CAMPBELL SCIENTIFIC®
WHEN MEASUREMENTS MATTER

SR50A

Sonic Ranging Sensor

Overview

The SR50A* is a rugged, acoustic sensor that provides a non-contact method for determining snow or water depth. The SR50A determines depth by emitting a 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.

Benefits and Features

- Rugged enough for harsh environments
- User-selectable options for output
- Uses a multiple echo processing algorithm to help ensure measurement reliability
- Compatible with most Campbell Scientific dataloggers

Output

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.

Mounting

To achieve an unobstructed view for the SR50A's beam, the SR50A is typically mounted to a tripod mast, tower leg, or user-supplied pole via the CM206 6-ft crossarm. The 19517 mounting kit attaches directly to the crossarm. The 19484 mounting stem attaches to the crossarm via the 17953 NU-RAIL fitting, CM220 right-angle mount, CM230 adjustable-angle mount, or CM230XL adjustable -angle mount. The CM230 or CM230XL should be used if the surface is at an angle.

**The SR50A is manufactured by Campbell Scientific Canada.*

Ordering Information

Sonic Ranging Sensor

SR50A-L CSC Sonic ranging sensor with user-specified cable length; specify the cable length, in feet, after the L. Requires either the 19517 Mounting Kit or 19484 Mounting Stem to attach to the CM206 crossarm. 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.

RS-485 Interface

MD485 RS-485 Multidrop Interface that is typically used when the application requires long cable lengths.

Mounting Hardware

19517 SR50A Mounting Kit that attaches directly to the CM206 crossarm. A U-bolt is included for attachment to the crossarm.

19484 Mounting Stem for attachment to a CM206 crossarm via the 17953 NU-RAIL fitting, CM220 mount, CM230 mount, or CM230XL mount.

17953 1-inxh x 1-inch NU-RAIL Crossover Fitting that attaches the 19484 mounting stem to a crossarm.

CM220 Right Angle Mounting Kit that attaches the 19484 mounting stem to a crossarm.

CM230 Adjustable Inclination Mount Kit for applications where the measurement surface is at an angle.

CM230XL Adjustable Angle Mounting Kit with Extended Length. Provides same functionality as the CM230 but places the SR50A further from the crossarm.

Specifications

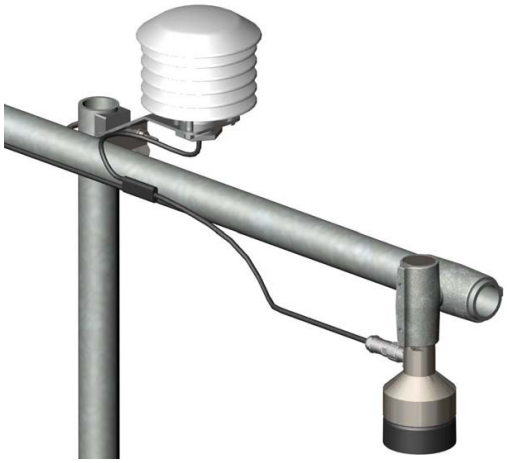
- Measurement Time: < 1.0 s
- Output Options: SDI-12 version 1.3, RS-232, RS-485 (output options selected by configuring internal jumpers)
- Baud Rates (RS-232, RS-485 modes): 1200 to 38400 bps
- Power Requirements: 9 to 18 Vdc (typically powered by datalogger's 12 Vdc power supply)
- Measurement Range: 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); requires external temperature compensation
- Operating Temperature Range: -45° to +50°C
- Length: 10.1 cm (4.0 in)
- Diameter: 7.5 cm (3 in)
- Weight: 1.0 kg (2.2 lb)

Power Consumption

- Active (typical): 250 mA
- Quiescent SDI-12 Mode: < 1.0 mA
- Quiescent RS-232/RS485 Modes: < 1.25 mA (≤9600 bps), < 2.0 mA (>9600 bps)

Maximum Cable Length

- SDI-12: 60 m (200 ft)
- RS-232: 60 m (200 ft); baud rates ≤9600 bps
- RS-485: 300 m (984 ft); cable lengths greater than 60 m require a heavier gage wire if the power supply drops below 11 Vdc



Above shows an SR50A attached to a crossarm via the 19484 mounting stem and a NU-RAIL fitting. A temperature probe housed in a radiation Shield is also attached to the crossarm.

This exploded view shows how the 19484 connects to the SR50A.

The 19517's bracket mounts directly to a crossarm. Two screws are used to attach the SR50A to the 19517 bracket.