CAMPBELL SCIENTIFIC
WHEN MEASUREMENTS MATTER

109SS-L

Stainless-Steel Temperature Probe for Harsh Environments

Rugged, Accurate, Versatile

Can be used in a variety of applications

Overview

The 109SS is a rugged, accurate probe that measures soil or water temperature from -40° to +70°C. The 109SS consists of a thermistor encased in a sheath made from grade 316L stainless steel. The rugged stainless-steel sheath protects the thermistor, allowing you to bury or submerge the 109SS in harsh, corrosive environments. This probe also has a fast time response, and it can be easily interfaced with our data loggers.

Benefits and Features

- Designed for harsh, corrosive environments
- Fast response time
- Wide temperature measurement range
- Easy to install or remove
- Compatible with most of our current and retired data loggers

Detailed Description

The 109SS thermistor can survive temperatures up to 100°C, but the overmolded joint and cable should not be exposed to temperatures hotter than +70°C.

Water Temperature

The sensor can be submerged to 46 m (150 ft) or 63 psi. Please note that the 109SS is not weighted. Therefore, the installer should either add a weighting system or secure the sensor to a fixed, submerged object, such as a piling.

Soil Temperature

The 109SS is suitable for shallow burial only. Placement of the sensor's cable inside a rugged conduit may be advisable for long cable runs—especially in locations subject to digging, mowing, traffic, use of power tools, or lightning strikes.

Specifications

Output	Analog
Operating Temperature Range	-40° to +70°C

For comprehensive details, visit: www.campbellsci.com/109ss

Accuracy	*Note:* Overall probe accuracy is a combination of thermistor interchangeability, bridge-resistor accuracy, and error of the Steinhart-Hart equation. Interchangeability is the principle component error. If needed, an estimate of the interchangeability error for 0 to 50°C, that can be used as the *Offset* parameter of the Therm109() instruction, can be determined with a 1-point or 2-point calibration. › ±0.60°C (-40 to +70°C) › ±0.49°C (-20 to +70°C)
Maximum Submergence	45.7 m (150 ft) or 434 kPa (63 psi)
Temperature Measurement Range	-40° to +70°C
Thermistor Temperature Survival Range	-50° to +100°C
Overmolded Joint and Cable Temperature Survival Range	-50° to +70°C
Interchangeability Error	› ±0.1°C tolerance (25°C) › ±0.38°C tolerance (0°C) › ±0.3°C tolerance (50°C) › ±0.4°C tolerance (70°C) › ±0.6°C tolerance (-40°C)
Steinhart-Hart Equation Error	≤ 0.02°C (-40°)
Time Constant in Air	› 0.5 s (antifreeze/water rolling) › 7.5 s (air @ 3 m/s) › 31 s (still air)
Sensor Description	Micro-BetaCHIP Probe 10K3MCD1, 0.5 mm (0.018 in.) diameter, 10 kohm at 25°C
Cable Description	0.56 cm (0.22 in.) diameter with Santoprene jacket
Cable/Probe Connection	"ATUM" heat shrink, "Macromelt" overmolded joint
Stainless-Steel Sheath Diameter	0.16 cm (0.063 in.)
Stainless-Steel Sheath Length	5.84 cm (2.3 in.)
Overmolded Joint Diameter	1.02 cm (0.40 in.)
Overmolded Joint Length	4.24 cm (1.67 in.)
Weight	0.1 kg with 3.2 m cable (0.2 lb with 10.5 ft cable)