CAMPBELL SCIENTIFIC
WHEN MEASUREMENTS MATTER

SR50ATH

Sonic Distance Sensor with Heater and Temperature Sensor

Overview

Note: This product has limited availability. Please consider the SnowVue™10 Digital Snow-Depth Sensor for snow-depth measurements and the TempVue™20 Pt100 Digital Air Temperature Sensor or HygroVue™10 Digital Temperature and Relative Humidity Sensor with M12 Connector for air temperature measurements.

The SR50ATH is a sonic distance sensor with an integrated external temperature probe and heater. Sonic sensors determine distance by emitting an ultrasonic pulse and then measuring the elapsed time between the emission and return of the pulse. The temperature probe allows the SR50AT series to output temperature-corrected values (speed of sound varies with temperature). The integrated heater prevents ice and rime from coating the transducer.

Benefits and Features

- Integrated temperature probe for providing temperature correction of measurements
- Non-contact method for determining snow depth
- Wide operating temperature range
- Integrated transducer heater; rugged enough for rime and ice environments
- User-selectable options for output
- Uses a multiple echo processing algorithm to help ensure measurement reliability
- Compatible with most Campbell Scientific data loggers

Detailed Description

The SR50ATH is an identical unit to the SR50A with the addition of an external temperature sensor and transducer heater. The temperature sensor requires a six-plate radiation shield. The addition of a heating element around the transducer prevents ice and rime from coating the transducer with minimal power requirements. The SR50ATH outputs a temperature-corrected distance reading, eliminating the need for further post-processing, as well as a separate temperature reading.

The SR50ATH was designed to meet the stringent requirements of measuring snow depths and uses a multiple echo processing algorithm to help ensure measurement reliability. The SR50ATH is compatible with all current Campbell

Scientific data loggers, as well as many other data acquisition systems.

Specifications

Measurement Time	< 1.0 s
Output Options	SDI-12 version 1.3, RS-232, RS-485 (output options selected by configuring internal jumpers)
Baud Rates	1200 to 38400 bps (RS-232, RS-485 modes)
Power Requirements	9 to 18 Vdc (typically powered by data logger's 12 Vdc power supply)
Quiescent Power Consumption in SDI-12 Mode	< 1.0 mA without heater
Quiescent Power Consumption in RS-232/ RS-485 Mode	❱ < 1.25 mA (≤ 9600 bps) without heater ❱ < 2.0 mA (> 9600 bps) without heater
Active Power Consumption	250 mA typical without heater
Measurement Range	0.5 to 10 m (1.6 to 32.8 ft)
Beam Acceptance	~30°
Resolution	0.25 mm (0.01 in.)
Accuracy	±1 cm (0.4 in.) or 0.4% of distance to target (whichever is greatest).
Operating Temperature Range	-45° to +50°C
Temperature Accuracy	❱ ±0.75°C (at -45° to 0°C) ❱ ±0.2°C (at 0° to 50°C)
Compliance	CE compliant
Diameter	7.5 cm (3 in.)
Length	10.1 cm (4.0 in.)
Weight	375 g (13.2 oz) without cable
Cable Weight	250 g (8.2 oz) for a 4.57-m (15-ft) cable

Heater

Heater Resistance	75 ohm
Nominal Operating Voltage	12 V (ac or dc) Use a properly conditioned low-noise power source. A noisy power source will affect operation of the sensor.
Maximum Rated Wattage	3 W
Maximum Rated Voltage	15 V (ac or dc)
Maximum Operating Temperature	25°C (Turn the heater power off at temperatures above 25°C. This prevents damage to the sensor and reduces power consumption.)

Maximum Cable Length

-NOTE-	*Cable lengths greater than 60 m require a heavier gage wire if the power supply drops below 11 Vdc.*
SDI-12	60 m (200 ft)
RS-232	60 m (200 ft) Baud rates ≤ 9600 bps
RS-485	300 m (984 ft)

For comprehensive details, visit: www.campbellsci.com/sr50ath