ProRadiant SYSTEMS

viega

# Product Instructions

## Optional Universal Sensor

### Applications

Viega's Optional Universal Sensor (stock code 16 018) can be used for domestic hot water control with the use of the Advanced Heating Control (stock code 16 014). The sensor can also be used as a replacement for the Basic Heating Control's supply sensor (stock code 16 015) and also the Advanced Snow Melt Control's universal sensors.

### Technical Data

Packaged Weight:
0.08 lb. (35 g), zinc sleeve, 10" (250 mm), 20 AWG XPE wire

Dimensions:
3/8" OD x 3/4" (9.5 OD x 19 mm)

Approval:
CSA C US, UL listed

Operating Range:
-60 to 255°F (-50 to 125°C)

Sensor:
NTC thermistor, 10 kΩ @ 77°F (25°C ± 0.2°C), ß=3892

Sensor comes with:

- 1 Universal Sensor
- 1 heat resistant 14" black tie strap

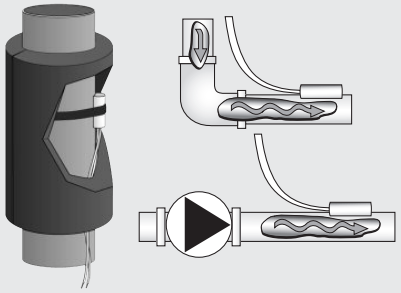
### Installation

These sensors are designed to mount on a pipe or in a temperature immersion well. The Universal Sensor can be strapped directly to the pipe using the cable tie provided. Insulation should be placed around the sensor to reduce the effect of air currents on the sensor measurement.

The Universal Sensor should be placed downstream of a pump or after an elbow or similar fitting. This is especially important if large diameter pipes are used as the thermal stratification within the pipe can result in erroneous sensor readings. Proper sensor location requires that the fluid is thoroughly mixed within the pipe before it reaches the sensor.

### Sensor Testing Instructions

A good quality test meter capable of measuring up to 5,000 kΩ (1 kΩ=1000Ω) is required to measure the sensor resistance. In addition to this, the actual temperature must be measured with either a good quality digital thermometer, or if a thermometer is not available, a second sensor can be placed alongside the one to be tested and the readings compared.



First, measure the temperature using the thermometer and then measure the resistance of the sensor at the control. The wires from the sensor must not be connected to the control while the test is performed.

Using the chart below, estimate the temperature measured by the sensor. The sensor and thermometer readings should be close. If the test meter reads a very high resistance, there may be a broken wire, a poor wiring connection or a defective sensor.

If the resistance is very low, the wiring may be shorted, there may be moisture in the sensor or the sensor may be defective. To test for a defective sensor, measure the resistance directly at the sensor location. **Do not apply voltage to a sensor at any time as damage to the sensor may result.**

| Temperature | | Resistance | Temperature | | Resistance | Temperature | | Resistance | Temperature | | Resistance |
|---|---|---|---|---|---|---|---|---|---|---|---|
| °F | °C | Ω | °F | °C | Ω | °F | °C | Ω | °F | °C | Ω |
| -50 | -46 | 490,813 | 20 | -7 | 46,218 | 90 | 32 | 7,334 | 160 | 71 | 1,689 |
| -45 | -43 | 405,710 | 25 | -4 | 39,913 | 95 | 35 | 6,532 | 165 | 74 | 1,538 |
| -40 | -40 | 336,606 | 30 | -1 | 34,558 | 100 | 38 | 5,828 | 170 | 77 | 1,403 |
| -35 | -37 | 280,279 | 35 | 2 | 29,996 | 105 | 41 | 5,210 | 175 | 79 | 1,281 |
| -30 | -34 | 234,196 | 40 | 4 | 26,099 | 110 | 43 | 4,665 | 180 | 82 | 1,172 |
| -25 | -32 | 196,358 | 45 | 7 | 22,763 | 115 | 46 | 4,184 | 185 | 85 | 1,073 |
| -20 | -29 | 165,180 | 50 | 10 | 19,900 | 120 | 49 | 3,760 | 190 | 88 | 983 |
| -15 | -26 | 139,402 | 55 | 13 | 17,436 | 125 | 52 | 3,383 | 195 | 91 | 903 |
| -10 | -23 | 118,018 | 60 | 16 | 15,311 | 130 | 54 | 3,050 | 200 | 93 | 829 |
| -5 | -21 | 100,221 | 65 | 18 | 13,474 | 135 | 57 | 2,754 | 205 | 96 | 763 |
| 0 | -18 | 85,362 | 70 | 21 | 11,883 | 140 | 60 | 2,490 | 210 | 99 | 703 |
| 5 | -15 | 72,918 | 75 | 24 | 10,501 | 145 | 63 | 2,255 | 215 | 102 | 648 |
| 10 | -12 | 62,465 | 80 | 27 | 9,299 | 150 | 66 | 2,045 | 220 | 104 | 598 |
| 15 | -9 | 53,658 | 85 | 29 | 8,250 | 155 | 68 | 1,857 | 225 | 107 | 553 |

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