CYCLOPS-7®
SUBMERSIBLE SENSORS

Product Instructions: Solid Secondary Standard for Stainless Steel and Titanium Housing

Introduction

The following information describes how to use the Cyclops-7 Solid Secondary Standards:

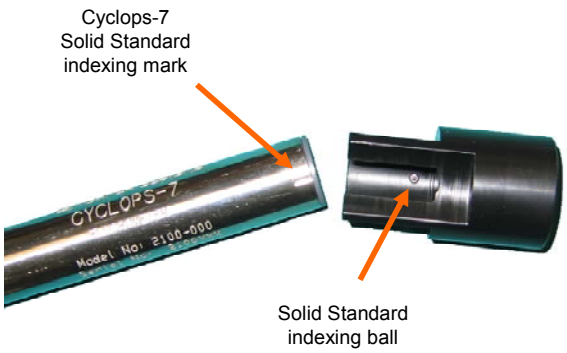
P/N 2100-900	*In Vivo* Chlorophyll, Rhodamine WT, Fluorescein, Phycocyanin, and Phycoerythrin
P/N 2100-904	CDOM, Crude Oil, Refined Fuels, and Optical Brighteners

Features

- Can be used in place of a primary liquid standard once a correlation between a primary standard and the solid standard is established.
- Can be used to check fluorometer stability and/or check for loss in sensitivity.
- Provides a broad range of very stable fluorescent responses.
- Has an adjustment screw allowing users to set to a desired signal.

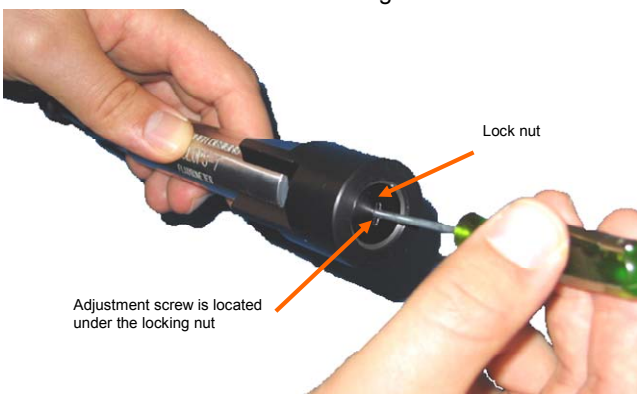
Installation the Solid Secondary Standard

1. Before installing the Solid Secondary Standard, ensure that the optical surface of the Cyclops-7 is completely clean and dry.
2. Fully mate the Solid Secondary Standard with the optical end of the Cyclops-7.
3. Rotate the Solid Secondary Standard in either direction until you feel the indexing ball click into the indexed position.



Align the index mark and indexing ball when mating the Cyclops-7 and the Solid Secondary Standard.

4. Use a flathead screwdriver to unscrew the locking nut as far as it will go.
5. To change the signal level use the green screwdriver provided and insert the blade through the hole in the locking nut. Rotate the screwdriver until it engages with the adjustment screw that is beneath the locking nut. Rotate the screw to adjust the signal level as necessary. Turning clockwise increases the signal and counterclockwise decreases the signal.



Insert the supplied green screwdriver through the hole in the locking nut to reach the adjustment screw.

6. Once the desired reading is obtained, tighten the locking nut so the adjustment screw is held firmly in place.
7. Finish by noting the output voltage and gain setting used (x1, x10 or x100) in the “Value” space on the Secondary Standard label.
8. Note that the response of every Solid Secondary Standard is unique. Hence, a new correlation must be determined for every sensor. For future identification, use the “ID” space on the label for a unique identifier for the Secondary Standard.

Use of the Solid Secondary Standard for *in vivo* Chlorophyll Applications:

1. Using your Cyclops-7 Fluorometer, measure a sample containing algae and record the response and the gain values for that measurement.
2. Dry off the optical end of the Cyclops-7, attach the Solid Secondary Standard to the fluorometer, and adjust the Solid Secondary Standard to produce the same response in the same gain as in step 1.

3. Perform a chlorophyll extraction to determine the actual chlorophyll concentration of the sample.

   NOTE: EPA Method 445.0 (*in vitro* determination of chlorophyll in algae) can be found on Turner Designs' website.

4. The Solid Secondary Standard's signal is now equivalent to the concentration value determined from step 3 and can be used in place of a liquid primary standard for future calibration of that specific Cyclops-7 Fluorometer.

Use of the Solid Secondary Standard for Dye Tracing Applications:

The Solid Secondary Standard can also be used to check fluorometer stability when making dye concentration measurements. If necessary, the Solid Secondary Standard can be used to establish a new correlation voltage without using a calibration solution each time.

1. Using your Cyclops-7 Fluorometer, measure a dye solution with known concentration and record the response as well as the gain values for that measurement.

2. Dry off the optical end of the Cyclops-7, attach the Solid Secondary Standard to the fluorometer, and adjust the Solid Secondary Standard to produce the same response in the same gain as in step 1.

3. The Solid Secondary Standard's signal is now equivalent to the concentration value of the dye solution used in step 1and can be used in place of a liquid primary standard for future calibration of that specific Cyclops-7.

   Note: Comprehensive information on dye trace measurements can be found at the following Turner Designs website: http://www.turnerdesigns.com/fluorescent-dye-tracing

Care and Storage:

Solid Secondary Standards should be stored at room temperature (~20 degree C) in their case when not in use and kept free of dust and moisture. Special care must be taken with the UV Solid Secondary Standard P/N 2100-904 to ensure that it is not exposed to UV light for prolonged periods of time. This can result in degradation of the standard.