CAMPBELL SCIENTIFIC
WHEN MEASUREMENTS MATTER

SR50A-L
Sonic Ranging Sensor

Rugged acoustic distance sensor

Typically used for snow depth measurements

Overview

The SR50A Sonic Distance Sensor provides a non-contact method for determining snow depth. It determines depth by emitting an ultrasonic pulse and then measuring the elapsed time between the emission and return of the pulse. An air temperature measurement is required to correct for variations of the speed of sound in air.

Note: Campbell Scientific recommends model SR50A-EE-L for operation in extreme environmental conditions where corrosion is a concern (such as coastal regions).

Benefits and Features

- Wide operating temperature range
- User-selectable options for output
- Rugged enough for harsh environments
- Uses a multiple echo processing algorithm to help ensure measurement reliability
- Compatible with most Campbell Scientific data loggers

Technical Description

The SR50A was designed to meet the stringent requirements of measuring snow depth, and it uses a multiple echo processing algorithm to help ensure measurement reliability.

SDI-12, RS-232, and RS-485 output options are available for measuring the SR50A. Campbell Scientific's MD485 interface can be used to connect one or more SR50A sensors in RS-485 mode to an RS-232 device. This can be useful for sensors that require lead lengths that exceed the limits of either RS-232 or SDI-12 communications.

The SR50A replaced the SR50 in March 2007. The newer SR50A is smaller and has different output options than its predecessor. The SR50AH is available with a heater option for locations where rime ice is a problem.

Specifications

Measurement Description	Snow depth
Measurement Time	< 1.0 s
Measurement Range	0.5 to 10 m (1.6 to 32.8 ft)
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)
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). Requires external temperature compensation.
Operating Temperature Range	-45° to +50°C
Temperature Accuracy	⟩ ±0.2° (at 0° to 50°C) ⟩ ±0.75° (at -45° to 0°C)
Compliance	CE Compliant
Length	10.1 cm (4.0 in.)
Diameter	7.5 cm (3 in.)
Cable Weight	250 g (8.2 oz) for a 4.57-m (15-ft) cable
Weight	⟩ 375 g (13.2 oz) without cable ⟩ 1.0 kg (2.2 lb)

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)

Power Consumption

Active	250 mA (typical)
Quiescent SDI-12 Mode	< 1.0 mA
Quiescent RS-232/RS-485 Modes	⟩ < 2.0 mA (> 9600 bps) ⟩ < 1.25 mA (≤ 9600 bps)

CAMPBELL SCIENTIFIC
80 Hathern Road, Shepshed, LE12 9GX UK | +(0)1509 828888 | sale@campbellsci.co.uk | www.campbellsci.eu
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