Turbidity Sensor

Model OBS-3+

The OBS-3+ sensor uses an optical backscatter method to measure suspended solids and turbidity for up to 4000 NTUs. Ideal applications include gaging rivers and streams, monitoring dredging and mining operations, controlling water quality in settling ponds and tanks, supporting sediment transport research, and providing laboratory measurements.



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

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 a MCBH-5-FS, wet-pluggable connector
- 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

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)

-2.5	0 to 2.5 Voltage Output for CR200-series, CR510, or CR10(X) dataloggers
-5	0 to 5 Voltage Output for CR800, CR850, CR1000, CR3000, CR5000, and CR9000(X) dataloggers
-20	4-20 mA Output (requires a CURS100 for our dataloggers to read the current signal)

Turbidity Range Options (for -2.5 and -5 Output Options)

When the output option is -2.5 or -5, the sensor will have two channels—one channel measures the lower range and the other channel measures the higher range. Order a range where the high channel will capture all high readings and the low range will capture most readings.

-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.

Turbidity Range Options (for -20 Output Option)

-N2	Measures the range of 0 to 250 NTUs.
-N3	Measures the range of 0 to 500 NTUs.
-N4	Measures the range of 0 to 1000 NTUs.
-N5	Measures the range of 0 to 2000 NTUs
-N6	Measures the range of 0 to 4000 NTUs.

Ordering Information (continued)

Common Accessories

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)

Cables for datalogger attachment

21094	OBS-3+ Cable with 5-meter (16 ft) length
21307	OBS-3+ Cable with 10-meter (33 ft) length.
21308	OBS-3+ Cable with 15-meter (49 ft) length.
21309	OBS-3+ Cable with 20-meter (66 ft) length.
21310	OBS-3+ Cable with 25-meter (82 ft) length.
21311	OBS-3+ Cable with 30-meter (98 ft) length.

Mechanical Wipers

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-meter (16 ft) cable. This wiper is intended for stand-alone operation.
HYDRO-WIPER-D	Datalogger-controlled wiper with 5-meter (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.

Specifications

Maximum depth	
Stainless-steel body:	500 m (1640.5 ft)
Titanium body:	1500 m (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
Infrared wavelength:	850 nm
Daylight rejection:	–28 dB (re:48 mW cm^{-2})

Ranges

Turbidity:	0 to 4,000 NTU
Concentration*	
Mud:	0 to 5,000 mg/l
Sand:	0 to 50 g/l

**Depends on sediment type.*

Accuracy

Turbidity:	0.25 NTU or 1% of reading*
Concentration:	
Mud:	0.5 mg/l or 1% of reading*
Sand:	0.25 g/l or 1% of reading*

**Whichever is larger*

Physical

Housing material:	316 stainless steel or titanium
Connector:	MCBH-5-FS, wet-pluggable
Dimensions	
Diameter:	1.0" (2.5 cm)
Length:	5.6" (14.1 cm)
Weight:	0.4 lbs (181.4 g)

815 W. 1800 N. | Logan, Utah 84321-1784 | USA | phone (435) 753-2342 | www.campbellsci.com
Australia | Brazil | Canada | England | France | Germany | South Africa | Spain | USA (headquarters)

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Printed February 2008