: (4 mA temperature / 20 mA temperature)
Input/Output: N= Non-Isolated; I= Isolated to 600 VRMS, 1 minute
Output: 4-20 mA DC.
RTD Element Code: 100 Ω Platinum at 0 °C
TCR's: PA = 0.00392, PB = 0.00391, PD = PE = 0.00385
Model Number: TT273, DIN Rail Mount RTD Temptran

Dimensions: All dimensions are in inches (millimeters)



When quality and performance are as important as price, call...

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