



## Chlorophyll WETStar Characterization

Date: November 19, 2013

S/N: WS3S-020

Chlorophyll concentration expressed in  $\mu\text{g/l}$  can be derived using the equation:

$$\text{CHL}(\mu\text{g/l}) = \text{Scale Factor} \times (\text{Output} - \text{Clean Water Offset})$$

|                                      |                          |
|--------------------------------------|--------------------------|
| Clean Water Offset (CWO)             | Analog output<br>0.080 V |
| Scale Factor (SF)                    | 6.1 $\mu\text{g/l/V}$    |
| Maximum Output                       | 5.48 V                   |
| Resolution                           | 0.75 mV                  |
| Ambient Characterization Temperature | 22 $\pm$ 1°C             |
| Current Draw                         | 30 mA @ 12V (typical)    |
| The Bulkhead Connector was sh        | 0.90 mV/hr               |
| Temperature Stability, 25–2 °C       | 1.95 mV/°C               |

| Range               |   |
|---------------------|---|
| 15 $\mu\text{g/l}$  | 0 |
| 32 $\mu\text{g/l}$  | X |
| 150 $\mu\text{g/l}$ | 0 |

### Definitions:

**CWO:** Clean Water Offset value obtained using pure filtered de-ionized water.

**SF:** Scale Factor is used to convert the fluorescence response of the instrument into chlorophyll-a concentration. Scale Factor is determined at WET Labs during a cross calibration using a liquid fluorescent standard and a reference fluorometer whose chlorophyll fluorescence response has been characterized in a laboratory using a mono-species lab culture of *Thalassiosira weissflogii* phytoplankton.

**Maximum Output:** Maximum signal output of the fluorometer.

**Resolution:** Standard deviation of 1 minute of clean water data, sampled once per second.

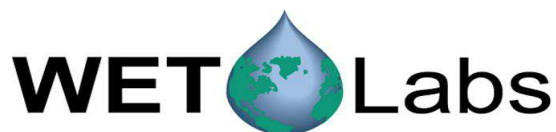
**Ambient Characterization Temperature:** Room temperature at time of characterization.

**Current Draw:** The amount of current the instrument uses for operation.

**12-hour Stability:** Deviation of output averaged over 12 hours.

**Temperature Stability:** Measured output variation per degree.

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## WETStar Calibration and Repairs

**Date** November 19, 2013    **Customer** MBARI

**S/N#** WS3S-020    **Repair Order** 21314

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### Standard Service

- Performed noise test: 1 sample/sec for 60 sec
- Performed stability test: 1 sample/min for 12 hrs
- Performed temperature test: 25–2 °C
- Performed saturation test
- Shake-tested unit
- Pressure-tested unit
- Updated unit's calibration sheet

### Diagnosis

The Bulkhead Connector was sheared off.

The Pressure Can had deep pits in it which compromised it's integrity.

### Repairs

Parts Replaced: Bulkhead Connector, Pressure Can and O-Rings.

### Comments

WETStar was re-calibrated with 24.5ppb Uranine.

Installed new 6 Pin Bulkhead Connector.

Analog Patch Cable Part #: EXA-210317