

# Temptran™ 4 to 20 mA Transmitters

Most HVAC sensors are available with companion 4 to 20 mA transmitters. See page 4-2 for suitable models. (Room air thermometers use model TT115, which has the same specifications as TT111). Temptran™ temperature transmitters convert low-level RTD output to a standard current signal that is immune to lead resistance and electrical noise. You can get accurate readings from points thousands of feet away.

## How to order transmitters

To order HVAC/R sensors with integral transmitters, specify both the RTD and the Temptran part numbers.

## High-accuracy calibration

Standard transmitters are calibrated to the nominal resistance values of the RTD at the zero and span points. Total system error includes the tolerance of both the transmitter and the RTD sensor.

If you order Minco Temptrons calibrated to the actual resistance of the RTD (as measured in Minco's metrology lab), this effectively subtracts the sensor tolerance from system accuracy specifications.

For example, consider a transmitter with a range of 0 to 500°C. The transmitter itself is accurate to  $\pm 1.0^\circ\text{C}$  ( $\pm 0.2\%$  of span, including calibration accuracy and linearity). The RTD interchangeability contributes an additional error of  $\pm 0.3^\circ\text{C}$  at  $0^\circ\text{C}$  and  $\pm 2.8^\circ\text{C}$  at  $500^\circ\text{C}$ . Total system error would be  $\pm 1.3^\circ\text{C}$  at  $0^\circ\text{C}$  and  $\pm 3.8^\circ\text{C}$  at  $500^\circ\text{C}$ . When you calibrate the sensor and transmitter as a set, the sensor error disappears, reducing system error to  $\pm 1.0^\circ\text{C}$  over the full range — all for a nominal extra cost.

## 0.75% guaranteed accuracy

Minco guarantees a system accuracy (current signal vs temperature) of 0.75% of span when you order specially calibrated Temptrons with any RTD in the HVAC/R Sensors Section. (An RTD with standard transmitter will deviate about 1-2% of span.) Tighter accuracies are available on special order.



Transmitters are mounted in the junction box on duct sensors, or in the connection head of fluid immersion sensors.

Outside air thermometers and Thermal-Ribbons: Transmitters are furnished separately. Install in an enclosure, but away from excessive ambient temperatures.



Full size wall mount thermometers use the TT115 circuit-board style Temptran. The enclosure is thermally designed to minimize heating of the sensor by transmitter electronics.

## Free NIST traceability

With each matched sensor/transmitter set, Minco sends you calibration data traceable to the National Institute of Standards & Technology. This helps you comply with ISO 9001 and other quality standards.

## Recalibration

Minco prints RTD resistance values right on the Temptran label to simplify recalibration. You simply connect a resistance decade box or "RTD simulator" in place of the RTD, dial in the correct values, and adjust zero and span. Because Minco RTDs shift less than  $0.05^\circ\text{F}$  per year in a typical HVAC installation, the printed values remain valid for many years.

MINCO MINCO, INC. USA	MODEL	TEMPTRAN™		
	D/C: 9614			
	100 OHM PLATINUM RTD			
	4mA=	20.0°F=	-6.7°C=	97.932Ω
	20mA=	120.0°F=	48.9°C=	118.969Ω

RTD resistances are printed on Temptran labels for easy recalibration of zero and span. A standard Temptran shows nominal values.

MINCO MINCO, INC. USA	MODEL	TEMPTRAN™		
	D/C: 9614 S/N: 103			
	100 OHM PLATINUM RTD			
	4mA=	20.0°F=	-6.7°C=	97.427Ω
	20mA=	120.0°F=	48.9°C=	118.988Ω

A specially calibrated Temptran shows actual resistance of the serialized, connected RTD.

See Section 4 for complete details and ordering information.

▼ = STANDARD OPTIONS  
Specifications subject to change