



TT115/TT155/TT165 Temptran™  
2-wire Temperature Transmitter for RTD Thermometers  
Installation and Operating Instructions



## Description

Designed for use in room air applications, model TT115/TT155/TT165 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 DC current. The current changes according to the range in which the Temptran is calibrated: 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.

**Note:** Transmitter circuit board only, Room Air housing and RTD sold separately.

## Specifications

<b>Sensing Element:</b>	100 ohm platinum RTD, 0.00392 ohm/ohm/°C TCR, 100 ohm platinum RTD, 0.00391 ohm/ohm/°C TCR, 100 ohm platinum RTD, 0.00385 ohm/ohm/°C TCR, 1000 ohm platinum RTD, 0.00385 ohm/ohm/°C TCR 1000 ohm platinum RTD, 0.00375 ohm/ohm/°C TCR
<b>Output:</b>	4 to 20 mA DC over specified range, limited to 30mA maximum.
<b>Calibration Accuracy:</b>	± 0.1% of Span
<b>Transmitter Linearity:</b>	± 0.1% of Span.
<b>Physical:</b>	Printed circuit board designed to mount inside the S470 series thermostat housing with RTD
<b>Operating Environment:</b>	32° to 122°F (0° to 50°C), non-condensing.
<b>Storage Environment:</b>	-67° to 212°F (-55° to 100°C), non-condensing.
<b>Ambient Temperature</b>	
<b>Effects:</b>	± 0.007% Span/°F (± 0.014% Span/°F for Spans < 100°F)
<b>Warm-up Drift:</b>	± 0.1% of Span max., assuming Vsupply = 24 VDC and Rloop = 250 ohms. Stable within 30 minutes.
<b>Supply Voltage:</b>	8.5 to 35 volts DC, non-polarized.
<b>Input Voltage Effect:</b>	± 0.001% of span per volt from 8.5 to 35 VDC.
<b>Maximum Load Resistance:</b>	The maximum allowable resistance of the signal-carrying loop, including extension wires and load resistance, is given by this formula: $R_{loop\ max} = (V_{supply} - 8.5) / .02$ amps. For example, if the supply voltage is 24 VDC, the loop resistance must be less than 775 Ω.
<b>System Integration:</b>	Output "High" (22-28mA) with sensor open. Output "Low" (3.3-3.7mA) with sensor shorted.
<b>Zero and Span Adjustment:</b>	Non-interacting, Zero and Span ±5%.
<b>Maximum Output Current:</b>	30 mA.
<b>Power Connections:</b>	Screw terminals, non-polar (connect either way).
<b>Sensor Connections:</b>	Screw terminals, non-polar (connect either way).

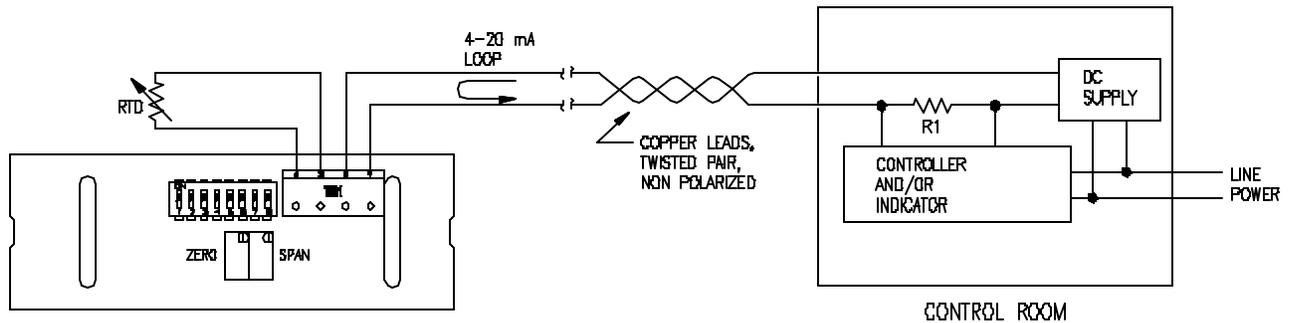
## Installation

Locate the Temptran near the RTD, in an area where the ambient temperature stays between the temperature range of the output.

Connect the Temptran as shown in the wiring diagram below. The transmitter's power and RTD connections are designed for non-polar hook-up, so polarity is not important. The maximum DC supply should not exceed 35 VDC. For the RTD, good connections are a must, a few ohms of resistance in the connection could cause an error of several degrees.

The Temptran has been factory-calibrated to its marked temperature range or to a specific RTD, do not change its Zero or Span adjustments.

## Wiring Diagram



## Power Supply

DC power supply requirements are determined by the transmitter's minimum voltage requirement and voltage drop across the load resistor and installation lead wires.

Example: The transmitter requires 8.5 Volts minimum. A typical 250 ohm load resistor drops 5.0 Volts @ 20 mA. Allowing a margin of 0.5 Volts for the supply permits 25 ohms of lead wire resistance for remote installation. Totaling these, we get a minimum power supply requirement of 14 VDC.

Using a 24 VDC power supply will take care of nearly all installations, but the transmitter will operate at voltages up to 35 VDC.

## How to Order

TT115	Model Number: TT115 = Nominally calibrated transmitter TT155 = Calibrated with thermometers so output tracks temperature within $\pm 0.75\%$ of temperature Span TT165 = Calibrated with thermometers so output tracks temperature within $\pm 0.50\%$ of temperature Span
PD	Resistance thermometer type: RTD Temptran PA = 100 $\Omega$ Platinum (.00392) PB = 100 $\Omega$ Platinum (.00391) PD = 100 $\Omega$ Platinum (.00385) PE = 100 $\Omega$ Platinum (.00385) PF = 1000 $\Omega$ Platinum (.00385) PW = 1000 $\Omega$ Platinum (.00375)
1	4-20 mA DC Output
H	Temperature Range (4 mA Temp/20 mA Temp): H = 40 to 90°F ( 4 to 32°C) Consult factory for current list of available ranges.
TT115PD1H ← Sample part number	

## 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 this product except as required under Minnesota Statutes, Section 336.1-719 (3).

This warranty is 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 of the seller or its employees or agent.

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