CAMPBELL SCIENTIFIC®

WHEN MEASUREMENTS MATTER

OBS-3+ Turbidity Sensor

OBS-3+ Turbidity Sensor

The OBS-3+ sensor uses OBS® technology to measure suspended solids and turbidity for up to 4000 NTUs. OBS technology works by emitting a near-infrared light into the water, then measuring the light that bounces back from the suspended particles.

The OBS-3+ is a submersible sensor. With the stainless steel body, it can be submerged in fresh water to a depth of 500 meters. When the titanium body is used, the OBS-3+ can be submerged in both fresh and salt water to a maximum depth of 1500 meters.

Applications

- Gage rivers and streams
- Monitor dredging and mining operations
- Control water quality in settling ponds and tanks
- Support sediment transport research
- Provide laboratory measurements

Features

- Provides a compact, low-power probe that is field proven
- Supports fresh water and salt water applications (salt water submersion requires titanium body)
- Compatible with all contemporary Campbell Scientific dataloggers as well as many retired dataloggers
- Contains an integral voltage clamp and optional 4–20 mA current loop
- Fitted with MCBH-5-FS, wet-pluggable connector—multiple mating cable length options available
- Offers an optional 5-point sedimentation calibration (must send Campbell Scientific a dry sample of sedimentation from the water that will be monitored)

Ordering Information

Sensor and Its Options

Model	Description
OBS-3+	Turbidity Sensor (must choose a body option and output option; cable for attachment to a datalogger is ordered as a common accessory)
Body Options	
-SB	Stainless Steel Body (fresh water only; maximum submersion depth of 500 m)
-TB	Titanium Body (fresh or salt water; maximum submersion depth of 1500 m)
Output Options (must choose a Turbidity Range)	
Each OBS-3+ has two channels—one channel measures the lower turbidity range and the other channel measures the higher turbidity range.	
-2.5	Supports our CR200-series, CR510, or CR10(X) dataloggers; both channels have an output range of 0 to 2.5 V.
-5	Supports our CR800, CR850, CR1000, CR3000, CR5000, and CR9000(X) dataloggers; both channels have an output range of 0 to 5 V.
-20	One channel has an output range of 4-20 mA, and the other channel has an output range of 0 to 5 V. A CURS100 is required for our dataloggers to read the 4-20 mA output.
Turbidity Range Options	
When the output option is -2.5 or -5, you should order a range where the high channel will capture all high-readings and the low range will capture most readings. When the output option is -20, the channel with the 4-20 mA output measures the lower turbidity range, and the channel with the 0 to 5 V output measures the upper turbidity range.	
-T1	Measures the lower range of 0 to 250 NTUs or higher range of 0 to 1000 NTUs.
-T2	Measures the lower range of 0 to 500 NTUs or higher range of 0 to 2000 NTUs.
-T3	Measures the lower range of 0 to 1000 NTUs or higher range of 0 to 4000 NTUs.
-T4	Measures the lower range of 0 to 2000 NTUs or higher range of 0 to 4000 NTUs.
-T5	Measures the range of 0 to 4000 NTUs on both channels. The -T5 option allows a channel with a 4-20 mA output (OBS-3+-20) to measure up to 4000 NTUs.

Cables for Datalogger Attachment

Model	Description
Several cable choices are offered for attaching the OBS-3+ to the datalogger. The cables differ in their length.	
21094	OBS-3+ Cable with 5-m (16 ft) length
21307	OBS-3+ Cable with 10-m (32 ft) length
21308	OBS-3+ Cable with 15-m (49 ft) length.
21309	OBS-3+ Cable with 20-m (66 ft) length.
21310	OBS-3+ Cable with 25-m (82 ft) length.
21311	OBS-3+ Cable with 30-m (98 ft) length.

Mechanical Wipers

Model	Description
Use of a wiper can help ensure accurate measurements by preventing algae and other fouling from covering the sensor's lens.	
HYDRO-WIPER-C	Battery-powered, mechanical wiper with integrated timer and 5-m (16 ft) cable. This wiper is intended for stand-alone operation.
HYDRO-WIPER-D	Datalogger-controlled wiper with 5-m (16 ft) cable. It uses the datalogger's power supply. This wiper is recommended when using a datalogger.
HYDRO-WIPER-C-L	Battery-powered wiper with integrated timer and user-specified cable length; enter length, in meters, after the -L. A user-specified cable length takes more time to manufacture; delivery time is 4 to 6 weeks. This wiper is intended for stand-alone operation.
HYDRO-WIPER-D-L	Datalogger-controlled wiper with user-specified cable length; enter length, in meters, after the -L. A user-specified cable length takes more time to manufacture; delivery time is 4 to 6 weeks. This wiper uses the datalogger's power supply.

Other Accessories

Model	Description
21098	OBS-3+ Carrying Case (Holds 2)
20915	5-Point Sedimentation Calibration (must send Campbell Scientific a dry sample of sedimentation from the water that will be monitored)
CURS100	Current Shunt Module is required for our dataloggers to read a 4-20 mA signal (output option -20)

Specifications

Maximum depth
- Stainless-steel body: 500 m (1640.5 ft)
- Titanium body: 1500 m (4921.5 ft)

Drift: <2% per year

Maximum data rate: 10 Hz

Input voltage
- Voltage output: 5 to 15 Vdc
- Current output: 9 to 15 Vdc

Typical current drain
- Voltage output: 15 mA
- Current output: 45 mA

Operating wavelength: 850 nm ±5 nm

Daylight rejection: –28 dB (re:48 mW cm^{-2})

Optical power: 2000 µW

Ranges

Turbidity: see Ordering Information

Maximum Concentration*
- Mud: 5,000 mg/l to 10,000 mg/l
- Sand: 50,000 mg/l to 100,000 mg/l

**Depends on sediment size, particle shape, and reflectivity.*

Accuracy

Turbidity: 2% of reading or 0.5 NTU**

Concentration
- Mud: 2% of reading or 1 mg/l**
- Sand: 4% of reading or 10 mg/l**

***Whichever is larger*

Physical

Housing material: 316 stainless steel or titanium

Connector: MCBH-5-FS, wet-pluggable

Weight: 0.4 lbs (181.4 g)

Dimensions
- Height: 5.56” (14.1 cm)
- Diameter: 0.98” (2.5 cm)

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