# PRO①®

**Pro1 Technologies**

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# R250S

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This manual covers the following models:
• **R250S** (Requires a Wired Sensor Capable Thermostat)

Congratulations on purchasing a PRO1 Wired Sensor. This remote sensor was designed to the highest reliability and ease of use standards. Thank you for choosing our quality products

**A trained, experienced technician must install this product.**

Carefully read these instructions. You could damage this product or cause a hazardous condition if you fail to follow these instructions.

**⚠ Caution: Equipment Damage Hazard**

Do not operate the cooling system if the outdoor temperature is below 50°F (10° C) to prevent possible compressor damage.

Una version en espanol de este manual se puede descargar en la pagina web de la compania.

Rev. 1807

## Installing the R250S as an Outdoor Sensor

The R250S can also be used as an Outdoor Temperature Sensor. Included in the package is a metal wall mount and 2 screws. Securely screw the mount with the R250S into a shaded area.



### Wiring the R250S

The R250S is packaged with 6' of 1.8mm cable. If you need more length, 24 AWG or larger wire can be joined onto the two wires from the sensor. The splices need to be properly joined and protected in an accessible junction box.

**⚠ Warning:**

Do **NOT** run the wires parallel to telephone or power cables. If there is a strong source of electromagnetic interference near the location of the sensor wires, a twisted pair or a protected cable should be used. The wires can also be run in a grounded metal conduit.

## Connecting to a Wired Sensor Capable Thermostat

After installation connect the R250S to the S terminal blocks on the Wired Sensor Capable Thermostat. Loosen the terminal block screws. Insert wires, then retighten terminal block screws.



**R250S Remote Sensor**

**NOTE:** Refer to your wred sensor capable thermostat manual for setup

## Connecting to a Wired Sensor Capable Thermostat

**R250S Wired Sensor**

Temperature range................... -4ºF to 140ºF (-20ºC to 60ºC)
Temperature accuracy............................................± 1ºF
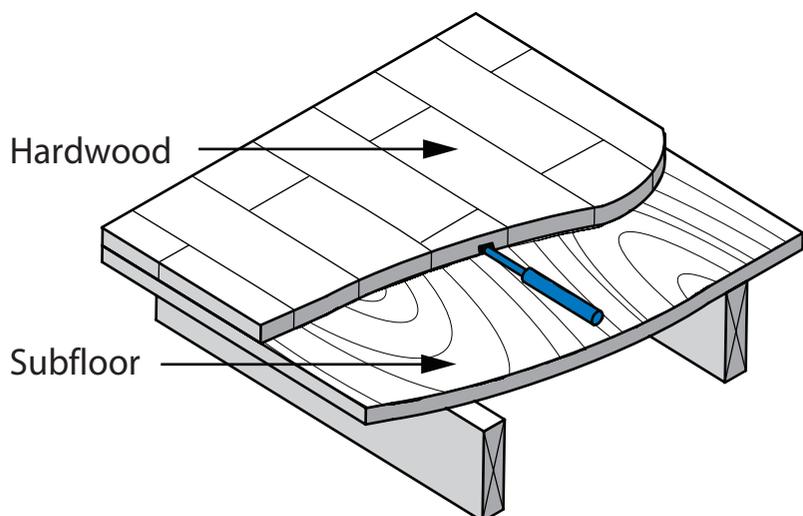Transmission................................................Constant Resistance

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## Installing the R250S as a Floor Sensor

Before wiring, the R250S needs to be installed. The stainless steel housing allows this sensor to be placed into concrete, thin-set, and grout. The following five examples demonstrate the proper way to install a R250S as a floor sensor in conventional floor construction.
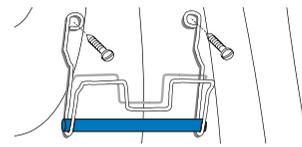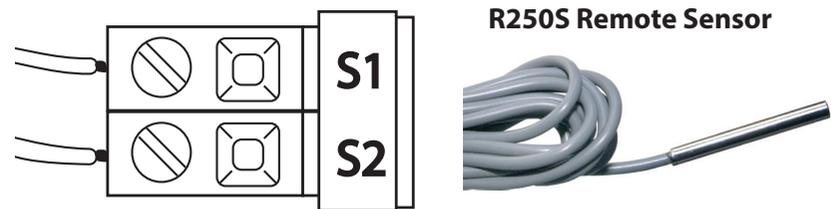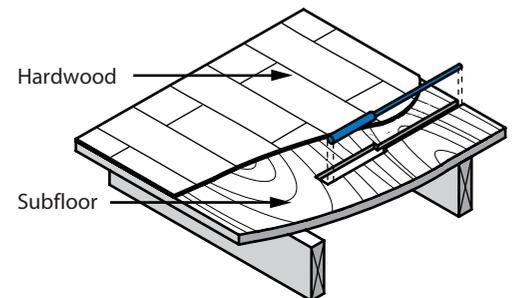
### Thick Covering - Greater Than 3/8" (10mm)

If the thick floor covering is installed directly to the subfloor, a 1/8" (4mm) wide by 1/16" (2mm) deep groove should be cut into the back of the floor cover to allow for the R250S wire. Position the sensor in such a place that the wire can reach the location of its junction box. The groove for where the sensor will be placed should be 1/4" (8mm) wide by 1/4" (8mm) deep by 1 3/4" (45mm) long. For accurate temperature reading, the sensor should be located exactly between heating elements.
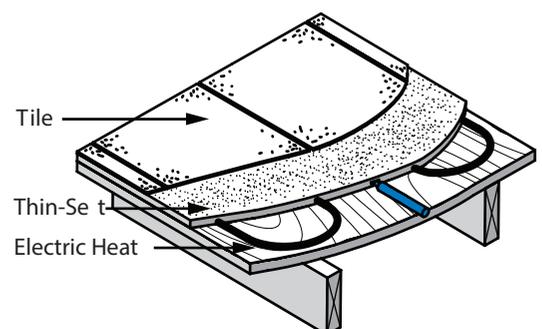


### Thin Covering - Less Than 3/8" (10mm)

If the thin floor covering is installed directly to the subfloor, a 1/8" (4mm) wide by 1/16" (2mm) deep groove should be cut into the surface of the subfloor to allow for the R250S wire. Position the sensor in such a place that the wire can reach the location of its junction box. The groove for where the sensor will be placed should be 1/4" (8mm) deep by 1 3/4" (45mm) long. For accurate temperature reading the sensor should be located exactly between the heating elements.



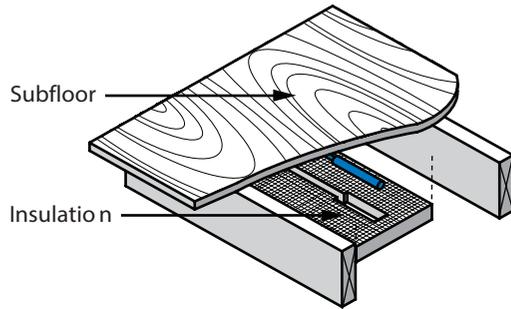### Thin-Set or Thin-Pour

If the floor covering is installed over the thin-set or thin-pour material of sufficient depth, the R250S sensor can be placed into either material and then covered by the floor covering. Position the sensor in such a place that the wire can reach the location of its junction box. For accurate temperature reading, the sensor should be located exactly between the heating elements.
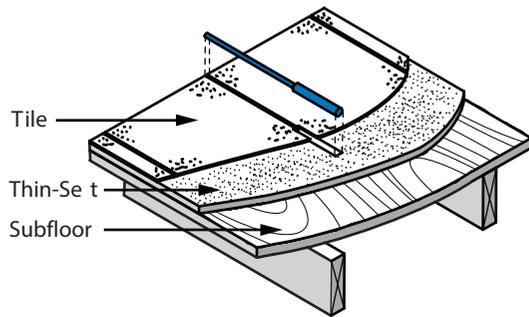
### Installing to the bottom of the subfloor

If installing the R250S sensor to the bottom of the subfloor, cut a piece of 1" (25mm) thick insulation into a 6" (150mm) by 6" (150mm) square.  A 1/4" (8mm) wide by 1/4" (8mm) deep by 1 3/4" (45mm) long groove should be cut into the insulation to allow for the sensor. Position the sensor in such a place that the wire can reach the location of its junction box.  Use a preferred and effective method to fasten the insulation to the subfloor.



Subfloor

Insulatio n

### Tile Flooring

The R250S sensor can be installed into existing tile with adequate grout lines. Select a location for the sensor that is exactly between the heating elements and in a low traffic area.  Position the sensor in such a place that the wire can



Tile

Thin-Se t

Subfloor

### 100K Thermistor Output Table

| °F | C | Ohms | °F | C | Ohms | °F | C | Ohms |
|---|---|---|---|---|---|---|---|---|
| -39- | 39.44 | 3916295 | 37 | 2.78 | 302466 | 113 | 45.00 | 41303 |
| -37- | 38.33 | 3627711 | 39 | 3.89 | 285206 | 115 | 46.11 | 39434 |
| -35- | 37.22 | 3362274 | 41 | 5.00 | 269035 | 117 | 47.22 | 37660 |
| -33- | 36.11 | 3117987 | 43 | 6.11 | 253877 | 119 | 48.33 | 35976 |
| -31- | 35.00 | 2893035 | 45 | 7.22 | 239664 | 121 | 49.44 | 34376 |
| -29- | 33.89 | 2685770 | 47 | 8.33 | 226331 | 123 | 50.56 | 32843 |
| -27- | 32.78 | 2494694 | 49 | 9.44 | 213819 | 125 | 51.67 | 31399 |
| -25- | 31.67 | 2318444 | 51 | 10.56 | 201971 | 127 | 52.78 | 30027 |
| -23- | 30.56 | 2155781 | 53 | 11.67 | 190946 | 129 | 53.89 | 28722 |
| -21- | 29.44 | 2004274 | 55 | 12.78 | 180588 | 131 | 55.00 | 27481 |
| -19- | 28.33 | 1865595 | 57 | 13.89 | 170853 | 133 | 56.11 | 26300 |
| -17- | 27.22 | 1737397 | 59 | 15.00 | 161700 | 135 | 57.22 | 25177 |
| -15- | 26.11 | 1618827 | 61 | 16.11 | 153092 | 137 | 58.33 | 24107 |
| -13- | 25.00 | 1509102 | 63 | 17.22 | 144992 | 139 | 59.44 | 23089 |
| -11- | 23.89 | 1407512 | 65 | 18.33 | 137367 | 141 | 60.56 | 22111 |
| -9 | -22.78 | 1313405 | 67 | 19.44 | 130189 | 143 | 61.67 | 21188 |
| -7 | -21.67 | 1226184 | 69 | 20.56 | 123368 | 145 | 62.78 | 20308 |
| -5 | -20.56 | 1145306 | 71 | 21.67 | 117000 | 147 | 63.89 | 19469 |
| -3 | -19.44 | 1069620 | 73 | 22.78 | 110998 | 149 | 65.00 | 18670 |
| -1 | -18.33 | 1000019 | 75 | 23.89 | 105338 | 151 | 66.11 | 17907 |
| 1- | 17.22 | 935383 | 77 | 25.00 | 100000 | 153 | 67.22 | 17180 |
| 3- | 16.11 | 875329 | 79 | 26.11 | 94963 | 155 | 68.33 | 16486 |
| 5- | 15.00 | 819505 | 81 | 27.22 | 90208 | 157 | 69.44 | 15824 |
| 7- | 13.89 | 767589 | 83 | 28.33 | 85719 | 159 | 70.56 | 15187 |
| 9- | 12.78 | 719284 | 85 | 29.44 | 81479 | 161 | 71.67 | 14584 |
| 11 | -11.67 | 674319 | 87 | 30.56 | 77438 | 163 | 72.78 | 14008 |
| 13 | -10.56 | 632442 | 89 | 31.67 | 73654 | 165 | 73.89 | 13458 |
| 15 | -9.44 | 593086 | 91 | 32.78 | 70076 | 167 | 75.00 | 12932 |
| 17 | -8.33 | 556739 | 93 | 33.89 | 66692 | 169 | 76.11 | 12430 |
| 19 | -7.22 | 522842 | 95 | 35.00 | 63491 | 171 | 77.22 | 11949 |
| 21 | -6.11 | 491217 | 97 | 36.11 | 60461 | 173 | 78.33 | 11490 |
| 23 | -5.00 | 461699 | 99 | 37.22 | 57594 | 175 | 79.44 | 11051 |
| 25 | -3.89 | 434134 | 101 | 38.33 | 54878 | 177 | 80.56 | 10627 |
| 27 | -2.78 | 408383 | 103 | 39.44 | 52306 | 179 | 81.67 | 10225 |
| 29 | -1.67 | 384316 | 105 | 40.56 | 49847 | 181 | 82.78 | 9841 |
| 31 | -0.56 | 361813 | 107 | 41.67 | 47538 | 183 | 83.89 | 9473 |
| 33 | 0.56 | 340581 | 109 | 42.78 | 45349 | 185 | 85.00 | 9121 |
| 35 | 1.67 | 320895 | 111 | 43.89 | 43273 | 187 | 86.11 | 8783 |

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## Specifications & Warranty

### Specifications

Operating Temperature ...................... 32˚F to 105˚F (0˚C to +41C)
Operating humidity............................... 90% non-condensing maximum
Dimensions of sensor .......................... 1.5"W x 2.75"H  x 0.75"D
Resistance range ...................................Up to 300 feet

### Warranty Registration

Your new thermostat has a 5 year limited warranty. You must register your thermostat within 60 days of installation. Without this registration the warranty period will begin on date of manufacture. For warranty issues please contact the HVAC professional that installed this product. You can register your new thermostat in 2 ways:

#### Online

Go to the company website, select warranty registration and fill out a short registration form.

#### Mail

Complete the form below and mail it to the address shown.

- - - - - - - - - - - - - - ✂ - - - - - - - - - - - - - - - -

### Warranty Registration

Name: _____

Address: _____

City: _____

State: _____

Zip: _____

Thermostat Model: _____

Date Installed: _____

Complete form and mail to:

**Thermostat Warranty Registration**

P.O. Box 3377
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