SCUFA™

The SCUFA (Self-Contained Underwater Fluorescence Apparatus) is an accurate, simple-to-use and versatile submersible fluorometer for chlorophyll and dye tracing applications.

The SCUFA has been designed to operate in a wide range of concentrations and environmental conditions. The capability to program sampling intervals via the Windows® Interface Software and the automatic range control enable the user to configure the SCUFA for any type of profiling or moored deployment.

ACCURACY

- Typical temperature fluctuations in natural waters can result in significant changes in fluorescence values. The SCUFA, with its integrated temperature probe and software, automatically corrects fluorescence data of temperature effects.
- Turbidity can also cause errors in fluorescence readings. You can use a dedicated second channel for turbidity measurements that provides valuable data for potential correlation and correction (Figure 1).

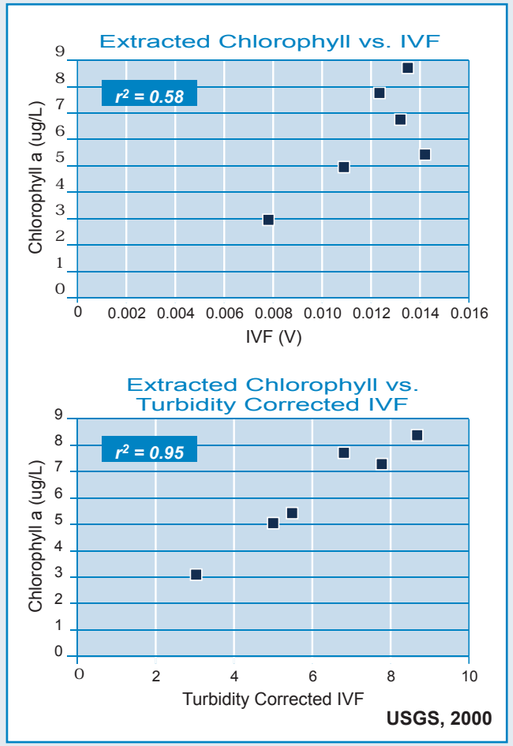

Figure 1. In vivo **fluorescence (IVF) data and turbidity-corrected IVF correlated to extracted chlorophyll.**

- User-selectable 0V and 5V values result in optimal range selection and improved resolution of analog data.
- Superior ambient light rejection eliminates the effects of sunlight and allows the SCUFA to be used in surface waters without the need for external pumps or light shields.

SIMPLICITY

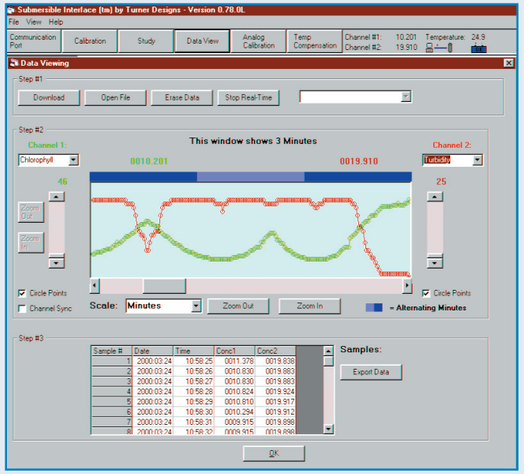

Figure 2. The Data View screen allows the user to download and view data from the internal data logger, as well as view data from real-time data transfer and saved files.

- The SCUFA's menu-driven software provides the interface for instrument configuration and data analysis. The software walks the user through easy-to-follow steps for functions such as calibration and data collection (Figure 2).
- The Auto-Ranging capability provides an extremely wide dynamic range, allowing the SCUFA to be used in dramatically different environments without manually changing gain settings or going over range.
- The SCUFA's solid secondary standard allows the user to verify instrument calibration quickly and easily and to re-calibrate if necessary.
- The optional Copper Anti-Fouling System enables unattended deployment for extended periods without the performance suffering from the effects of biofouling.

VERSATILITY

- 0-5V and RS-232 signal outputs are standard features, so the SCUFA can be mated to a variety of CTDs and data collection devices.
- Open optics eliminates the need for a pump, but a pump can be used with the optional flow-through cap.
- The SCUFA can be programmed for user-defined sampling rates and times with the purchase of the Internal Data Logging (IDL) Package. IDL also reduces power consumption through the use of Sleep Mode between sampling intervals.

INTRODUCTION TO TURNER DESIGNS

We have been producing sensitive and durable fluorescence instrumentation since 1972. Turner Designs currently manufactures more fluorescence instruments than any other company in the world. We are an employee-owned company whose people take pride in providing quality instruments and responsive technical service.

SCUFA Configuration Options, (2000-010)

Choose 1 channel from the following:
Channels: Chlorophyll **a**; Cyanobacteria (Phycocyanin, (PC) or Phycoerythrin, (PE) pigments); Rhodamine WT; Fluorescein; Turbidity
Instrument Options:
Turbidity; Internal Data Logging; Automatic Temperature Correction

The SCUFA Basic Package includes a fluorometer (P/N 2000-010), Windows® Interface Software and a PC Interface Cable. If you are interested in a fluorescence application not seen here, please contact our sales dept to discuss custom options.

Specifications		Chlorophyll	Cyanobacteria		Rhodamine WT/Fluorescein	
Minimum Detection Limit:						
	Fluorescence	0.02 µg/L*	150 cells/mL		0.04 ppb	
	Turbidity	0.05 NTU	0.05 NTU		0.05 NTU	
Dynamic Range:	Fluorescence	4 orders of magnitude			4 orders of magnitude	
	Turbidity	3 orders of magnitude			3 orders of magnitude	
Resolution:	Digital	12 bit			12 bit	
	Analog	1.2 mV			1.2 mV	
Current Draw:	Max. Sampling Rate	50 mA			50 mA	
	Sleep	50 µA			50 µA	
Input Voltage		7–15 VDC			7–15 VDC	
Signal Output		0–5 V & RS-232			0–5 V & RS-232	
Max. Sample Rate:	Digital	1 Hz			1 Hz	
	Analog	5 Hz			5 Hz	
Connector		Impulse (MCBH-8-MS SS)			Impulse (MCBH-8-MS SS)	
Temperature Range		–2 to 40°C			–2 to 40°C	
Light Source		Chlorophyll a	PC	PE	Rhodamine WT/Fluorescein	
		Blue	Orange	Green	Green	
Detector		Photodiode			Photodiode	
Optics (nm)		Chlorophyll a	Cyanobacteria PC	Cyanobacteria PE	Rhodamine WT	Fluorescein
Excitation/Emission		460/685	595/670	528/573	530/600	490/580
Weight in Air		1.98 lb (0.9 kg)			1.98 lb (0.9 kg)	
Diameter		2.5" (6.35 cm)			2.5" (6.35 cm)	
Length		10" (25.4 cm)			10" (25.4 cm)	
Depth Rating		600m			600m	

* Detection limits for **in vivo** measurements were determined with monocultures. Actual detection limits will vary depending on natural algae assemblage.

Accessories Available

- Internal Data Logger (Logs 11,000 data points) (P/N 2000-200)
- Automatic Temperature Compensation (P/N 2000-700)
- Flow-through Cap (P/N 2000-900)
- Solid Calibration Standard (P/N 2000-901)
- Copper Anti-Fouling System (P/N 2000-950)
- Battery Pack (P/N 2000-600)
- Deployment Cage (P/N 2000-940)

TURNER DESIGNS
Reliable Instruments for an Unreliable World

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SUBMERSIBLE FLUOROMETER

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