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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 **SeaFET™Com and the original SeaFET™ command set are no longer valid for the SeaFET™ V2.**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>

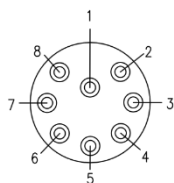
The LED/Magnetic switch allows users to check the current instrument status before deploying the SeaFET™.

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