



Chlorophyll WETStar Characterization

Date: November 19, 2013

S/N: WS3S-021

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 0.078 V
Scale Factor (SF)	6.5 $\mu\text{g/l/V}$
Maximum Output	5.06 V
Resolution	1.37 mV
Ambient Characterization Temperature	22 $\pm$ 1°C
Current Draw	30 mA @ 12V (typical)
12-hour Stability	1.75 mV/hr
Temperature Stability, 25–2 °C	0.47 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.

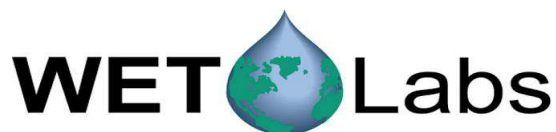
Ambient Characterization Temperature: Room temperature at time of characterization.

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-021 **Repair Order** 21314

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

Socket 1 on the Bulkhead Connector was loose causing intermittent connection.
Capacitors on the Power Board were starting to leak.
Red Filter was delaminated.

Repairs

Replaced the Bulkhead Connector, Capacitors on Power Board, Red Filter and O-Rings.

Comments

WETStar was re-calibrated with 24.5ppb Uranine.
Installed new 6 Pin Bulkhead Connector.
Analog Patch Cable Part #: EXA-210317