

## Q-Series Room Relative Humidity and Relative Humidity & Temperature Sensors with Active Output Signals

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### Product Description

The Q-Series Room Relative Humidity, and Relative Humidity & Temperature Sensors monitor and transmit changes in humidity and temperature to the building control systems. These units are especially suited for applications where precise, stable humidity sensing is required.

Several models are available — for humidity only (in 5% and 2%) or for humidity and temperature sensing (also in 5% and 2% versions). The humidity only units are available in either 4 to 20 mA or 0 to 10 Volt signal versions. The combination humidity and temperature units are available in either dual current or voltage versions.

### Product Numbers

QFAx0xx

### Caution Notations

<b>CAUTION:</b>		Equipment damage, or loss of data may occur if you do not follow the procedures as specified.
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### Required Tools

- Phillips screwdrivers, sizes 1 and 2
- Medium flat-blade screwdriver
- Wire cutters/strippers
- Tape measure
- Medium-duty electric drill
- Drill bit for wall anchor hole
- Marker or pencil
- Two No. 10 screws and wall anchors

### Expected Installation Time

30 minutes

### Prerequisites

- Ensure that the appropriate field wiring is installed.  
Appropriate wiring is one or more twisted pair or three conductor cables (plenum or non-plenum as required) within the maximum wiring run length for the humidity/temperature controller. The maximum recommended length is 750 feet (229 m).
- Ensure that all wiring complies with National Electric Code (NEC) and local regulations.

### Installation

Always mount the sensor vertically.

Locate the sensor:

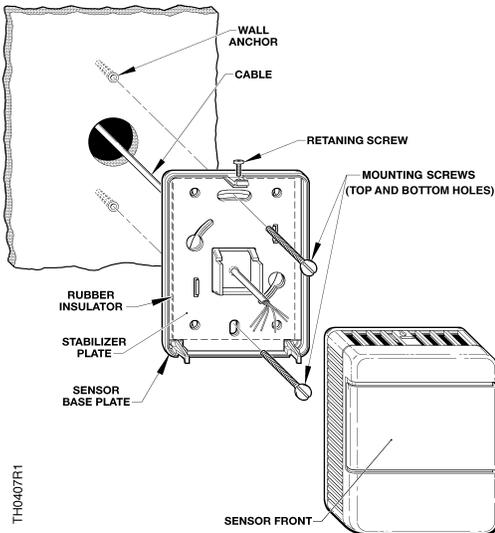
- According to design specifications and local regulations.
- Where the air circulates around it freely (not in recessed areas or behind doors).
- Allowing a minimum of 4 inches (10 cm) of free space above and below for proper air flow and access.
- Away from drafts caused by doors, windows, outside walls, air registers, pipes, return air plenums, etc.
- Away from heat sources, such as strong lights, fireplaces, direct sunlight, etc.
- On an inside wall (preferably), about 5 feet (1.5 m) above the finished floor.

**NOTE:** Local codes (such as the Americans with Disabilities Act) may require a specific mounting height.

## Drywall Mounting (No Rough-in), Typical

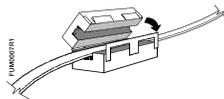
Using the sensor base plate as a template, mark the center field wiring hole and the mounting hole locations (Figure 1).

**NOTE:** For drywall mounting, use only the top and bottom holes.



**Figure 1. Drywall Mounting (No Rough-in), Typical.**

2. Drill two 3/16-inch (4.8 mm) mounting holes. If you are using screws to attach the sensor, insert two plastic wall anchors into the holes.
3. Cut a 1-inch (25 mm) center hole with a hole saw.
4. Pull about 6 inches (150 mm) of the field wiring through the hole in the wall and the sensor base plate.
5. Secure the field wiring in the terminal block located on the printed circuit board.
6. On sensors with voltage output signals (see Table 1), place the ferrite filter around the field wiring cable behind the sensor base plate towards the wall opening. Snap the ferrite filter closed (Figure 2).



**Figure 2. Ferrite Filter.**

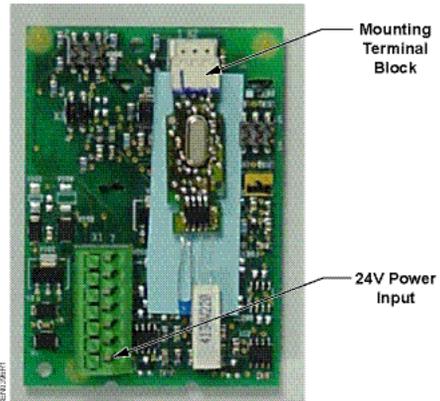
7. Push the field wiring and ferrite filter (if required) through the hole in the wall and loosely mount the sensor base plate on the wall using the screws provided. Do not tighten the screws.
8. Level the sensor base plate for appearance and then tighten the mounting screws.



**CAUTION:**

Over-tightening may cause the sensor base plate to flex or crack.

9. Feed the extra field wiring back through the hole in the sensor base plate.
10. Check that:
  - a. The wires from the humidity sensing membrane are separated from each other and are not in contact with the PCA.
  - b. The humidity sensing membrane has "free space" and is not in contact with the PCA or the temperature sensing element. See Figure 3.



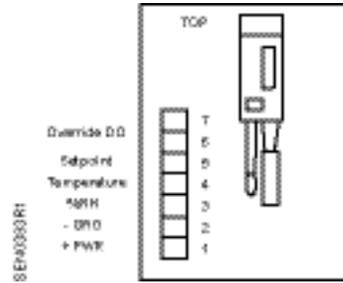
**Figure 3.**

**NOTE:** Blue background behind sensor is for clarity only and is not on production parts.

11. Snap the sensor pieces together by hooking the feet of the base plate into the slots on the front plate then pushing the top of the sensor until it snaps into place.
12. Tighten the sensor front retaining screw (Figure 1).

The installation is now complete.

## Wiring Diagrams



**Table 1. Rh/T Room Sensors with Active Outputs Installation, 0 to 10V.**

Available Features	Sensor Terminals Used				
	Power <sup>1</sup> 1 & 2	% Rh 2 & 3	Temp 2 & 4	Setpt 2 & 5	Ovrd 6 & 7
Rh: 0 to 10V, with and without display	•	•	–	–	–
Rh: 0 to 10V, T: 0 to 10V, with and without display	•	•	•	–	–
Rh: 0 to 10V, T: 0 to 10V, full-featured	•	•	•	•	•

1. Power input to these devices can be 24 Vac +/-20% or 12 to 35 Vdc.

**Table 2. Rh/T Room Sensors with Active Outputs Installation, 4 to 20 mA.**

Available Features	Sensor Terminals Used			
	% Rh <sup>2</sup> 1 & 3	Temp <sup>2</sup> 1 & 4	Setpt 1 & 5	Ovrd 6 & 7
Rh: 4 to 20 mA, with and without display	•	–	–	–
Rh: 4 to 20 mA, T: 4 to 20 mA, with and without display	•	•	–	–
Rh: 4 to 20 mA, T: 4 to 20 mA, full-featured	•	•	•	•

2. Power input to these devices is 12 Vdc to 35 Vdc ONLY.

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