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Change Notice: SeaFET™ pH Sensor Upgrade - June 2018

Sea-Bird Scientific has upgraded our SeaFET™ pH sensor to the “SeaFET™ V2”, implementing several important changes. **This change applies to the SeaFET™, Shallow SeapHOx™, and Deep SeapHOx™.** All new SeaFETs shipped after May 1, 2018 will be SeaFET™ V2s. Original SeaFETs serial number 200 and higher are eligible for an upgrade to SeaFET™ V2 at Sea-Bird.

The SeaFET™ V2 implements improvements to the original SeaFET™’s reliability, data quality, ease of operation, and deployment endurance, with significant changes to how users interface with the instrument. Most notable are changes to the instrument’s command set; the SeaFET™ V2 now responds to commands and sampling routines similar to the SBE 37, and no longer responds to the original SeaFET™ commands. The Sea-Bird Scientific UCI Software (used with the SUNA V2 and HydroCAT-EP) is now the primary interface for configuration, data upload, and data processing. **SeaFET™Com and the original SeaFET™ command set are no longer valid for the SeaFET™ V2.**

In addition to changes in commands and sampling routines, the new electronics in the SeaFET™ V2 provide greater reliability and stability while sampling, addressing data dropout and noise issues with the original SeaFET™. SeaFET™ V2 users can expect reliable accuracy to ± 0.05 pH and precision of 0.004 pH.

Software/Communications

UCI has replaced SeaFETCom as the SeaFET™ V2’s primary software interface. UCI looks and behaves similarly to SeaFETCom and retains the same ability to configure the SeaFET™, upload data, and process data.

The SeaFET™ V2 has a completely revised command set that includes commands common to other Sea-Bird Scientific CTDs. When interfacing with the SeaFET™ V2 via a terminal, each line is either preceded by an “S>” prompt or concluded with an “<Executed/>” tag. **None of the original SeaFET™ V1 commands are valid for the SeaFET™ V2.** Users can interface with the SeaFET™ via UCI (version 2.0.0 and higher) or a standard terminal emulator. Refer to the instrument manual and Quick Start Guide for a detailed list of SeaFET™ V2 commands and their uses.

Sampling

The SeaFET™ V2 no longer utilizes Burst Sampling and Sample Averaging. Instead, autonomous and polled sampling routines are identical to standard Sea-Bird moored CTDs:

- Autonomous sampling: the user programs a sample interval between 10-21600 seconds. When prompted to begin sampling (via UCI or with the “startnow” command), the SeaFET™ V2 will wake, collect a single sample, output data (optional), then return to quiescent state at the specified interval.
- Polled sampling: sending the “TS” command to the SeaFET™ V2 via RS-232 will prompt it to take and output a single sample.

The SeaFET™ V2 real-time data output and uploaded data formats are also completely different from the original SeaFET™ data format. Refer to the instrument manual for a detailed description of the data output formats.

Hardware

The most notable hardware changes are to the internal electronics. Physically the SeaFET™ V2 is identical to the original SeaFET™; it uses the same housing, batteries, and shallow versions (SeaFET™ and Shallow SeapHOx™) utilize the same DuraFET pH sensor.

The new electronics also reduce the SeaFET™ V2’s power consumption, allowing for longer deployment times. UCI calculates an estimated deployment duration after configuring the SeaFET™ V2.

Magnetic Switch

The SeaFET™ V2’s Magnetic Switch and Indicator LED function differently from the original SeaFET™. **The magnetic switch no longer changes sampling or power settings on the SeaFET™.** Rather, it now allows the user to determine the instrument’s status:

No Flash: SeaFET™ V2 batteries/memory are not ready for deployment	Red Flash: SeaFET™ V2 has not received a sampling command	Green Flash: SeaFET™ V2 is sampling or waiting to begin sampling
<p>The LED will not flash if any one of the following conditions are true:</p> <ul style="list-style-type: none"> • The RTC battery is not sufficient (below 2.5 V) • The isolated battery is not sufficient (below 4.0 V) • The main battery or external power supply is not sufficient (below 7.0 V) • The memory is full 	<p>The SeaFET™ V2 batteries and memory are ready to deploy, but the instrument has not received a sampling command.</p> <p>Connect the SeaFET™ to a computer and click on “Start” in UCI, or send “startnow” or “startlater” before deploying.</p>	<p>The SeaFET™ V2 batteries and memory are ready to deploy, and the SeaFET™ V2 has received the “startnow” or “startlater” command.</p> <p>It is either sampling or waiting to begin sampling at the time predetermined in UCI or with the “startdatetime=mmddyyyyhhmmss” command.</p>

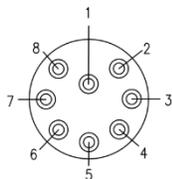
The LED/Magnetic switch allows users to check the current instrument status before deploying the SeaFET™.

Connecting the SeaFET™ V2 to a Computer

The SeaFET™ V2 is only compatible with the RS-232 cable (PN ASY-CAB-00095) used to connect the original SeaFET™ to a serial port. **The USB cable is NOT compatible with the SeaFET™ V2.** All communication is through RS-232.

Connect the SeaFET™ V2 to UCI or a terminal emulator program (such as SeaTermV2 or Tera Term)

MCIL 8-MP Bulkhead Connector



Pin	Name	Description
1	VIN	External DC Power Supply, 6 – 18 Vdc
2	V-/SG	Power Supply Return / Signal Ground
3	N/A	N/A
4	CTD/PUMP V+	Optional CTD or Pump Power (12V 650mA)
5	TXD / D+	RS-232 Transmit / USB D+
6	RXD / D-	RS-232 Receive / USB D-
7	CTD TXD	Optional CTD RS-232 Transmit
8	CTD RXD	Optional CTD RS-232 Receive

- Baud rate: default 19200
- Data: 8 bit
- Parity: none
- Stop: 1 bit
- Flow control: none