

## Chlorophyll WETStar Characterization

Date: November 25, 2020

S/N: WS3S-236

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>0.085 V |
| Scale Factor (SF)                    | 5.8 $\mu\text{g/l/V}$    |
| Maximum Output                       | 5.53 V                   |
| Resolution                           | 0.73 mV                  |
| Ambient Characterization Temperature | 22 $\pm$ 1°C             |
| Current Draw                         | 30 mA @ 12V (typical)    |
| 12-hour Stability                    | 0.77 mV/hr               |
| Temperature Stability, 25–2 °C       | 1.09 mV/°C               |

| Range               |   |
|---------------------|---|
| 28 $\mu\text{g/l}$  | x |
| 75 $\mu\text{g/l}$  | 0 |
| 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.