



SR50A, SR50A-316SS and SR50AH

Sonic Ranging Sensors



Model SR50A-316SS - Stainless steel chassis)



Model SR50A (aluminium chassis)

Rugged, non-contact acoustic sensor

For determining snow or water depth

Overview

The SR50A-series sonic ranging sensors^a, provide a non-contact method for determining snow or water depth. They determine 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.

Campbell Scientific offers three models: the SR50A, SR50A-316SS, and SR50AH. The SR50A-316SS has a stainless-steel chassis and parylene-coated transducer head that allows the sensor to be used in marine or other corrosive environments. The SR50AH includes a heater that prevents ice from coating the transducer.

Benefits and Features

- › Wide operating temperature range
- › Rugged enough for harsh environments
- › User-selectable options for output
- › Uses a multiple echo processing algorithm to help ensure measurement reliability
- › Compatible with most of our current dataloggers.

Mounting

To achieve an unobstructed view, the sensor is typically mounted to a tripod mast, tower leg, or user-supplied pole via the CM206 1.8 m (6 ft) crossarm. The 008168 mounting kit attaches directly to the crossarm. The 008164

mounting stem attaches to the crossarm using the NU-Rail fitting, CM220 right-angle mount, CM230 adjustable-angle mount, or CM230XL adjustable-angle mount. Use the CM230 or CM230XL when the surface is at an angle.

Output

SDI-12, RS-232 and RS-485 output options are available for measuring these sensors. Campbell Scientific's MD485 interface can be used to connect one or more SR50A-series

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.

^aThe SR50A-series sonic ranging sensors are manufactured by Campbell Scientific Canada.

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

- › SR50A (no cable): 375 g (13.2 oz)
- › SR50A-316SS (no cable): 795 g (28 oz)
- › Cable: 4.5 m (15 ft): 250 g (8.2 oz)

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 gauge wire if the power supply drops below 11 Vdc

Power Consumption (no heater)

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

Heater (SR50AH only)

- › Heater Resistance: 75 Ohms
- › Nominal Operating Voltage: 12 V (ac or dc)^b
- › Maximum Rated Wattage: 3 W
- › Maximum Rated Voltage: 15 V (ac or dc)
- › Maximum Operating Temperature: 25°C^c

Ordering Information

Sonic Ranging Sensor

SR50A	CSC sonic ranging sensor
SR50A-316SS	CSC stainless-steel sonic ranging sensor for Marine Environments
SR50AH	CSC sonic ranging sensor with heater

NB: Standard cable lengths 3, 5 & 10 m. Other lengths available to special order.

RS-485 Interface

MD485	RS-485 Multidrop Interface for applications with long cable lengths.
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Mounting Hardware

- 008168** Mounting Kit that attaches directly to the crossarm. Either this mounting kit or the 008164 mounting stem (see below) is required to mount the sensor to a crossarm
- 008164** Mounting Stem that uses a 008285 NU-RAIL fitting, CM220 mount, CM230 mount, or CM230XL mount (see below) to attach the sensor to a crossarm. Either this stem or the 008168 mounting kit (see above) is required to mount the sensor to a crossarm.



SR50AH attached to a crossarm using the 008168 mounting kit.

- 008285** 1-inch x 1-inch NU-RAIL Crossover Fitting that attaches the 008164 mounting stem to a crossarm.
- CM220** Right Angle Mounting Kit that attaches the 008164 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.



This shows the 008164 to SR50A connection.

^bUse a properly conditioned low noise power source. A noisy power source will affect operation of the sensor.

^cTurn the heater power off at temperatures above 25°C. This prevents damage to the sensor and reduces power consumption.