SIEMENS

Series 1000 Room Temperature Sensors, 1K Ω Platinum (375α) RTD (MBC/RBC/MEC/UC)

Product Description

These sensors work with the Modular Building Controller (MBC), Remote Building Controller (RBC), Modular Equipment Controller (MEC) and Unitary Controller (UC). The sensors detect room temperature using a 1K Ω Platinum (375α) Resistance Temperature Detector (RTD).

NOTE: These sensors can be mounted on electrical boxes, stud-type mounting brackets, or drywall. Obtain the necessary mounting hardware and follow the appropriate mounting procedures for the type of installation required.

Product Numbers

Table1. Product Numbers and Descriptions.

Sensor Product Number*	Description
544-760	Sensing only
544-770	Override and setpoint
544-780	Override, setpoint and temperature display

* Product number suffixes indicate the display's temperature scale (where applicable) and sensor color: C = °C; F = °F, A = desert beige; B = white (e.g., 544-770**FA** for °F, desert beige).

Warning/Caution Notations

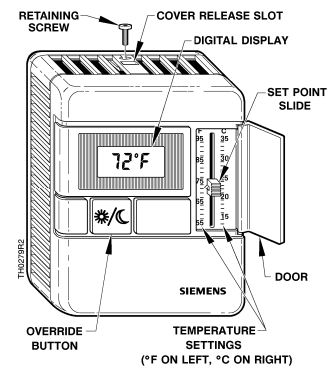| WARNING	⚠	Personal injury/loss of life may occur if a procedure is not performed as specified.
CAUTION	⚠	Equipment damage, or loss of data may occur if you do not follow procedure as specified.

Figure 1. Room Temperature Sensor (Showing All Optional Features).

Required Tools

- Phillips size 1 or 2 screwdriver
- 1/16-inch (1.57 mm) Allen wrench, if needed (192-632, package of 5)
- Small, flat-blade screwdriver
- Medium, flat-blade screwdriver
- Medium-duty electric drill
- 3/16-inch (4.8 mm) drill bit
- One-inch (25 mm) hole saw
- Small level
- Tape measure
- Marker or pencil

Expected Installation Time

30 minutes

Prerequisites

- Review these instructions before beginning.
- Installed: appropriate field wiring (standard four-conductor or six-conductor room sensor cables, plenum or non-plenum as required), within the maximum wiring run length for the individual field panel or equipment controller.

NOTE: All wiring must comply with National Electric Code (NEC) and local regulations.

Accessories

Review Table 2 to verify that you have the appropriate mounting hardware.

For retrofit installations, normally follow the method used by the pre-existing device. You may need to replace existing mounting hardware. Always mount the sensor vertically.

Table 2. Accessories.

P/N	Description	Used For	Reference
PTX6.4SPS	Sensor Power Supply Module	MBC/RBC applications with digital display	545-422
182-621	Gym Guard Kit, desert beige	gyms and similar environments requiring a guard. (Incompatible with adapter bases and the extender ring.)	155-222P25 (TB 193)
182-621E	Gym Guard Kit, satin chrome	See above.	155-222P25 (TB 193)
182-683	Metal (and Wood) Stud Mounting Bracket (pkg. 5)	single-sensor rough-in installations. Kit includes locator.	129-057
182-685	Spring Clips: Finished Drywall Mounting Kit (10 pack)	drywall mounting.	129-073
192-506	Electrical Box Adapter Plate Assembly Kit (pkg. 5)	electrical boxes mounted flush with the wall and for gyms and similar environments requiring a guard. (Also see *544-782*.)	Figure 8
192-860	Finish Plate Kit 1 Gang 1 Sensor; stainless steel	single-sensor, low-cost mounting. Plate is 3.7 × 5.1 inches (9.5 × 12.9 cm)	155-252P25 (TB 238)
536-666	Mounting Strap	standard light switch plate (field-supplied) to mount sensor on 2 × 4 electrical box	540-040 540-237
544-782*	Single Adapter Base Mounting Kit	2 × 4 boxes, all single sensor installations on walls with oversized holes, paint lines, etc., that need to be covered, and on exterior brick/cement-type walls. Kit includes Electrical Box Adapter Plate Assembly (192-495. Adapter base is 3-1/2 × 5 inches (8.8 × 12.7 cm).	Figure 8
544-783*	Double Adapter Base Mounting Kit	4 × 6 boxes and all double sensor installations on walls with oversized holes, paint lines, etc., that need to be covered, and on exterior brick/cement-type walls. Kit includes two mounting plates (192-720). Adapter base is 5 × 7 inches (12.7 × 18 cm).	Figure 8
544-784	Non-conduit Rough-in Kit, Double	double-sensor non-conduit rough-in installations. Kit includes locator.	540-784
544-785*	Extender Ring Kit	exterior brick or cement-type walls; fits to back of sensor base plate	—
544-800	Universal Adapter Kit	retrofitting a previous horizontal installation to a vertical one, or when the screw spacing does not fit the electrical box adapter plate. Kit includes multi-slotted adapter plate.	Figure 8
981-344	Electrical Box Cover Plate Kit	2 × 4 box rough-ins. Kit includes locator and connector.	—
—	Various finish plates	double-sensor, low-cost mounting for a variety of applications.	155-252P25 (TB 238)

* Product number suffixes indicate color: A = desert beige; B = white (e.g., 544-782**B**)

Mounting Information

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 (100 mm) free space above and below for proper airflow, the front cover removal tool, and the computer communication cable.

- 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: While not recommended, if you must mount the sensor on exterior brick or cement-type walls, see *Accessories*.

Drywall Mounting (No Rough-in), Typical

1. Mark the center (cable) hole and the mounting hole locations using the sensor base plate as a template. See Figure 2.

   ⚠ **CAUTION:**

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

2. Drill two 3/16-inch (4.8 mm) mounting holes.

3. Cut a 1-inch (25 mm) center hole with a hole saw.

4. If using screws to attach the sensor, insert two plastic wall anchors.

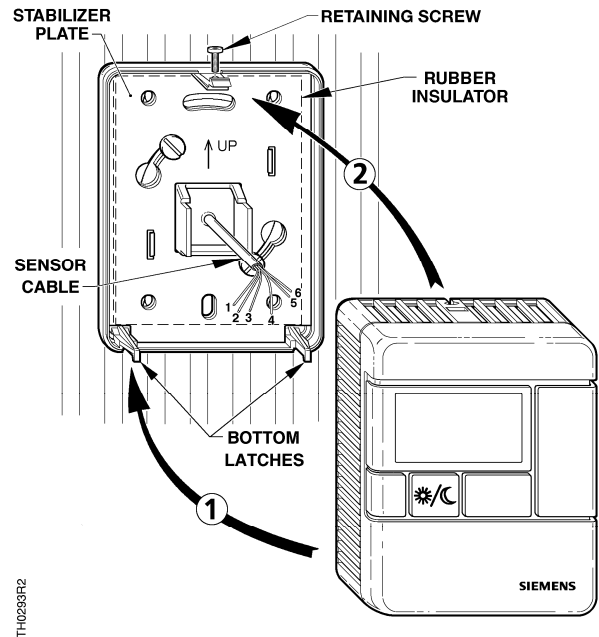5. Pull about three inches (75 mm) of the cable through the mounting hardware in the order shown. See Figure 2.

Figure 2. Drywall Mounting (No Rough-in), Typical.

6. Mount the sensor base plate on the wall, noting the UP arrow on the stabilizer plate:

   a. Install either the two mounting screws provided, the drive rivets provided, or spring clips, but do not tighten.

   ⚠ **CAUTION:**

   Pounding too hard or over-tightening may cause the sensor base plate to crack or bend.

   b. Level the sensor base plate for appearance.

   c. Tighten the two mounting screws to the sensor base plate.

7. Cut the cable, leaving about 3 inches (75 mm) on the sensor side of the drywall.

   ⚠ **CAUTION:**

   For retrofits: Before cutting the cable, make sure it is disconnected from the UC/MBC/RBC.

8. Unplug the terminal block from the back of the printed circuit board (PCB) and terminate the cable wires at the sensor terminal block. For six-position terminal blocks, see Figure 3. For four-position terminal blocks, see Figure 4. Also see Figure 5 (MBC/RBC) or Figure 6 (UC). Reinstall the terminal block.
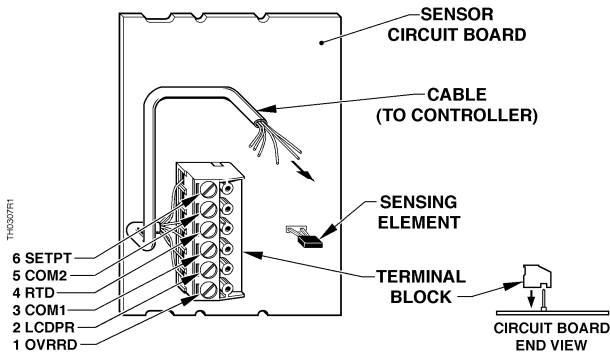
Figure 3. Terminating to Six-position Terminal Block (with Setpoint Switch).
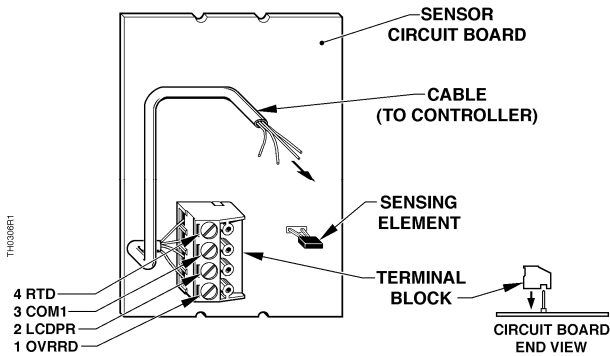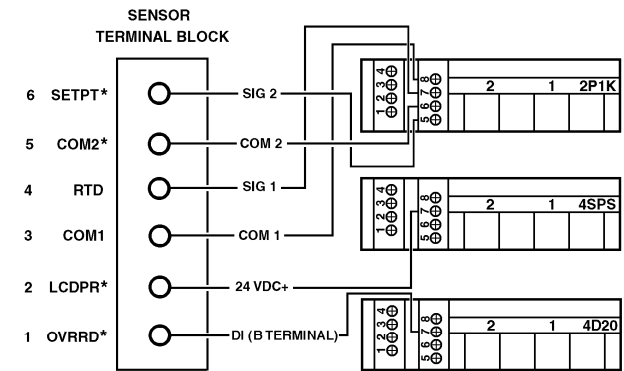

Figure 4. Terminating to Four-position Terminal Block (No Setpoint Switch).

9. Feed the extra cable back through the hole in the rubber insulator.

10. Snap the sensor front to the sensor base plate by first hooking the sensor front to the bottom latches, and then pushing the top of the sensor front into place until it latches.

11. Tighten the sensor front retaining screw. See Figure 2.

12. Terminate the other end of the wires either (a) at the MBC/RBC module terminal block(s*) (*Figure 5) or (b) at the appropriate UC terminal blocks (Figure 6.*)

The installation is now complete.

Terminating the Cable Wires

NOTE: 1. All connections for one sensor must be terminated in the same cabinet, whether MBC, RBC, MEC or UC.

2. Unitary Controller installations: On the UC Input/Output Card, place the universal inputs jumper in the RTD position.
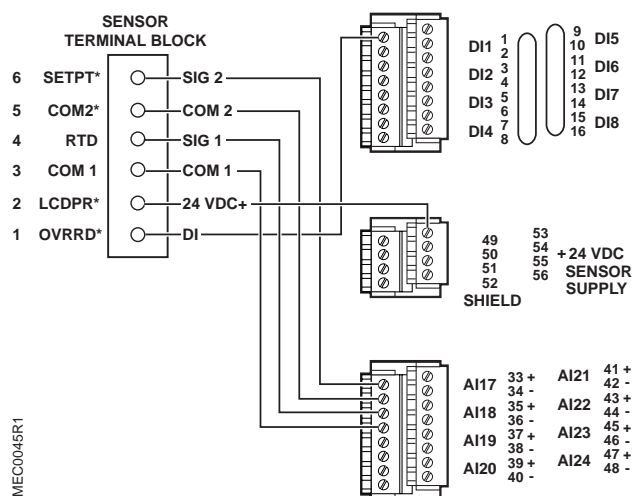

Figure 5. MBC/RBC Wiring Example. (Wiring to Full-featured Sensor 544-780).

Figure 6. UC Wiring. (Wiring to Full-featured Sensor 544-780).
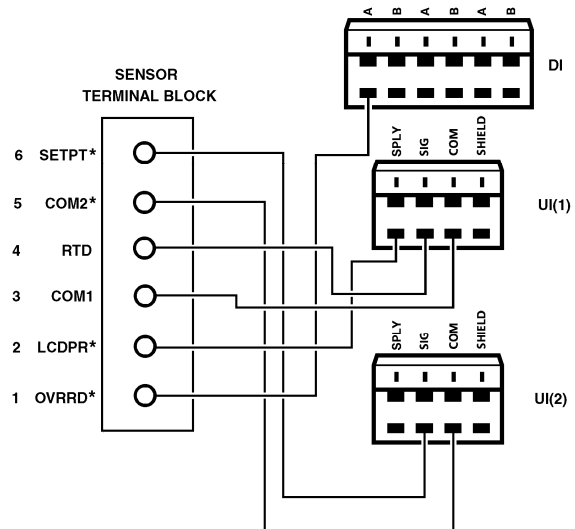
* Optional feature
NOTE: 1. Some terminal blocks have only four terminal points.
2. Not all wires are used with all sensor models.
3. COM2 is the return signal path for the setpoint option.
4. Wiring configuration is only an example and can differ depending on application.

Figure 7. MEC Wiring. (Wiring to Full-featured Sensor 544-780).

Electrical Box and Rough-in Mounting, Typical

1. If a locator is attached to the rough-in device, remove the locator by removing the two screws and lightly rocking the locator to pull it free.

2. Untie the twist tie and pull about three inches (75 mm) of the sensor cable into the space.

3. If you have a single-sensor electrical box, install the electrical box adapter plate. See Figure 8.

    If you have a double-sensor electrical box, install the required mounting plate(s).

    If you use a universal adapter kit for a retrofit job, install the multi-slotted plate in place of the electrical box adapter plate. See Figure 8.

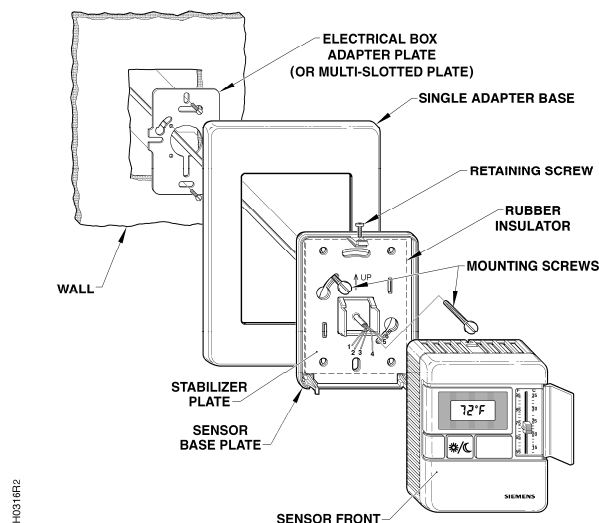4. Pull the cable through the required mounting hardware in the order shown.

Figure 8. Electrical Box and Rough-in Mounting, Typical.

5. Install the two sensor mounting screws provided but do not tighten.

6. Mount the sensor base plate on the wall, noting the "UP" arrow on the stabilizer plate:

    a. Level the sensor base plate for appearance only.

    b. Tighten the two mounting screws to the sensor base plate.

⚠ **CAUTION:**

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

7. Continue with *Drywall Mounting (No Rough-in, Typical),* Steps 7 through 13.

The installation is now complete.