

# Deep SeapHOx™ V2

OCEAN CT(D)-pH-DO SENSOR



## Overview

The Sea-Bird Scientific Deep SeapHOx™ V2 combines the Satlantic Deep SeaFET™ V2 pH sensor with the Sea-Bird Electronics SBE 37-SMP-ODO MicroCAT CTD+DO sensor. The Deep SeaFET™ V2 adapts the MBARI/SIO Deep-Sea DuraFET technology to measure pH in a deep moored package.

The Deep SeapHOx™ V2 allows for the integrated data collection of pH with the critical oceanographic and biological measurement of temperature, salinity, and oxygen. The integrated package also allows the Deep SeaFET™ V2 to take advantage of the SBE 37's pumped flow path and anti-fouling technology, extending deployment durations in some cases.

## Features

Moored pH, Conductivity, Temperature, Pressure and Optical Dissolved Oxygen

Integral pump

RS-232 interface

Internal memory and batteries (can be powered externally)\*

Expendable anti-fouling devices, unique flow path, and pumping regimen for biofouling protection

UCI software package (setup, data upload, and data processing)

Field-proven MicroCAT family, with more than 10,000 instruments deployed

Maximum depth 2000 m

\* The instrument **MUST** carry internal batteries; external power may extend the deployment duration depending on the sampling regime.

## Components

- pH sensor is an ion selective field effect transistor (ISFET) type adapted for high pressure operation.
- Unique internal-field conductivity cell permits use of expendable anti-fouling devices, for long-term bio-fouling protection.
- Aged and pressure-protected thermistor has a long history of exceptional accuracy and stability.
- Strain-gauge pressure sensor with temperature compensation is available in 6 ranges.
- Oxygen sensor is field-proven, individually calibrated SBE 63 Optical Dissolved Oxygen sensor.
- Pump runs for each sample, providing improved pH, conductivity, and oxygen response, bio-fouling protection, and correlation of CTD and oxygen measurements.

## Options

- RS-232 Interface
- Optional strain-gauge pressure sensor
- Wire mounting clamp and guide or brackets for mounting to a flat surface

## Field Specifications

The specifications below represent the expected performance of the instrument when deployed in the field. Under controlled circumstances in a lab, we would expect the instrument to outperform these specifications.

We have chosen to display field specifications to give our users a true measure of how Sea-Bird Scientific instruments perform in harsh environments and applications. It is critical to keep this in mind when comparing specifications with instruments from other manufacturers.

### Measurement Range

Conductivity	0 to 7 S/m (0 to 70 mS/cm)
Temperature	-5 to 45 °C
Pressure	0 to 350 / 2000 m (meters of deployment depth capability)
Dissolved Oxygen	120% of surface saturation in all natural waters (fresh and salt)
pH	6.5 - 9.0 pH

### Accuracy

Conductivity	± 0.0003 S/m (0.003 mS/cm)
Temperature	± 0.002 °C (-5 to 35 °C); ± 0.01 °C (35 °C to 45 °C)
Pressure	± 0.1% of full scale range
Dissolved Oxygen	larger of ± 3 µmol/kg (0.07 ml/L, 0.1 mg/L) or ± 2%
pH	± 0.05 pH

### Typical Stability

Conductivity	0.0003 S/m (0.003 mS/cm) per month
Temperature	0.0002 °C per month
Pressure	0.05% of full scale range per year
Dissolved Oxygen	sample-based drift < 1 µmol/kg/100,000 samples (20°C)
pH	0.003 pH/month

### Resolution

Conductivity	0.00001 S/m (0.0001 mS/cm)
Temperature	0.0001 °C
Pressure	0.002% of full scale range
Dissolved Oxygen	0.2 µmol/kg
pH	0.004 pH

Memory Capacity	32 MB (Over 1,240,000 samples)
System Depth Rating	2000 m
System Dimensions	55.88 cm x 28.25 cm x 12.90 cm (Height does not include 3.56 cm end cap) 22" x 11.12" x 5.08" (Height does not include 1.4" end cap)

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SeaFET connected to MicroCAT pumped flow path