CAMPBELL SCIENTIFIC®
WHEN MEASUREMENTS MATTER

OBS-3A

Turbidity and Temperature Monitoring System

Accurate, Rugged

Several sensors in one probe

Overview

The OBS-3A combines our OBS probe with pressure, temperature, and conductivity sensors in a battery-powered recording instrument. Batteries and electronics are contained in a housing capable of operating at depths of up to 300 meters—depending on the pressure sensor installed.

Benefits and Features

- Runs 1,5000 to 8,000 hours on three D cells
- Monitors sediment concentrations up to 5,000 mg/l and turbidity up to 4,000 NTUs
- Uses the field-proven OBS® technology (U.S. Patent No. 4,841,157) to measure turbidity
- Logs instrument depth, wave height, wave period, temperature, and salinity
- Records 200,000 lines of data in flash memory
- Programs set points and sampling times
- Offers an optional 5-point sedimentation calibration (must send Campbell Scientific a dry sample of sedimentation from the water that will be monitored)

Applications

- Gage rivers and streams
- Monitor dredging and mining operations
- Record turbidity at remote sites
- Support sediment transport research
- Measure wastewater effluent

Technical Details

The heart of the OBS-3A monitoring system is an OBS® sensor for measuring turbidity and suspended solids concentrations. This sensor detects near infrared (NIR) radiation scattered from suspended particles. A fast-response, stainless steel-clad thermistor monitors temperature. Pressure is measured with a semiconductor piezo-resistive strain gage, and conductivity is measured with a four-electrode conduction-type cell. Working depths of the pressure sensor are selected as an option (see Ordering Info). The monitor uses HydroSci software running under Windows® XP, 7, and 8.

Ordering Information

Turbidity & Temperature Monitoring System

OBS-3A Turbidity & Temperature Monitoring System. Must choose a Turbidity Range option (see below). The OBS-3A requires three D-cell batteries. The field cable, mechanical wiper, and carrying case are ordered separately.

Turbidity Range Options

-N1 Measures the range of 0 to 100 NTUs.

-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.

Pressure Sensor Options

-NP No pressure sensor

-10 Orders a pressure transducer that measures depth < 10 m (14 psi).

-20 Orders a pressure transducer that measures depth < 20 m (28 psi).

-50 Orders a pressure transducer that measures depth < 50 m (71 psi).

-100 Orders a pressure transducer that measures depth <100 m (142 psi).

-200 Orders a pressure transducer that measures depth <200 m (284 psi).

Conductivity Sensor Option

-NS No Conductivity sensor

-CS Orders a conductivity probe that measures the range of 0 to 65 mS/cm.

Field Cables for Attachment to Computer

Several cable choices are offered for attaching the OBS-3A to a PC. The cables differ in their length.

21214 OBS-3A Field Cable with a 10 m (33 ft) length.

21318 OBS-3A Field Cable with a 20 m (66 ft) length.

21319 OBS-3A Field Cable with a 30 m (98 ft) length.

Other Accessories

21099 OBS-3A 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).

425 Alkaline D Cell Battery.

Specifications

- Maximum Depth: 300 m (984 ft)
- Drift Over Time: <2% per year
- Drift Over Temperature: 0.05% per °C
- Maximum Sample Size: 2048
- Sampling Rate when connected to the PC: 1 to 25 Hz
- Maximum Data Rate: 25 Hz (connected to PC), 5 Hz (used autonomously)
- Data Capacity: 8 MB
- Maximum Number of Data Lines: 200,000
- PC Interfaces: RS-232/115 kbps, RS-485/115 kbps
- Infrared Wavelength: 850 nm
- Battery Capacity: 18 Ah
- Battery Life (maximum): 8,000 hr

Measurement Ranges

- Turbidity: 0.4 to 1,000 NTUs
- Pressure: 0 to 10, 20, 50, 100, or 200 m
- Temperature: 0° to 35°C
- Conductivity: 0 to 65 mS cm^{-1} (40 PSU, o/oo)

Concentration (depends on sediment type)

- Mud (D50 = 20 µm): 0.4 to 5,000 mg L^{-1}
- Sand (D50 = 250 µm): 2 to 100,000 mg L^{-1}

Accuracy

- Turbidity: <2%
- Pressure: 0.5% of f.s. (f.s. = 50, 100, or 200 dBar)
- Temperature: ±0.5°C
- Conductivity: 1%

Sediment Concentration

- Mud: 2% of reading
- Sand: 3.5% of reading

Physical

- Connector: MCBH-8-FS, wet-pluggable
- Operating Temperature Range: 0° to 35°C
- Storage Temperature Range: -20° to 70°C
- Weight without batteries: 1.5 kg (3.4 lb)
- Diameter: 7.6 cm (3 in)
- Height: 36.2 cm (14.3 in)