

GGUN - FL-30

User's manual

doc_764522_a_UM - GGUN FL-30.odt



Table of Contents

1. SPECIFICATIONS.....	3
2. OVERVIEW.....	4
3. OPERATION.....	4
4. SET-UP.....	5
5. CALIBRATION.....	5
6. MAINTENANCE.....	6
7. GGUN FLUOROMETER CONNECTOR.....	6
8. PRODUCT NUMBERS RELATED TO GGUN FL-30 (DATALOGGER, TELETRANSMITTER, CABLE, TRACERS).....	7
9. CONTACT INFORMATION.....	8

Enquiries

Albillia Sàrl
Rue des Epancheurs 34b
2012 Auvernier
Switzerland

+41 79 570 71 75
info@albillia
www.albillia.com

1. Specifications

Number of optics	4
Detectable tracers	3 of 3 different classes. Classes I / II / III / V (see table 1 below)
Turbidity detection	0.02 to 400 NTU
Built-in thermometer - precision	0.1°C
Built-in thermometer - resolution	0.034°C
Detection threshold	2 x 10 ⁻¹¹ g/ml typical (uranine)
Saturation level	2500 mV
Electrical noise	0.01 mV
Analog to digital conversion	24 bit unipolar
Minimum acquisition interval	4 seconds
Power supply	12V (9 to 15V) DC power
Consumption (stdby/normal)	20mA - 60mA
Connections	The probe connects to the datalogger through a 4-wire cable with 2 waterproof connectors
Immersion depth	50m
Head weight (IP68 Stainless steel)	7.3kg
Diameter	160mm
Height	170mm

WARNING

Weakness of fluorometer FL30: The connection to the sensor.
 Always fully plug the connector because the O-ring seal is located in the depths.
 Avoid intrusion of sand.

Never open the GGUN FL-30.

Table 1 - Classes and tracers

Class	Tracer
I	Uranine (Na fluorescein), pyranine, eosine, chlorophyll A (optional)
II	Amidorhodamine G, sulforhodamine B, rhodamine WT, resorufin
III	Tinopal CBS-X, CBS-CL, amino-G-acid , photine CU
V	Naphtionate

Table 2 – GGUN FL-30 products

Number	Product name and optics
734996	GGUN FL-30 - I, II, III
735001	GGUN FL-30 - I, II, V

2. Overview

The fluorometer is employed for continuous measurements during tracer tests using dyes such as uranine, rhodamine, Tinopal, etc. As many as three conveniently selected tracers can be used simultaneously. Water flows through the optical cell of the fluorometer (a glass tube of cylindrical cross-section).

The optical system comprises four lamps and three photo detectors mounted on four perpendicular axes on two levels. Each axis is equipped with excitation and detection filters and lenses. The lamps are switched on and off in turn, measuring three independent responses and water turbidity. The offset voltage of the preamplifiers (dark signal) is also recorded at each measuring cycle.

The fluorometer probe hosts an analogue to digital converter for converting the fluorometer signals into unipolar 24-bit words (data resolution 1:16'000'000). The largest signal is 2500 mV. Therefore the smallest is 0.00015 mV. The data flow is sent to the data logger through a 15 m-long or longer cable (4 wires).

The datalogger can be TRMC-GGUN or a TRMC-GGUN-COM

Table 3 – Datalogger and teletransmitter products

Number	Product name	Documents
735563	TRMC-GGUN	753947 - User's Manual
745679	TRMC-GGUN-COM	753947 - User's Manual

3. Operation

In clean and degassed water, the background noise is very stable (≈ 0.01 mV). The residual signal is produced

- by light scattering of water
- by reflections within the optical cell

Under these ideal conditions, as little as 2×10^{-11} g/ml of dye concentration can be detected (uranine). Other dyes are a factor of 8 to 10 less sensitive. The detection threshold increases with turbidity.

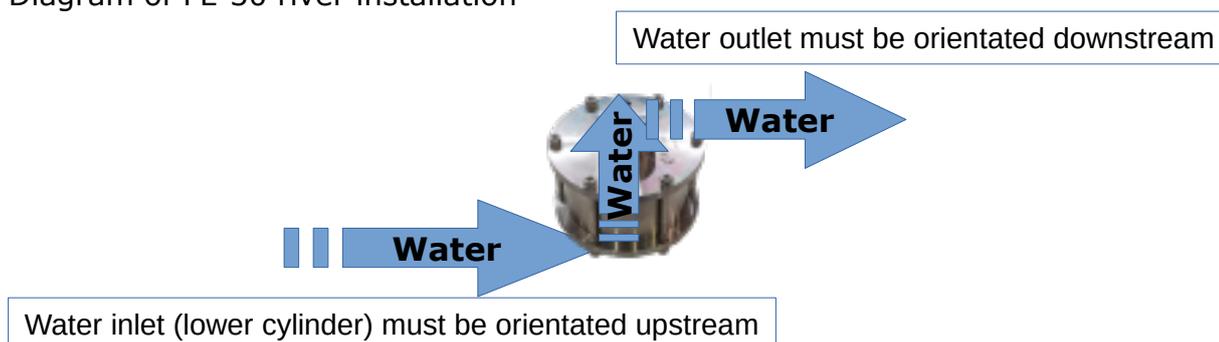
The signal measured with an empty optical cell is not significant and must be ignored.

4. Set-up

To avoid bubble accumulation in the optical cell, the fluorometer should be set up vertically. Air bubbles scatter the light and strongly reduce the signal quality, producing peaks.

Completely immerse the probe into water and secure it with a heavy brick (5 kg or more) or a nylon rope. If the flowrate is slow, the electrical cable is strong enough to hold the probe in place. For higher flowrates, tie down the probe. Turn it so that the water inlet (lower cylinder) is orientated upstream and the outlet downstream.

Diagram of FL-30 river installation



5. Calibration

Calibration is advisable 2-3 times a year, permitting proper system operation.

You will need a software to do your calibration.

Table 4 – Softwares

Number	Software name	Documents
	fluo_cal	
	fluo_view	
	FLUO	

fluo_calib measures live and create a .dat file

fluo_view measures live and can convert mV to ppb using the .dat file create with fluo_calib.

FLUO needs a calib.dat file. FLUO measures live and displays values on a graph.

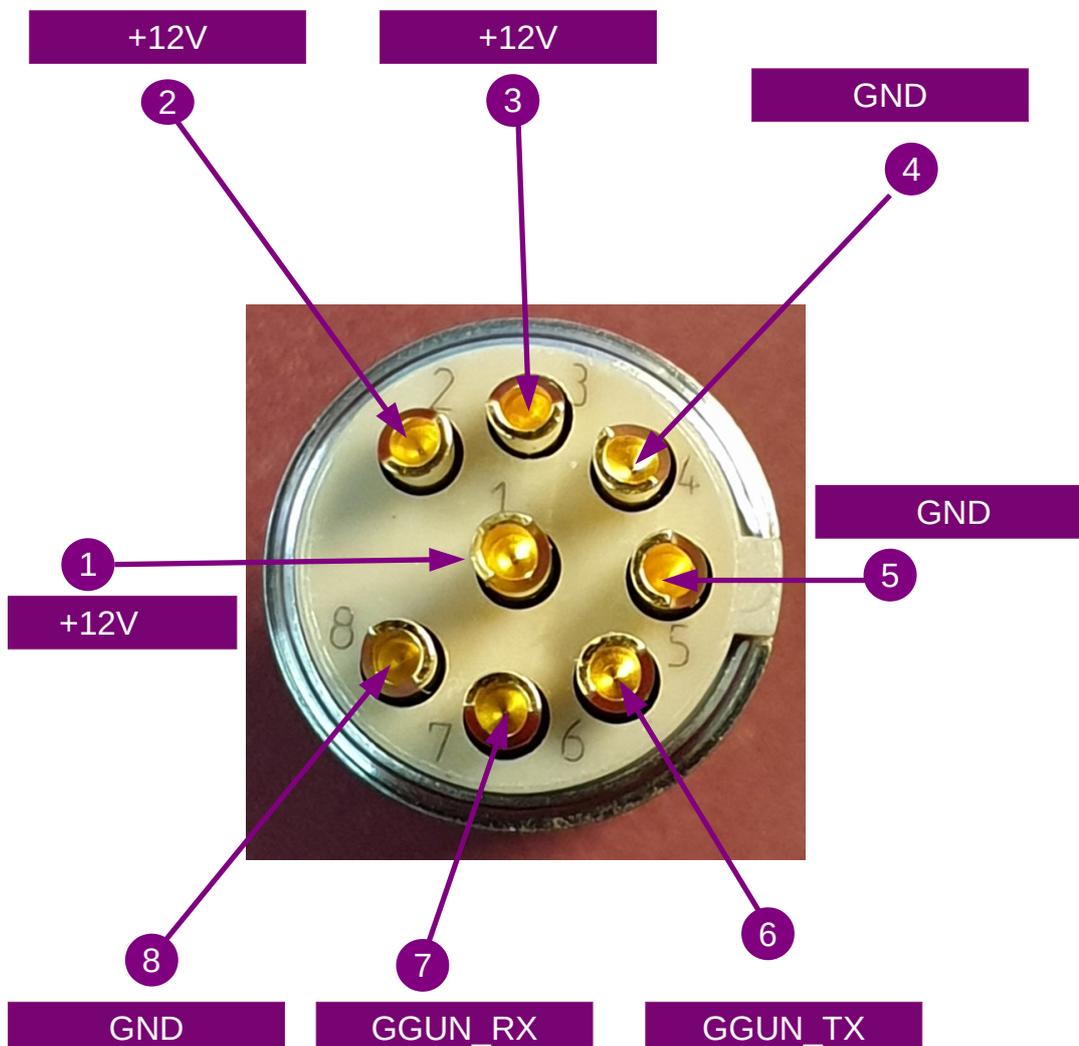
Please look at the document doc_762336_a_calibration for further information.

6. Maintenance

To ensure optimal accuracy, the glass tube should be cleaned before each tracer test and after 2 weeks at least. Never dismount the fluorometer. Only remove the 2 small caps (GGUN FL-30 probe). Use a Nylon tube brush.

Intern filters are sensitive to humidity and heat. This is the main reason why the probe should not be used in waters with temperature exceeding 35 °C.

7. GGUN Fluorometer connector



8. Product numbers related to GGUN FL-30 (datalogger, teletransmitter, cable, tracers)

GGUN FL-30 products

Number	Product name and optics
734996	GGUN FL-30 - I, II, III
735001	GGUN FL-30 - I, II, V

Datalogger and teletransmitter products

Number	Product name	Documents
735563	TRMC-GGUN	753947 - User's Manual
745679	TRMC-GGUN-COM	753947 - User's Manual

Cable for GGUN FL-30 to data logger

Number	Length	Product name
708900	15m	CAB-FLUO-FL-30-15M
733790	30m	CAB-FLUO-FL-30-30M
746255	50m	CAB-FLUO-FL-30-50M
746263	70m	CAB-FLUO-FL-30-70M

Tracers

Number	Type	Weight	Tracer
737189	Powder	250g	Uranine
710863	Powder	1kg	Uranine
734517	Liquid	1.5kg/ 5l	Uranine
737247	Powder	250g	Eosine
760405	Powder	5kg	Eosine
737221	Powder	250g	AminoG acid
760413	Powder	5kg	Amino G acid
737213	Powder	250g	Sulforhodamine B
710889	Powder	1kg	Sulforhodamine B
760397	Powder	5kg	Sulforhodamine B
734525	Liquid	1kg/ 5l	Sulforhodamine B
737239	Powder	250g	Sodium naphtionate
760462	Powder	5kg	Sodium naphtionate

9. Contact information



Address : Albillia S.à.r.l.
Rue des Epancheurs 34b
2012 Auvernier
Switzerland

phone : +41 76 570 71 75
e-mail : info@albillia.com
Web : www.albillia.com