Water level, stage, or flow can be measured with many types of sensors: pressure transducers, bubblers, shaft encoders, or ultrasonic sensors. The location where you are measuring water level, the accuracy required, and the ease of installation all contribute to determining the best water-level sensor for your measurement site.

**CS451**  
**Pressure Transducer**  
The CS451 is a pressure transducer for water-level measurements in canals, wells, ponds, harbors, lakes, streams and tanks. It has a stainless-steel case that can be submerged in most canals, wells, ponds, lakes, and streams. The CS451 outputs either a digital SDI-12 or RS-232 signal to indicate observed pressure and temperature. This output can be read by many of our dataloggers.  
The CS451 replaces the CS450 transducer. The new transducers have a smaller gap between the water ports and the diaphragm so that less air is trapped that the user must remove during deployment. Trapped air causes the transducer’s readings to drift as the air slowly dissolves into the water.

**CS456**  
**Pressure Transducer**  
The CS456 is a pressure transducer for water-level measurements in canals, wells, ponds, harbours, lakes, streams and tanks. It has a rugged titanium case that allows it to be used in saltwater and other harsh environments. The CS456 outputs either a digital SDI-12 or RS-232 signal to indicate observed pressure and temperature. This output can be read by many of our dataloggers. The CS456 replaces the CS455 transducer. The new transducers have a smaller gap between the water ports and the diaphragm so that less air is trapped that the user must remove during deployment. Trapped air causes the transducer’s readings to drift as the air slowly dissolves into the water.

**CRS451V**  
**Vented Water-Level Recording Sensor—Stainless Steel**  
The CRS451V consists of a submersible water-level and water-temperature sensor with its own time clock and memory to store the collected data—in a compact stainless-steel case. This datalogging capability frees users to place the sensor in remote sites and let it collect data for long periods. HydroSci software is included and elegantly supports test setup, data retrieval, and data display. Long battery life and rugged construction mean you can trust the CRS451V to collect important data. Low cost and ease of use make it a good choice in a variety of applications. The CRS456V is the same as this, but with a titanium case.

**CRS456V**  
**Vented Water-Level Recording Sensor—Titanium**  
The CRS456V consists of a submersible water-level and water-temperature sensor with its own time clock and memory to store the collected data—in a compact titanium case. This datalogging capability frees users to place the sensor in remote sites and let it collect data for long periods. HydroSci software is included and elegantly supports test setup, data retrieval, and data display. Long battery life and rugged construction mean you can trust the CRS456V to collect important data. Low cost and ease of use make it a good choice in a variety of applications. The CRS451V is the same as this, but with a stainless-steel case.

For comprehensive details, visit: [www.campbellsci.eu/water-level-stage-flow](http://www.campbellsci.eu/water-level-stage-flow)
| **CRS451**  
Stainless Steel - Water-Level Recording Sensor | The CRS451 consists of a water-level and water-temperature sensor that has its own time clock and memory to store the collected data, in a compact stainless-steel case. This frees users to place the sensor in remote sites and let it collect data for long periods. The sensor can then be retrieved, connected to a PC via a micro-USB port, and the data transferred to the PC. HydroSci software is included and elegantly supports test setup, data retrieval, and data display. Long battery life and rugged construction mean you can trust the CRS451 to collect important data. Low cost and ease of use make it a good choice in a variety of applications. |
| **CRS456**  
Titanium - Water-Level Recording Sensor | The CRS456 consists of a water-level and water-temperature sensor that has its own time clock and memory to store the collected data, in a compact titanium case. This frees users to place the sensor in remote sites and let it collect data for long periods. The sensor can then be retrieved, connected to a PC via a micro-USB port, and the data transferred to the PC. HydroSci software is included and elegantly supports test setup, data retrieval, and data display. Long battery life and rugged construction mean you can trust the CRS456 to collect important data. Low cost and ease of use make it a good choice in a variety of applications. |
| **CS475**  
Radar Water-Level Sensor 20m maximum distance | The CS475 is a pulse-radar water-level sensor. Positioned directly over the water surface it determines water level by measuring the elapsed time between the emission of short microwave pulses and the return. Typical applications include water level measurements of rivers, lakes and reservoirs. Ideal for applications where submersed sensors are not appropriate because of the risk of damage due to corrosion, contamination or flood-related debris. A solid state design with no moving parts means that maintenance costs and time are kept to a minimum. This sensor is supplied with a 10m cable as standard, other length available to order. |
| **CS475A**  
Radar Water-Level Sensor, 114.8 ft Maximum Distance | The CS475A radar-ranging sensor monitors the water level of rivers, lakes, tidal seas, and reservoirs. The sensor is ideal for areas where submersed sensors can be damaged due to corrosion, contamination, flood-related debris, lightning, or vandalism. It emits short microwave pulses and then measures the elapsed time between the emission and return of the pulses. The elapsed time measurement is used to calculate the distance between the sensor and the target (for example, water, grain, slurry). The distance value can then be used to determine depth of the medium. The CS475A outputs a digital SDI-12 signal to indicate distance and stage. This output is acceptable for recording devices with SDI-12 capability, including Campbell Scientific dataloggers. |
| **CS477**  
Radar Water-Level Sensor 70 m maximum distance | The CS477 is a pulse-radar water-level sensor. Positioned directly over the water surface it determines water level by measuring the elapsed time between the emission of short microwave pulses and the return. Typical applications include water level measurements of rivers, lakes and reservoirs. Ideal for applications where submersed sensors are not appropriate because of the risk of damage due to corrosion, contamination or flood-related debris. Maintenance costs and time are kept to a minimum with these sensors which have no moving parts. Supplied with 10m cable as standard, other length available to order. |

For comprehensive details, visit: [www.campbellsci.eu/water-level-stage-flow](http://www.campbellsci.eu/water-level-stage-flow)
<table>
<thead>
<tr>
<th><strong>Model</strong></th>
<th><strong>Description</strong></th>
<th><strong>Note</strong></th>
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<tbody>
<tr>
<td>SR50A-L</td>
<td>The SR50A is a rugged acoustic sensor for measuring the distance from the sensor to a target. It is typically used to measure snow or water depth, but it is well-suited for other uses. Because the speed of sound in air varies with temperature, an independent temperature measurement is required to compensate the distance reading. A simple calculation is applied to initial readings for this purpose.</td>
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<td><strong>Note:</strong> Campbell Scientific recommends model SR50A-316SS-L for marine environments.</td>
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<tr>
<td>SR50AH-L</td>
<td>The SR50AH heated sonic ranging sensor provides a non-contact method for determining snow or water 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. The SR50AH includes an integrated heater that prevents ice and rime from coating the transducer.</td>
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<td><strong>Note:</strong> Campbell Scientific recommends model SR50A-316SS-L for marine environments.</td>
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<tr>
<td>SR50AT-L</td>
<td>The SR50AT-L is an acoustic distance sensor that measures the elapsed time between emission and return of an ultrasonic pulse. This measurement can be used to determine snow or water depth. The SR50AT-L includes an external temperature sensor and outputs a temperature-corrected distance reading, eliminating the need for further post-processing.</td>
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<td><strong>Note:</strong> Campbell Scientific recommends model SR50AT-316SS-L for marine environments.</td>
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<tr>
<td>SR50AT-316SS-L</td>
<td>The SR50AT-316SS is a stainless-steel version of Campbell Scientific’s acoustic sensor for measuring the distance from the sensor to a target. The stainless-steel chassis allows for operation in environments where corrosion is a concern (that is, marine). It is typically used to measure snow or water depth, but is well-suited for other uses, as well.</td>
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<tr>
<td></td>
<td>The SR50AT-316SS includes an external temperature sensor and outputs a temperature-corrected distance reading, eliminating the need for further post-processing. This sensor is compatible with most Campbell Scientific dataloggers.</td>
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</tbody>
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