



Customizable

Rugged, digital temperature measurements

Overview

The CS230 temperature profiler uses SDI-12 digital technology for simple integration. SDI-12 does away with analog measurement inaccuracies and susceptibility to electrical noise. The CS230 consists of a rigid probe assembly and up to four optional external temperature probes. The rigid probe assembly maintains the precise position of the temperature points within the profile, while protecting the temperature sensors in all mediums for the long-term.

The CS230 is suited for a wide variety of applications and environments. The completely sealed probe assembly and external probes permit the CS230 to be used in roadbeds, soils, and water (snow and ice). Applications where the CS230 is used include spring-load adjustment, frost and permafrost monitoring, and soil and water temperature profiling.

Benefits and Features

- › Lifetime min/max temperature recording
- › Customizable measurement spacing for any number of applications
- › Available external probes simplify installation for roadbed applications
- › User-resettable min/max temperature recording
- › Automatic 1 second temperature update
- › Makes use of the included SGB3 to protect against electrical surges
- › One SDI-12 channel is used to connect all temperature sensors
- › Low power—suitable for remote applications
- › No calibration required
- › Serial number & installation depth data for each location stored onboard each sensor
- › Excellent long-term stability of measurements
- › Comprehensive measurement range

Technical Description

When power is supplied to the CS230 probe, the internal electronics will continuously measure the temperature at an approximate rate of 1 measurement per second. Every output measurement obtained from the sensor is a running average of 10 consecutive 1-second readings. The accuracy specification is based on an average of 10 consecutive readings. For this purpose, after initial power-up, it is

recommended to delay 10 seconds to obtain the best accuracy.

Because the sensor is obtaining a measurement every 1 second, it is recommended to use the Continuous measurement command to obtain the temperature readings. Using the "R" commands will reduce the time taken to obtain a reading with the SDI-12 protocol.

Specifications

Operating Temperature Range	-55° to +85°C
Typical Accuracy	±0.2°C (-40° to +85°C) includes lifetime drift
Worst Case Accuracy	» ±0.5°C (-55° to -40°C) includes lifetime drift » ±0.4°C (-40° to +85°C) includes lifetime drift
Resolution	0.0078°C
Communications	SDI-12
Maximum Sensors per Probe	32
Minimum Spacing	5 cm (1.97 in.)
Optional External Probes	4 (maximum)

Supply Voltage	9 to 28 Vdc
Current Consumption	» 1.0 mA (max) quiescent current draw per sensor » 20 mA + (# sensors * 1.0 mA) active current draw
Warm-up Time on Power up	10 s
Probe Diameter	2.13 cm (0.84 in.)
Standard External Probe Length	45 cm (18 in.)
Maximum Length	3.0 m (118 in.)
Maximum Cable Length	152 m (500 ft)
Electronics Sealing Classification	IP68

