

# SOIL TEMPERATURE SENSORS

## 5600-0030 & 5600-0455



### SOIL & WATER TEMPERATURE PROBE 5600-0455

THE 5600-0455 SOIL & WATER TEMPERATURE PROBE CONNECTS DIRECTLY TO ALL SUTRON DATALOGGERS

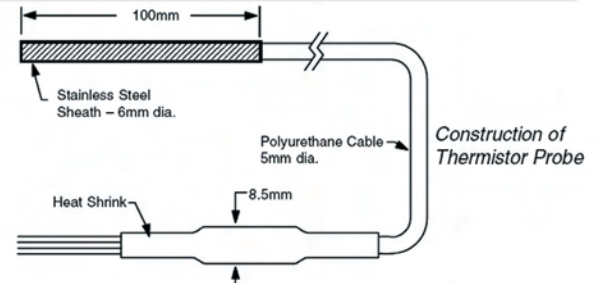
- Rugged, versatile
- High accuracy
- Multiplexers available
- Connects directly to all Sutron dataloggers (and various others from different manufacturers).
- Precision thermistor in a water-resistant casing & a standard 3m polyurethane cable - tough, UV-resistant, totally waterproof.
- Operates over the range  $-40^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$ .
- Low cost
- Long cables available

#### ACCURACY

Overall accuracy is comparable to that of a platinum resistance thermometer. In practice, the accuracy depends on a combination of the thermistor's interchangeability specification, the precision of the bridge resistors and the linearisation error.

In the worst case, these errors might produce a total error of  $\pm 0.3^{\circ}\text{C}$  over the range  $-20^{\circ}\text{C}$  to  $+48^{\circ}\text{C}$  for the 107 probe and  $\pm 0.4^{\circ}\text{C}$  over the range  $-3^{\circ}\text{C}$  to  $+92^{\circ}\text{C}$  for the 108 probe. (Note that these are the worst case errors; generally, the overall accuracy is better than  $\pm 0.2^{\circ}\text{C}$ .)

A major error component is the thermistor specification, given as  $\pm 0.1^{\circ}\text{C}$  over the range 0 to  $+70^{\circ}\text{C}$ , and  $\pm 0.3^{\circ}\text{C}$  (worst case) at  $-40^{\circ}\text{C}$ .



Although the thermistor interchangeability is typically better than this, the majority of the error can be determined with a single point calibration. This error can then be compensated for by entering an offset into the appropriate instruction.

#### LINEARISATION ERRORS (STANDARD INSTRUCTION)

##### RANGE $^{\circ}\text{C}$ ERROR

- 40 $^{\circ}\text{C}$  to +56 $^{\circ}\text{C}$   $\pm 1.0^{\circ}\text{C}$
- 38 $^{\circ}\text{C}$  to +52 $^{\circ}\text{C}$   $\pm 0.5^{\circ}\text{C}$
- 23 $^{\circ}\text{C}$  to +48 $^{\circ}\text{C}$   $\pm 0.1^{\circ}\text{C}$

#### BRIDGE RESISTORS

Both 0.02% tolerance, 5ppm temperature coefficient

#### MAXIMUM NUMBER OF PROBES

One datalogger excitation channel will drive several hundred probes. Each probe only requires a single-ended input. The practical limitation is the number of lead wires that can be inserted into a single excitation terminal (approximately 10).

### SOIL & WATER TEMPERATURE PROBE 5600-0030

THE 5600-0030 SOIL AND WATER TEMPERATURE PROBE IS DESIGNED FOR LONG-TERM BURIAL IN SOIL, CONCRETE, OR OTHER HIGH-MOISTURE ENVIRONMENTS.

While NOT designed for deepwater immersion, the 5600-0030 is water-tight for water temperature measurements in bogs, wetlands, wells, lakes, reservoirs, and rivers. Output is not linear. The equation to convert voltage to temperature is supplied with the unit.

- Water resistant
- Rugged
- High sensitivity
- UV resistant
- High accuracy

#### SPECIFICATIONS

Accuracy	0 to 60 $^{\circ}\text{C}$ 0.1 $^{\circ}\text{C}$ -40 to 60 $^{\circ}\text{C}$ 0.2 $^{\circ}\text{C}$
Cable	15 foot length standard (other lengths available)

#### ORDERING

5600-0030-1 Temperature Sensor, Soil/Water,