



Installation Sheet

±5% (4–20 mA) Room Humidity Sensor

Order number: X13511051010

The ±5% room humidity (RH) sensor provides a 4–20 mA signal for use with the Tracer™ ZN520, Tracer ZN521, and Tracer ZN524 controllers, programmable control modules (PCMs), and universal programmable control modules (UPCMs).

Note: Do not use this sensor with a terminal unit controller (TUC). Instead, use a 20–4 mA humidity sensor (4190 7017) with these units.

Power Requirements

The room humidity sensor requires 24 Vdc to operate. When the sensor is connected to a Tracer ZN520, Tracer ZN521, or Tracer ZN524 controller, the controller provides the required power. When using the sensor with a UPCM, use the 24 Vdc power supply (4020 0977). This power supply can be ordered with a UPCM (select option 2 or 3 of UPCM model digit 7) or it can be ordered separately. When wiring the sensor to a PCM, use the 24 Vdc power supply (4020 0792).

Warnings, Cautions, and Notices

Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

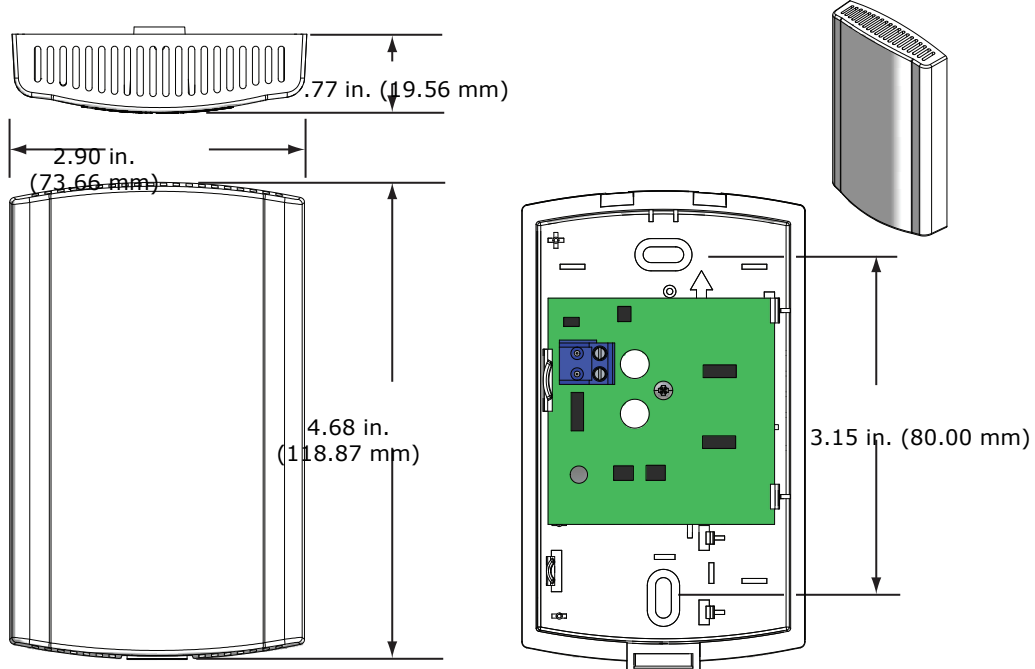
The three types of advisories are defined as follows:

WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.
NOTICE	Indicates a situation that could result in equipment or property-damage only accidents.

Specifications and Sensor Dimensions

Accuracy:	±5% RH over 20–95% RH at 77°F (25°C). Includes hysteresis, linearity, and repeatability.
Operating temperature range:	From 0°F to 140°F (-17°C to 60°C)
Supply voltage:	18-24 Vdc
Drift rate:	Less than 0.2% per year
Operating measurement range:	0-99% RH, noncondensing
Sensing element:	Polymer capacitive
Output characteristics:	4-20 mA for 0-100% RH
Repeatability:	0.5% RH
Hysteresis:	Less that 1% RH
Sensitivity:	0.1% RH
Storage temperature:	From -85°F to 158°F (-65°C to 70°C)
Thermistor resistance:	10 kΩ at 77°F
Temperature accuracy:	±0.36°F (±0.2°C)

Dimensions:



Sensor Locating Best Practices and Mounting

Locating

Properly locating the room humidity sensor is important to ensure accurate measurement. Place the sensor in an area of the room with good air circulation. Places to avoid when locating the sensor:

- Locations subject to draft from windows, doors, or diffusers
- Surfaces with an uncooled or unheated area behind them, such as an outside wall or the wall of an unoccupied store room
- Near heat sources, such as radiant heat from the sun, heat from appliances, or heat from concealed pipes or chimneys
- Dead spots behind doors, draperies, or in corners
- Walls having excessive vibration
- Corrosive environments such as near swimming pools or in hospital rooms

Mounting

To mount the sensor, first choose a flat interior surface that is approximately 54 inches (1.4 m) from the floor and then:

1. Remove sensor cover by pressing the thumb tab at the bottom of the enclosure. Tilt the cover forward and raise it over the top of the back plate.
2. Feed the wires through the base.
3. Attach sensor to drywall or plaster (hardware not included with the sensor).
4. For a 2 x 4 junction box, mount the sensor using two #6-32 screws.
5. Connect the controller wires to the terminals on the sensor (refer to the next section about wiring).
6. Replace cover by engaging tab hinges on top of the unit and then push to snap in place.

Wiring

Note: Analog input wire must be 18-gauge shielded twisted pair (equivalent to Trane wire number 400 2028). Cut back and tape the shield at the sensor. Ground the shield at the controller. Before starting wiring, refer to the illustration, "Specific controller-type wiring," p. 4.

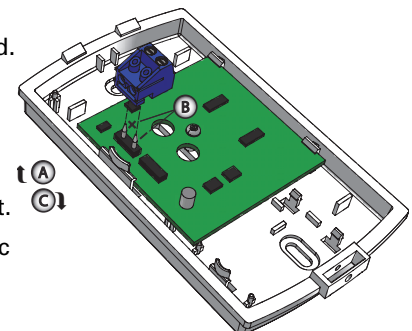
NOTICE

Equipment malfunction!

Do not run sensor wires and ac power wires together in the same conduit or wire bundle. This may cause malfunction due to electrical noise.

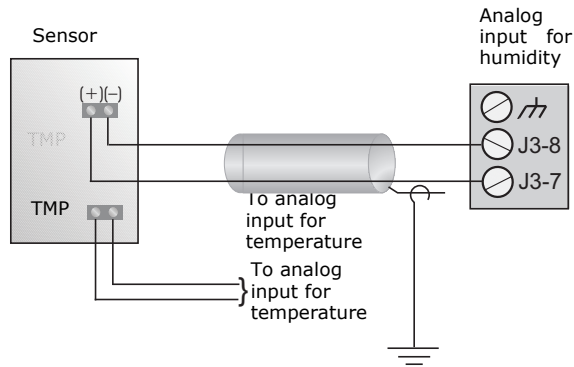
Connect the controller wires to the terminals on the sensor as follows:

1. Remove the blue terminal block **(A)** by carefully lifting it up and off the circuit board.
2. Locate the (+) and (-) terminal markings **(B)** on the board.
3. Attach the supply voltage to the (+) lead and the signal wire to the (-) lead.
4. Complete the wiring.
5. Replace the blue terminal block **(C)** on the circuit board and apply power to the unit.
6. Check for appropriate output signal using a digital volt meter (DVM) set on the dc milliamperes connected in series with the (-) terminal.

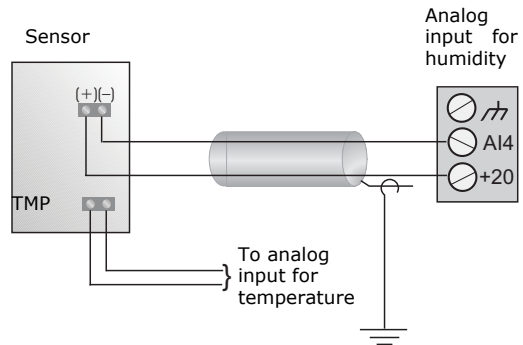


Specific controller-type wiring

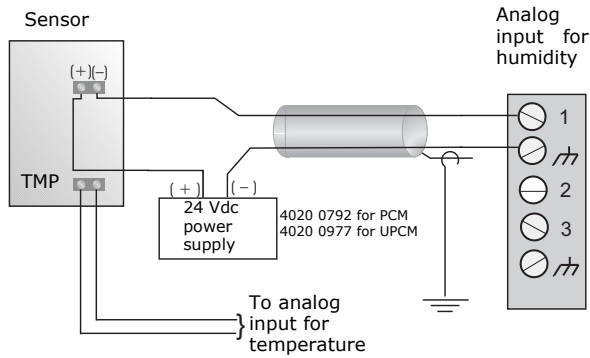
Tracer ZN520 and ZN524 sensor



Tracer ZN521 sensor



PCM/UPCM sensor



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