



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 $+70^{\circ}\text{C}$. 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 $+70^{\circ}\text{C}$.

should either add a weighting system or secure the sensor to a fixed, submerged object, such as a piling.

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

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 -40° to $+70^{\circ}\text{C}$
Range

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 **Therm1090** 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)

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



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