



## Better Signal Performance

Internal amplifier boosts signal for less interference

### Overview

The CSIM11<sup>a</sup> measures the full pH range of liquids and the CSIM11-ORP<sup>a</sup> measures oxidation reduction potential (ORP) of liquids. They can be submerged in water or inserted into tanks, pipelines, and open channels. The sensors are intended for non-pressurized systems<sup>b</sup> and were not designed for applications above 30 psi.

The construction of the two sensors is identical except the CSIM11-ORP includes a 0.5 cm (0.2 in) platinum band wrapped around the glass electrode, which allows the CSIM11-ORP to respond to the electron density in the fluid.

### Benefits and Features

- › Internal amplifier boosts the signal, decreasing signal interference
- › Titanium ground rod runs inside the outer body to eliminate ground loop errors
- › Compatible with most Campbell Scientific dataloggers
- › Porous polytetrafluoroethylene (PTFE) liquid junction<sup>c</sup> is less susceptible to clogging as compared to conventional reference junctions
- › Plunger-style pH glass electrode<sup>d</sup> allowing the probe to be mounted at any angle

### Technical Description

The CSIM11 and CSIM11-ORP have a plunger-style pH glass electrode that allow them to be mounted at any angle. Their porous PTFE liquid junction is less susceptible to clogging as compared to conventional reference junctions.

A titanium ground rod runs inside their PPS outer body to eliminate ground loop errors. An internal amplifier boosts the signal, decreasing signal interference. The amplifier is powered by two internal lithium batteries, and thus does not require any

power from the datalogger. These batteries are designed to last the lifetime of the sensors.

The reference solutions and bulb configuration are optimized for natural water applications. Alternate reference solutions and bulb configurations are available. Contact Campbell Scientific for pricing and availability.

<sup>a</sup>The CSIM11 and CSIM11-ORP use glass bulb technology which has a life expectancy of around 6 months to 2 years depending on the conditions of the water.

<sup>b</sup>If the sensor will be mounted in a pressurized pipe or tank, a variation of the CSIM11 or CSIM11-ORP that does not have a refillable chamber is necessary; contact Campbell Scientific for assistance.

<sup>c</sup>Patent number for the porous PTFE liquid junction is 4,128,468.

<sup>d</sup>Patent number for the plunger-style pH glass electrode is 4,333,812.

## Specifications

- › Temperature Range: 0° to +80°C
  - › Pressure Range: 0 to 30 psig
  - › Accuracy: ±0.1% over full range
  - › Impedance: < 1 MΩ @ 25°C
  - › Reference Cell: Single Junction KCl/AgCl
  - › Body Material: ABS
  - › Wetted Materials: ABS, PTFE, FKM, Glass, Titanium
  - › Cable Jacket Material: polyurethane
  - › Response Time: 95% of reading in 10 s
  - › Drift: < 2 mV per week
  - › Internal Lithium Battery Lifetime: 5 years (life of probe)
  - › Length: 17.8 cm (7.0 in)
  - › Diameter: 3.0 cm (1.2 in)
  - › Weight with 15 ft cable: 0.5 kg (1 lb)
- pH Sensor*
- › pH Range: 0 to 14
  - › Zero Potential: 7.0 pH ±0.2 pH
  - › Sodium Error: < 0.05 pH in 0.1 Molar Na<sup>+</sup> ion at 12.8 pH
  - › Output: ±59 mV/pH unit
- ORP Sensor*
- › ORP Range: -700 to +1100 mV

## Ordering Information

### Water Quality Sensors

<b>CSIM11</b>	pH sensor with bulb protectors and refillable chamber. Standard lead length 5 m
<b>CSIM11-ORP-L</b>	ORP sensor with bulb protectors and refillable chamber. Standard lead length 5 m
<b>M11REFILL</b>	PH/ORP Probe Refill solution for CSIM11 or CSIM11-ORP (113 g container)

