CAMPBELL SCIENTIFIC®
WHEN MEASUREMENTS MATTER

109SS

Temperature Sensor for Harsh Environments

Rugged, Accurate, Versatile

Can be used in a variety of applications

Overview

The 109SS consists of a thermistor encased in a 316L stainless-steel sheath. The rugged stainless-steel sheath protects the thermistor allowing the 109SS to be buried or submerged in harsh, corrosive environments.

The 109SS measures temperature from -40° to +70°C. The thermistor can survive temperatures up to 100°C, but the overmolded joint and cable should not be exposed to temperatures hotter than +70°C.

Benefits and Features

- Designed for harsh, corrosive environments
- Fast response time
- Compatible with our CR300, CR6, CR200(X)-series, CR800, CR850, CR1000, and CR3000 dataloggers
- Wide temperature measurement range
- Easy to install or remove
- Compatible with the CWS900-series interfaces, allowing it to be used in a wireless sensor network

Installation

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.

Ordering Information

Temperature Sensor for Harsh Environments

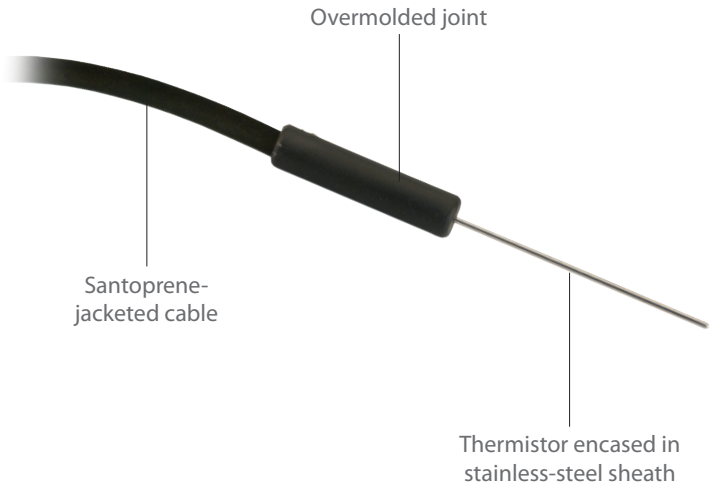
109SS-L Stainless Steel Temperature Probe with user-specified cable length. Enter cable length (in feet) after the -L. Must choose a cable termination option (see below).

Cable Termination Options (choose one)

-PT Cable terminates in stripped and tinned leads for direct connection to a datalogger's terminals.

-PW Cable terminates in connector for attachment to a prewired enclosure.

-CWS Cable terminates in a connector for attachment to a CWS900-series interface. Connection to a CWS900-series interface allows this sensor to be used in a wireless sensor network.



Specifications

- Thermistor Description: Micro-BetaCHIP Probe 10K3MCD1, 0.5 mm (0.018 in) diameter, 10 kohms at 25°C
- Measurement Range: -40° to +70°C
- Thermistor Survival Temperature Range: -50° to +100°C
- Overmolded Joint and Cable Survival Temperature: -50° to +70°C
- Maximum Water Submersion Depth: 45.7 m (150 ft) or 434 kPa (63 psi)
- EU Declaration of Conformity: https://s.campbellsci.com/documents/us/compliance/eudoc_109ss.pdf
- Interchangeability Error

Temperature	Tolerance
-40°C	±0.6°C
0°C	±0.38°C
25°C	±0.1°C
50°C	±0.3°C
70°C	±0.4°C

- Steinhart-Hart Linearization Equation Error (maximum): 0.02°C at -40°C
- Time Constant in Air

Fluid	τ
Still Air	31 s
Air at 3 m/s:	7.5 s
Antifreeze/Water Rolling	0.5 s

- 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.)
- Cable/Probe Connection: ATUM heat shrink, Macromelt over-molded joint
- Cable Description: 0.56 cm (0.22 in) diameter with Santoprene jacket
- Weight: 0.1 kg with 3.2 m cable (0.2 lb with 10.5 ft cable)