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# TRMC-GGUN TRMC-GGUN-COM

# User's manual

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# Introduction

## Quick introduction

The TRMC-GGUN and TRMC-GGUN-COM are dataloggers developped by the Tetradre company especially for customer using only one fluorometer sensor, FL-24 or FL-30 of the company Albilia.

TRMC-GGUN and TRMC-GGUN-COM are using the advances developped in term of hardware and software for the whole family of Tetraedre's TRMC dataloggers family.

## **TRMC-GGUN and TRMC-GGUN-COM comparisons**

	TRMC-GGUN	TRMC-GGUN-COM
Memory size	1'000'000 bytes	1'000'000 bytes
PC connection	Yes	Yes
IP65 protective case	Yes	Yes
Bluetooth interface	Yes	Yes
Low power consumption	Yes	Yes
2G, 3G, 4G communication modem	-	Yes
Built-in antenna	-	Yes
Types of interface for sensors	1x RS-232 Connector	1x RS-232 Connector
Internal battery (1)	Yes	Yes

(1): 12V 7Ah Lead battery, must be ordered separately. Order number 708504



# Connections

## Connectors



Figure 1. TRMC-GGUN connectors







Figure 2. TRMC-GGUN Battery location



Battery protection and holder

Battery protection screws





### Figure 3. TRMC-GGUN Battery connection



Battery connection. Red for +12V

Battery connection. Blue for OV

## **Connecting the TRMC-GGUN**

#### Power supply

To operate, the TRMC-GGUN and TRMC-GGUN-COM need a 12V 7Ah battery. This battery must be located inside the loggers. The battery must be ordered separately. Tetraedre's product number is 708504.

#### **Battery replacement procedure**

To access, the battery, you must open the case. Unmount the battery protection case 7 by

unscrewing the two screws  $\mathbf{8}$ . The battery is then easily accessible  $\mathbf{10}$ 

#### Fuse

The TRMC-GGUN contains a replaceable fuse inside the electronic box. This is a 5x20mm 1A T fuse. The fuse can easily be replaced if necessary 1.

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#### FL-24 or FL-30 connection

The fluorometers must be connected to the connector outside the case 2

#### PC connection

To be able to communicate with the logger using the USB adapter cable, you must connect it to the connector located on the front plate 3.

The USB adapter cable must be ordered separately. Tetraedre's product number is 709572.

### Communicating with the datalogger

There are two ways to communicate with the datalogger: By using a USB adaptation cable or by Bluetooth.

#### Bluetooth

The TRMC-GGUN and TRMC-GGUN-COM have built-in Bluetooth. Currently (January 2023), the software is not ready to use this feature. We expect to have first version during spring 2023. Don't hesitate to contact your reseller to know the status of the latest software.

#### USB

When using the appropriate cable, you can communicate with the datalogger using a Windows applications. The USB adapter cable creates a COM port on your computer.

Currently, to communicate with the TRMC-GGUN, you must be the **Axiome Basic** software. Tetraedre is currently developping a simplified version of Axiome Basic name **Axiome Fluo**. Currently (January 2023), the software is not ready to use this feature. We expect to have first version during spring 2023. Don't hesitate to contact your reseller to know the status of the latest software.

### Functionnalities of the datalogger

The TRMC datalogger have great functionnalities. This document will only present basic functionnalities. A complete documentation of the TRMC firmware capabilites is available. Contact Tetraedre if you want this documentation.



# Using Axiome Basic with the TRMC-GGUN and TRMC-GGUN-COM

In order to communicate with the TRMC-GGUN, you need at least Axiome Basic version h01 or newer. Check Tetraedre's web site for the latest version: <a href="https://www.tetraedre.com/publication.php?publication\_id=149">https://www.tetraedre.com/publication.php?publication\_id=149</a>

## Using Axiome Basic

### Connect the COM port

To discuss with the logger, you must start the Axiome Basic program and connect to the appropriate COM port.

See picture below. Select correct COM port in list. See  $^{(4)}$ .

Then click on the «Connect» button 42.

Date & Time Read value : Estimated :			Get Status [C	trl+S]	ID : Communication Pa COM port : 
Acquisition Station Sele	- NextOn:		-		Mode :
GSM	Ple	ase Choose a Statio	n to Call		
0 : (no	station)		0 : Offline (no Windows com p B: COM6 C: COM7 D: COM100 F: COM100	connection) orts	
Flash Occ			F: COM102 G: COM103 H: COM104 I: COM105		
Conn	ect	Reload setup [F5]	Load Setup [F3]	type : direct	Language
Setup file : -					



Once the COM port is opened, the «Connected» green text is displayed. see <sup>B2</sup>.

Click on «Get Status [Ctrl+S]» (<sup>E1</sup>) to view informations related to the device.

Duration:   000000 00h 10m 00s     Next On:   Thu 1970-01-01 01:01:01 6MT+01:00     counter:   0/0     Next Off:   Thu 1970-01-01 01:00:00 GMT+01:00     lash	Duration : 00000d 00b 10m 00s		
Disconnect ! [F7]	Next On:   Thu 1970-01-01 01:01:01 GMT+01:00     Inter:   0/0     Next Off:   Thu 1970-01-01 01:00:00 GMT+01:00     Inter:   0%     Size:   5083     Inter:   0%     Size:   5078	Conne	ect ! [F5]

Look especially at the time of the logger. Acquisition => «Next On» indicates when the next acquisition will take place. GSM => «Next On» indicates when the next data transmission will take place (obviously only useful for logger with remote communication capabilities).

The section «Flash» indicates the memory occupation. Depending on the filling level of the memory, you might decide, or not, to clear the memory.

Measurements     Clear Flash   Download Flash [Ctrl-D]   Start Acquisition NOW	Connect ! [F5] Disconnect ! [F7]
SUCCESS : Tmaster : terminated TERMINATE_SUCCESS	^
< Ready	× 
	B7



Each time that you start an acquisition (<sup>B7</sup>), or when the logger makes an automatic acquistion, you can check the current memory filling level. You can easily extrapolate how many acquisitions you can make and for how long (depending on «Interval0»).

B5	
Axiome Basic / 267872_h01	- 🗆 ×
Eile Communication Functions System functions Advanced Functions ACQ functions Configuration	Help
System configuration Acquisitions Probes Health COM configuration	Station
Time Configuration	ID : 146 Communication Panel COM port :
Set time to PC time Quick Sync [Ctrl+Y]	\\.\COM100
	Mode : direct
GSM Configuration	Status : Connected
2023   -   3   -   23   17   :   30   :   00   GMT+1	Access : free
GSM enable GSM disable	OFF
GSM on now ! GSM off now ! GSM off +15min	
System Configuration Memory	Connect ! [F5]
Upload EEPROM configuration [CtrlU]	Disconnect ! [F7]
SUCCESS : Taxiome_master : terminated TERMINATE_SUCCESS <time iso="1970-01-01T01:06:00+01:00" v="360"> START :: get status SUCCESS : Taxiome_master : terminated TERMINATE_SUCCESS START : Quick sync SUCCESS : Taxiome_master : terminated TERMINATE_SUCCESS</time>	^
< Ready	~

Click on «Quick Sync [Ctrl+Y]» (<sup>B5</sup>) to set the logger clock, next acquisition time and next transmission time. You can also manually start a remote communication.

Please note that when making a remote communication exchange with Tetraedre TDS server, the memory occupation is automatically managed by the server so you don't have to take care of it.

#### Data download

Once you have done the acquisitions that you are interested in, you can either download them on your computer using the USB connection or transmit them to the TDS server (for dataloggers having such capacity).

By clicking on «Download Flash» (<sup>(1)</sup>), you can download measurement locally to your computer. You can clear the memory by clicking on «Clear Flash» (<sup>(3)</sup>). These operations are usually reserved for on-site operations or for dataloggers not having remote communication capabilities.

To download the «new» data, we suggest to click on «incremental» (<sup>C2</sup>). By doing so, Axiome Basic will download the new data and update an internal pointer that indicates up to where the data have been previously downloaded. So next time you won't download the same data again

The downloaded data are stored in a raw .bin file located in the directory c:\tetraedre\data\_bin. A second file is created in the directory c:\tetraedre\data\_xml

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When the download is finished a new windows is opened. Click in the «View» menu and select «TRMC-GGUN» (<sup>D1</sup>) to simplify the display.

File View	Tools TRMC-GGUN TRMC-1 TRMC-12	stamp	T [°C] 35.00	F1 [mV]	F2 [mV] F3	3	SI C	ation ID : 146 ommunication Par	el
Гhu 1 Гhu 1	TRMC-GGUN TRMC-1 TRMC-12	stamp	T [°C] 35.00	F1 [mV]	F2 [mV] F3	-	-0	ID : 146 ommunication Par	el
Thu 1 Thu 1	TRMC-1 TRMC-12		35.00	100.00	-	-		ommunication Par	hel
ſhu 1	TRMC-12		J					COM	
_			35.00	100.00				Som poit.	00
	TPM-14	-						\\.\LUMI	JU
_	TSL-485 P+T*	L						Mode :	direct
	TPM-16					, ]		Status : Co	nnected
	Extension Coder							Access :	free
	Extension Fluorimeter								
	Extension Elster								
	Extension MOGAM							OFF	
	Extension GPS								
	Pressure logger					e!			
	Custom Filter								
	3 digit for temperature							Connect	[F5]
	Local Time	L						Disconnec	t ! [F7]
<	GMTTime				>				
<	iome_mas iso="15	TPM-16 Extension Coder Extension Fluorimeter Extension Blster Extension MOGAM Extension GPS Pressure logger Custom Filter 3 digit for temperature Local Time GMT Time tome_master : terminated TERMINA: tome_1000-01-01701:06:00+01:00*	TPM-16 Extension Coder Extension Fluorimeter Extension Blater Extension MOGAM Extension GPS Pressure logger Custom Filter 3 digit for temperature Local Time GMT Time Come_master : terminated TERMINATE_SUCCE iso="1970-01-01701:06:00+01:00" >	TPM-16 Extension Coder Extension Fluorimeter Extension Blster Extension MOGAM Extension GPS Pressure logger Custom Filter 3 digit for temperature Local Time GMTTime GMTTime GMTTime SUCCESS 1000=_master : terminated TERMINATE_SUCCESS	TPM-16 Extension Coder Extension Fluorimeter Extension Blster Extension MOGAM Extension GPS Pressure logger Custom Filter 3 digit for temperature Local Time GMT Time GMT Time GMT Time SUCCESS 1000=_master : terminated TERMINATE_SUCCESS 1000=10101:06:00+01:00" >>	TPM-16 Extension Coder Extension Fluorimeter Extension Blster Extension MOGAM Extension GPS Pressure logger Custom Filter 3 digit for temperature Local Time GMTTime > SUCCESS 1 dog="haster : terminated TERMINATE_SUCCESS 1 dog="haster : terminated TERMINATE_SUCCESS"	TPM-16   Extension Coder   Extension Fluorimeter   Extension Blster   Extension MOGAM   Extension GPS   Pressure logger   Custom Filter   3 digit for temperature   Local Time   GMT Time   ison=_master : terminated TERMINATE_SUCCESS   ison='10101:06:00+01:00" >	TPM-16 Extension Coder Extension Fluorimeter Extension Btster Extension MOGAM Extension GPS Pressure logger Custom Filter 3 digit for temperature Local Time GMT Time Siome_master : terminated TERMINATE_SUCCESS 1:00=1:01:01:06::00+01:00" >>	TPM-16 Status: Co   Extension Coder Extension Fluorimeter Access: Access:   Extension Blater Extension GPS Pl OFF   Extension GPS Pressure logger Pl Disconnect   Custom Filter 3 digit for temperature Connect Disconnect   Local Time > Disconnect Disconnect   isome_Imaster : temnated TERMINATE_SUCCESS > Disconnect



The new window will show the measured data in a tabular format. With the right mouse button, you can copy or save the data a tabular file.

					D2
Axiom e Ba File Commu System Status	Affiche XML / 267872_h01 File View Tools Timestamp	Timestamp	- C	× onfiguration H	- · ×
Acquisition Enable	Thu 1970-01-01 01:06:00 GMT+01:00	360	35.00 100.00 - 35.00 100.00 -		Communication Panel COM port :
Acquisition 2023 YYYY Digital Outp		]	copy to clipbo Save tabular	ard	Mode : direct Status : Connected Access : free
Measureme	¢			e1	Connect   [F5] Disconnect ! [F7]
SUCCESS : Ta <time iso="1970-01-01T01:06:00+01:&lt;br&gt;st status&lt;br&gt;axiome_master : terminated TERP&lt;br&gt;nick sync&lt;br&gt;axiome_master : terminated TERP&lt;br&gt;ownload&lt;br&gt;axiome_master : terminated TERP&lt;/td&gt;&lt;td&gt;MINATE_SUCCE&lt;br&gt;00" v="360&lt;br&gt;START : Qu&lt;br&gt;SUCCESS : Ta&lt;br&gt;START : Qu&lt;br&gt;SUCCESS : Ta&lt;br&gt;START : da&lt;br&gt;SUCCESS : Ta&lt;/td&gt;&lt;td&gt;axiome_master : terminated TERP&lt;br&gt;"> MINATE_SUCCE MINATE_SUCCE MINATE_SUCCE</time>	ISS 185 185		~		
Ready					11

#### Affiche XML

To analyze data after they have been downloaded, you can start the «Affiche XML» program.



Within this program, you can reopen the XML file (stored in c:\tetraedre\data\_xml), change the display an save the data as tabular.

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Ne N	iew Tools												
1.000	TRMC-GGUN	stamp	T [°C]	F1 [mV]	F2 [mV]	F3 [mV]	F4 [mV]	Vbat [V	1161[m/	1162[m	V169[v	V170[V	C166[#
Thu 1	TRMC-1		35.00	100.00									
Thu 1	TRMC-12		35.00	100.00							•		
	TCL 405 D . T												
	TPM-16												
	Extension Coder												
	Extension Fluorimeter												
	Extension MOGAM												
	Extension GPS												
	Pressure logger												
	Custom Filter												
	3 digit for temperature												
	Local Time												
	GMT Time												

#### Fluorometer measurement ppb conversion

Inside the «Affiche XML» windows, you can select the «convert to ppb» tool. We using this tools, load the newest calibration data file of your fluorometer.

You can then convert the mV values returned by the fluorometer into NTU and ppb.



# Contact information



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