

Temperature Transmitter

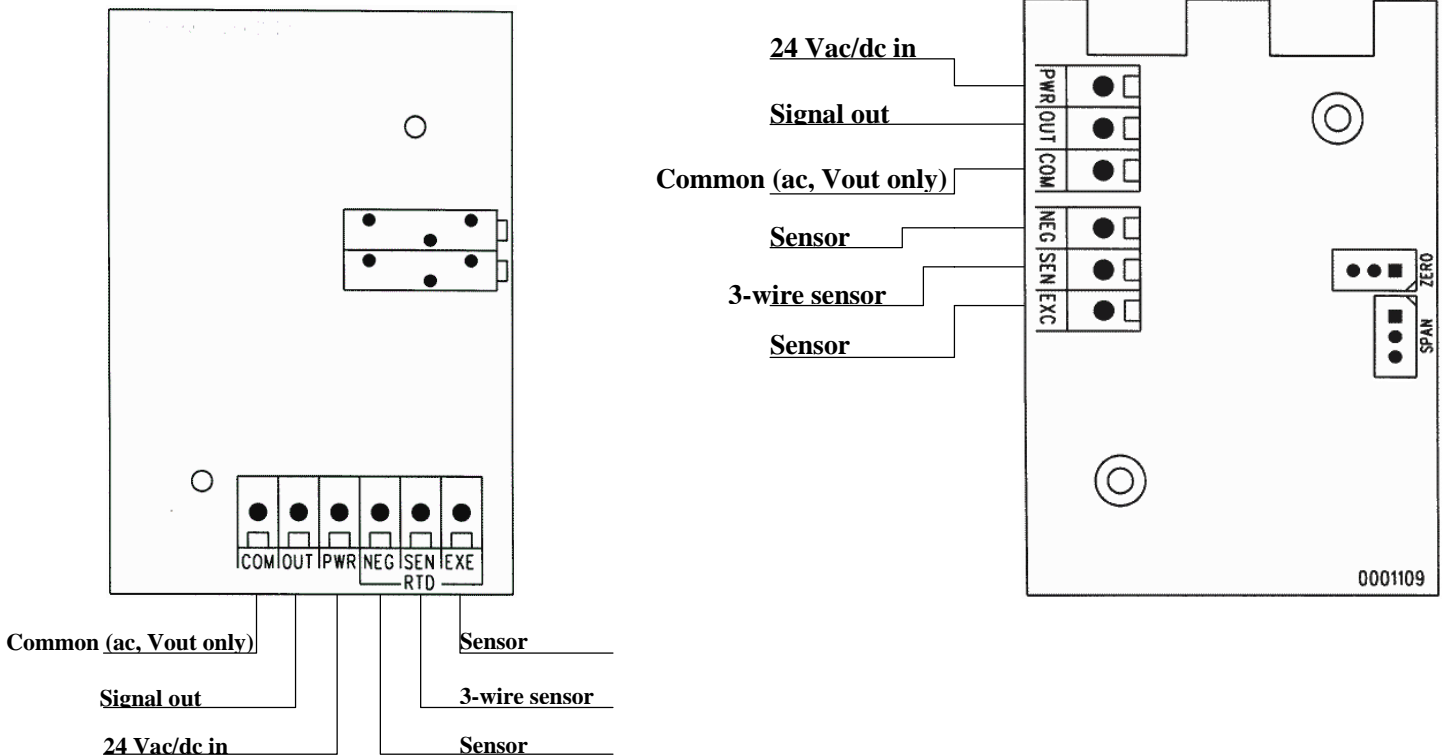
Designed to convert a 100 or 1000 ohm RTD signal into an analog output with 0.1% FSO accuracy.

Specifications

Operating Temperature Range	0 to 70 °C (32 to 158 °F) -40 to 85 °C (-40 to 185 °F) (OSA)
Accuracy	0.1 % FSO
Wiring Connections	Screw Connectors, 18-22 awg
Sensor Types	100 Ω, 1K RTD's

Wiring

Wiring connections are made as shown in the diagrams below. Note that the SEN input is only used for three-wire sensors, and the COM input is used only when using an AC power supply and/or a voltage signal output.



Field Calibration

By using precision resistor values equal to the zero and span of the transmitter temperature range, the unit can be calibrated in the field. Disconnect the sensor from the transmitter and connect the resistor that represents the zero value to the EXC and NEG terminals (NOTE: if the unit uses a three-wire sensor, a jumper must be placed between EXC and SEN). Adjust the RVZ or ZERO pot until the desired output is achieved. Hook the resistor that represents the span value to the EXC and NEG terminals and adjust the RVS or SPAN pot until the desired output is achieved. Repeat these two steps until no further adjustment is required.



TE500AE shown with optional display, setpoint and override switch.

Space Temperature Transmitter

Designed to convert a 100 or 1000 ohm RTD signal into an analog output with 0.1% FSO accuracy.

Installation

Transmitters can be mounted directly on a wall or to a wall box. For the most accurate results, units should be mounted on an inside wall to a wall box, approximately 3 to 5 feet from the floor, away from any supply air exhausts and other sources of heat or cold. The enclosure cover is held in place with a locking tab located to the left of center at the bottom of the enclosure. The knob for the setpoint must be removed before removing the cover. After installation the cover can be locked on with the set screw (1/16" or 1.5 mm) at the bottom of the enclosure.

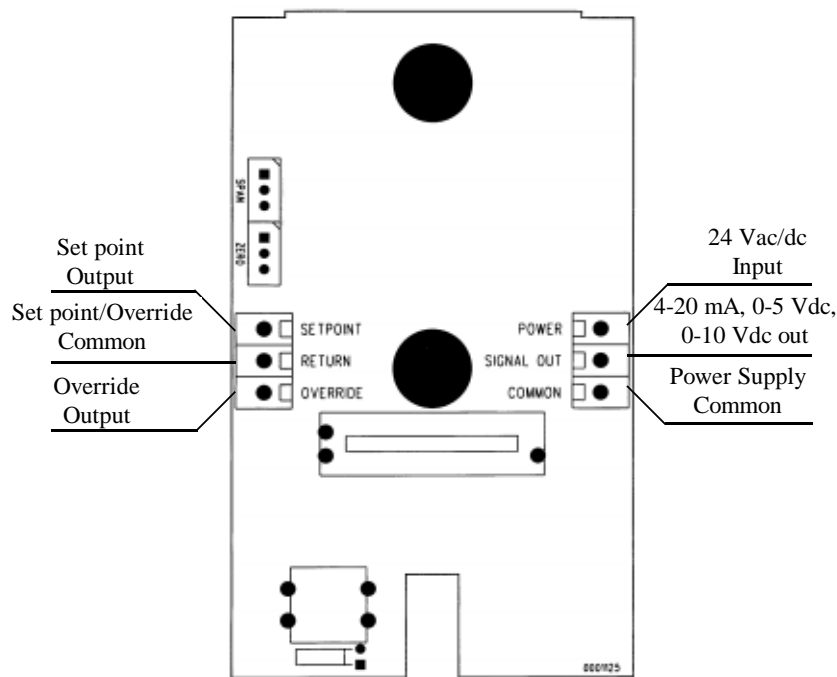
Specifications

Transmitter Accuracy	±0.1% of span, including linearity	Power Supply (0-10 Vdc)	15 to 35 Vdc or 15 to 32 Vac
Temperature Sensor Type	1000 ohm platinum RTD standard (class B, 385 Alpha, thin film)	Voltage Mode Maximum Current	< 3 mA with no LCD 15 mA nominal with LCD
Output Signal	4-20 mA current loop, 0-5 Vdc or 0-10 Vdc (factory configured)	Voltage Mode Maximum Output	Limited to < 5.5 Vdc for 0-5 model and < 10.5 Vdc for 0-10 model & 0-5 with LCD
Operating Temperature	0 to 70°C (32 to 158°F)	Input Voltage Effect	Negligible over specified operating range
Operating Humidity	0 to 95% RH (non-condensing)	Protection Circuitry	Reverse voltage protected and output limited
4-20 mA Loop Power Supply	18 to 35 Vdc or 18 to 32 Vac (with 250 ohm load and no LCD)	Display Accuracy	±0.2°C or ±0.2°F over full range with respect to the output signal
	22 to 35 Vdc or 22 to 32 Vac (with 250 ohm load and LCD)	Display Units	°C or °F (Factory set)
Loop Current (Minimum)	2 mA nominal (occurs with shorted sensor)	Display Range	0.0 to 35.0°C typical range for transmitter (other ranges available)
Loop Current (Maximum)	22.5 mA nominal (occurs with open sensor)	Display Resolution	0.1°C or 0.1°F for display of 00.0 to 99.9
Maximum Loop Load	> 600 ohms at 24 Vac/dc with no LCD, > 325 ohms with LCD	Slide-pot	20 – 30K (L-R) standard, other values available
Power Supply (0-5 Vdc)	10 to 35 Vdc or 10 to 32 Vac, 15 Volts minimum with LCD	Switch	Normally open pushbutton, 0.4 VA at 24 Vac/dc standard

Electrical Connection

The transmitter should be connected to the controller using 18 to 22 AWG wire and requires three wires for voltage and AC operation while only two wires are required for DC 4-20 mA loop-powered operation. The use of shielded cable is optional but recommended for the highest noise immunity. Do not route signal wires in the same conduit with power cables as signal degradation may occur. The controller Analog Input (AI) must be selected to match the transmitter output before power is applied. The AI type must be a high impedance voltage input for use with 0-1, 0-5 or 0-10 Vdc transmitters, or a current input with 250 or 500 ohm impedance. All transmitters have an operating range of 0 - 70 °C (32 – 158 °F). The transmitter board should not be mounted where temperatures will exceed these values. See the connection diagram for more details.

If there are options included on the device, they are wired at the Setpoint and Override terminals. The Return terminal is used as the common for both of these options. The LCD display is powered by the same supply as the transmitter.



Typical Wire Resistance Values

When using a voltage output transmitter long wire runs can add significant error to the readings. Use the following chart to determine errors due to wire resistance or consider using a 4-20 mA transmitter for better accuracy. Locate the type of wire being used. Multiply the total length of the wire (distance from the controller to the sensor and back) by the number found in the following chart for total resistance.

GAUGE WIRE TYPE	18 AWG	22 AWG	24 AWG
STRANDED (OHMS/FOOT)	5.85 mΩ	14.75 mΩ	23.29 mΩ
SOLID (OHMS/FOOT)	6.4 mΩ	15.85 mΩ	25.72 mΩ