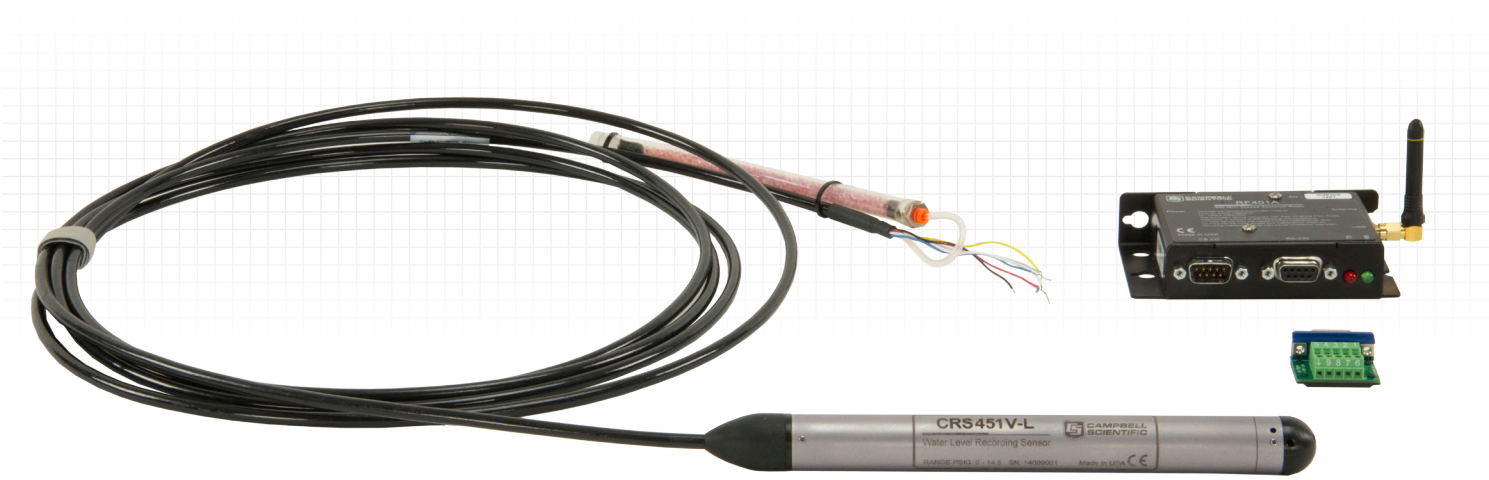
CAMPBELL SCIENTIFIC
WHEN MEASUREMENTS MATTER

CRS451V and CRS456V

Submersible Water-Level Recording Sensors

Pressure Transducer Combined with a Recorder

High Resolution and Accuracy



Overview

The CRS451V/CRS456V combines our CS451/CS456 submersible pressure transducer with a Campbell Scientific recorder. The CRS451V/CRS456V supports standard time-based scanning and recording along with event-based recording based on water level change "Delta" or logarithmic time sequence for pump and slug tests. HydroSci software is included and elegantly supports test set up, data retrieval, and data display. Additionally, this sensor can be attached to a telemetry device (such as a cell phone modem) for remote data collection using LoggerNet.

The CRS451V has a 316L stainless-steel case that can be submerged in most canals, wells, ponds, lakes, and streams. The CRS456V has a rugged titanium case that allows it to be used in saltwater or other harsh environments.

Benefits and Features

- Quality construction ensures product reliability
- Sensors and data-collection features in one instrument case
- Free customer-friendly software for communication, configuration, data collection
- Fast scan rate
- Large data storage capacity
- Fully temperature-compensated
- Rugged stainless-steel or titanium case protects piezoresistive sensor
- Long battery life
- Multiple logging/scanning modes:
  - Standard
  - Delta
  - Logarithmic
- Wires directly to a radio or cell phone for remote data collection (enclosure and separate power supply required)

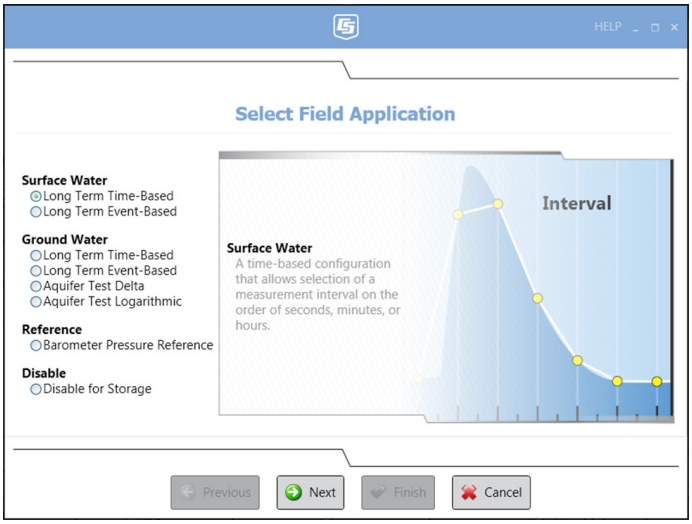
Options and Accessories[a]

Options

- Accuracy: standard 0.1% full-scale range TEB[b]
- Pressure range (psi): up to 2.9 (standard accuracy only), 7.25, 14.5, 29, 72.5, or 145
- Cable length (ft): 15, 17, 30, 33, 50, 75, 83, 100, 200, user-specified
- Nose cone: standard, weighted (for easier submersion), or ¼ inch NPT (for closed-pipe applications)

Accessories

- Heyco Cable Grip (pn 31648) for mating with a 1 in. PVC pipe
- Replacement Desiccant Tube (pn 25366)
- A200 Sensor-to-PC Interface
- ATP400 Accessory Telemetry and Power Kit with ENC10/12 enclosure. Consists of the ENC10/12 enclosure that houses a rechargeable battery. Several telemetry (cellular modem, spread spectrum radio, Wi-Fi), antenna, solar panel, and enclosure mount options are offered.



HydroSci software is included with the CRS451V/CRS456V. It simplifies the process of configuring the sensor to monitor surface water, ground water, or a standard pump test.

Specifications

- Power Requirements: Internal user replaceable lithium battery
- Measurement Time: <1 s
- Output: RS-232
- Internal Data Collection Memory: 4 MB
- Logging/Scanning Modes: Standard, Delta, Logarithmic
- Battery life: 5+ years when logging interval is once per hour
- Diameter: 2.22 cm (0.875 in)
- Length: 22.23 cm (8.75 in)
- Weight: 230 g (0.51 lb)
- Operating Temperature Range[c]: 0° to +60°C
- Dry Storage Temperature Range[c]: -30° to +80°C
- Measurement Ranges:

Pressure (psig)	Pressure (kPa)	Depth of fresh water
0 to 7.25	0 to 50	0 to 5.1 m (16.7 ft)
0 to 14.5	0 to 100	0 to 10.2 m (33.4 ft)
0 to 29	0 to 200	0 to 20.4 m (67 ft)
0 to 72.5	0 to 500	0 to 50.9 m (167 ft)
0 to 145	0 to 1000	0 to 102 m (334.5 ft)

- Resolution: 0.0035% full-scale range
- Overpressure: 2 x pressure range
- Maximum Cable Length[d]:
  250 ft for data collection or communication at 115200 bps
  500 ft for data collection or communication at 9600 bps

Accuracy

- Water Level: 0.1% full-scale range TEB**
- Temperature: ±0.2°C

Power Consumption

- Quiescent: < 80 µA
- Measurement/Communication Current: 4 mA for 1 s measurement

Distance from pressure sensor interface (black line etched on housing) to:

- End of Standard Nose Cone: 2.3 cm (0.9 in)
- End of NPT Nose Cone: 2.54 cm (1 in)
- End of Weighted Nose Cone: 9.9 cm (3.9 in)

[a]For more information about the options and accessories, refer to: www.campbellsci.com/order/crs451v or www.campbellsci.com/order/crs456v.

[b]Total Error Band (TEB) includes the combined errors due to nonlinearity, hysteresis, nonrepeatability, and thermal effects over the compensated temperature range, per ISA S51.1.

[c] WARNING: Sensor could be damaged if encased in frozen liquid.

[d]Cable lengths exceeding these recommendations may prevent the sensor from communicating with a computer either directly or through a telemetry device even though the sensor is still capable of making measurements and storing data.