TEMPERATURE TRANSMITTER - WALL (4-20 MA)

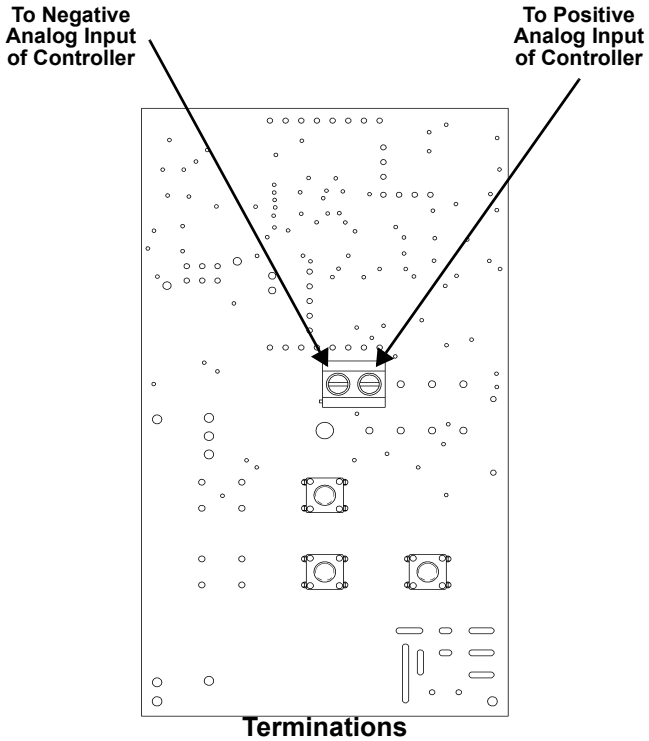
Description

The Liebert TW420 transmitter incorporates a 1,000 Ω platinum RTD. This device provides an accurate and predictable two-wire, 4 to 20 mA output over a specified range. It is specifically designed for temperature sensing and transmission over long distances without degradation of the 4-20 mA signal. The transmitter can operate with a supply voltage of 12 to 30VDC. The Liebert TW420 is first calibrated with simulated RTD values for the specified range. The sensor is then connected to the transmitter and tested at one temperature.

Termination

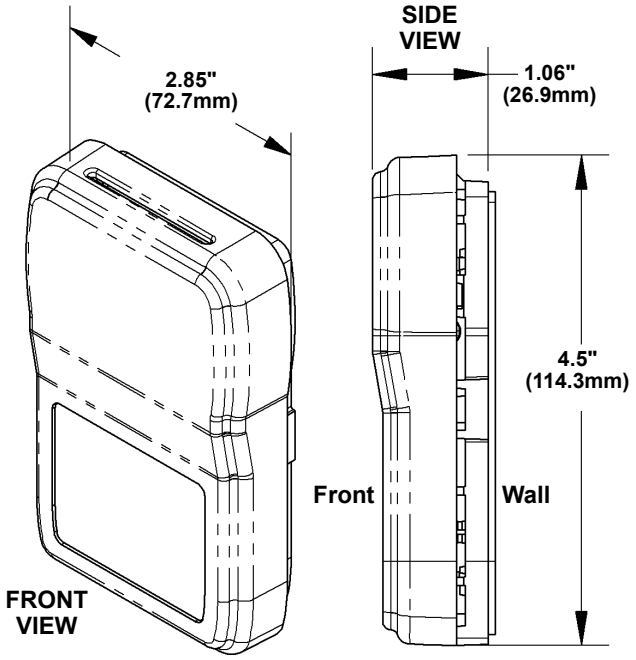
The Liebert TW420 transmitter may be powered from a 12 to 30VDC supply and is polarity-sensitive.

Though interference from external sources is not a major problem with current transmitters, Emerson Network Power recommends separating the wiring from line voltage wiring and from wiring used to supply highly inductive loads, such as motors, generators and coils. Emerson also recommends making power connections with twisted pair wire of at least 22 AWG and crimp-type connectors.



Terminations

Dimensions



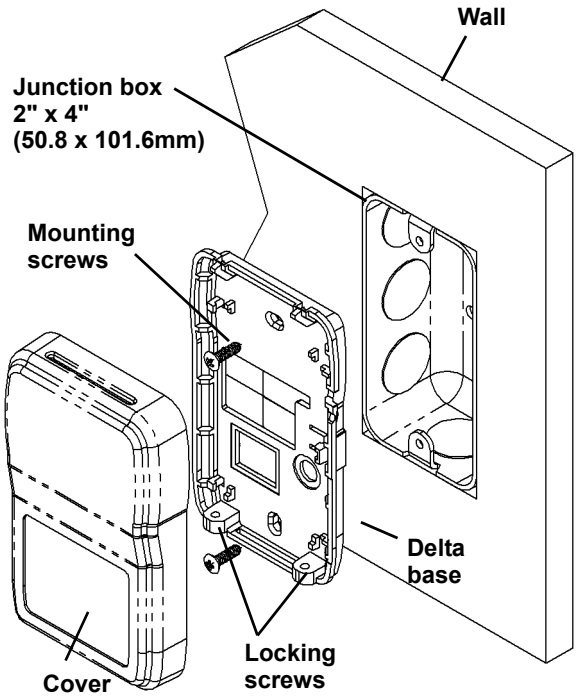
Specifications

Output	4 to 20 mA
Sensor	1,000 Ω platinum RTD
Supply Voltage	12 to 30 VDC
Tolerance of Resistance (Accuracy)	±0.82°F (±0.459°C)
Temperature Coefficient	0.00385 Ω/Ω/°C
Environmental Operating Range (Transmitter)	45°F to 96°F (7°C to 35°C)

Ordering Information

Quantity	Part #	Description
	TW420	Temperature Transmitter Wall 4-20 mA @ 45°F to 96°F

Mounting



NOTE

The wall temperature and the temperature of the air within the wall cavity can cause erroneous readings on wall-mounted units. The mixing of room air and air from within the wall cavity can lead to condensation and premature failure of the sensor.

To prevent these conditions, seal the conduit leading to the junction box and seal the hole in the drywall by using an adhesive backed, foam insulating pad.

Enclosure Mounting Instructions

Mounting hardware is provided for both junction box and drywall installation.

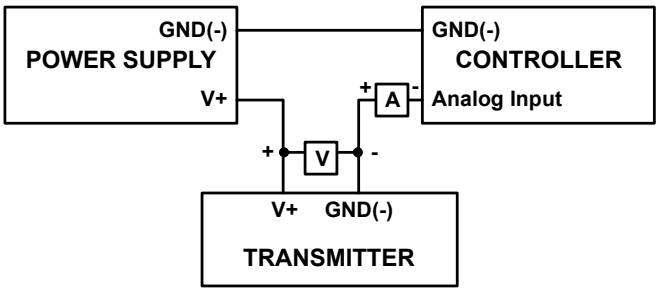
1. Pull the wires through the opening in the base plate.
2. **For junction box installation:** Secure the base to the box using the #6-32 x 1/2" mounting screws provided.
   For drywall installation: Drill two 3/16" holes 3-1/4" apart on center. Insert the drywall anchors and secure the base using the #6 x 1" sheet metal screws provided.
3. Terminate the unit according to the guidelines in **Termination on page 1**.
4. Attach the cover by latching it to the top of the base, rotating the cover down and snapping it into place.
5. Secure the cover by backing out the lock-down screws using a 1/16" allen wrench until they are flush with the bottom of the cover.

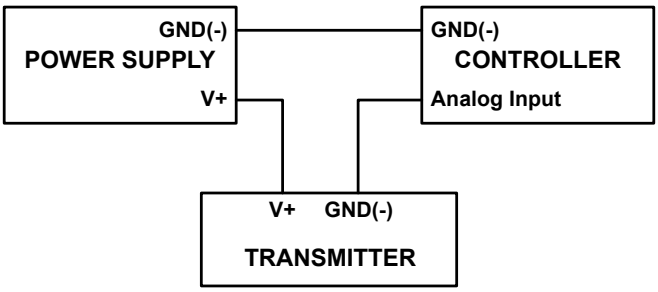
Troubleshooting Guide

The following table lists common problems and possible solutions. For more information, consult your local dealer, Liebert representative or the Liebert Worldwide Support Group.

Problems	Possible Solutions
Unit will not operate	• Check power supply at controller. • Disconnect sensor power wires and check for +VDC.
Temperature sensor in front-end software is reading high	• Determine if the input is set up correctly in the front end software. • Check if the transmitter wires are physically shorted. • Check wiring for proper termination.
Temperature sensor in front-end software is reading low	• Determine if the input is set up correctly in the front end software. • Check if the transmitter wires are physically open. • Check wiring for proper termination.

Troubleshooting Steps





1. Measure the voltage by placing a voltmeter (**V**) across the transmitter's (+) and (-) terminals. This voltage should be between 12 and 30VDC.
2. Measure the current by placing an ammeter (**A**) in series with the controller input.
   The current should read according to the equation at right:

$$\frac{(A-4)\times T_{span}}{16} + T_{low} = T$$

Variables in equation:

A	= Ammeter reading in mA
T_{span}	= # of degrees in the temperature span
T_{low}	= Low end of the temperature span
T	= Temperature at the sensor

3. The temperature surrounding the transmitter must be between 45°F and 96°F (7°C and 35°C).