GEI ELETTRONICA

GWT-4

VIBRATING WIRE DATALOGGER



TECHNICAL INSTRUCTIONS

GWT-4_ENG_rev0_030826

Battery-Powered Data Logger designed for remote monitoring

CE

INFORMATION FOR USERS Pursuant to Legislative Decree no. 49 of 14 March 2014 (WEEE Directive), the crossed-out wheeled bin symbol on the appliance indicates that the product, at the end of its useful life, must be disposed of separately from household or general waste. Users must take the appliance to appropriate municipal recycling centers (drop-off points) for waste electrical and electronic equipment (WEEE). Alternatively, as the direct manufacturer of the device, we are available to provide you with the information necessary for the proper management and collection of the product at the end of its life, in accordance with current legislation. Correct recycling helps prevent potential negative effects on the environment and health, promoting the recovery of materials. The company participates in the Cobat WEEE Collective System to ensure proper end-of-life management of the product.

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General Characteristics

GWT Model	Channels	3 or 4
Vibrating Wire	Excitation	0 - 5V
	Range	260 to 4800 Hz
	Resolution	0.10 Hz
	Accuracy	0.01% Full Scale
NTC Thermistor	Range	1000 to 64000 Ohms
	Resolution	<4 Ohms
	Accuracy (25ºC)	0.3ºC
Communications	Port	USB C
	Software	GWT-4
	Operating System	Windows 7-8-10-11
Data Storage	Memory	8MB
Readings	-------	up to 135,000
	When memory is full	data is stopped
	Reading interval	sec/min/hr/day
	Format	Day/month/year - hr/min/sec
Power Supply	Voltage	6-15V
Battery	Battery Type	4 x Alkaline AA or 2xLi-SOCl
	Battery Life	>5 years/4 memory fills
Other	Box Material	Aluminum/Plastic
	Dimensions	150 x 90 x 80
	Protection	IP66
Weight	without battery	350 g

Description

GWT-4 is a battery-powered data logger designed for remote monitoring. Available with 3 or 4 channels for up to 4 vibrating wire sensors with associated thermistors. The data logger is configured using dedicated software called GWT-4, provided free of charge.
The GWT-4 data logger can be put into standby mode by setting the acquisition mode to OFF. The logger status is always visible when connected to a computer in the lower-right corner of the GWT-4 software window. This can be useful when recording is not required for extended periods. When connected to the GWT-4 data logger, all sensor and logger configuration information is displayed by the software. Data can then be downloaded in engineering units. The GWT-4 features the APPEND DATA FUNCTION, which allows you to append data to an existing file or, depending on your needs, create a second file with a different name. It also features the REAL TIME READINGS function, which allows you to read-only, real-time acquisition and display of the status of connected sensors.

COMPATIBLE TOOLS WITH MULTIPLEXER CHANNELS

- All vibrating wire instruments
- VW strain gauges
- VW piezometers
- VW load cells
- NTC thermistors only
- Hydrological instruments (VW piezometers)

HOST SYSTEM REQUIREMENTS

Hardware:

• Desktop or laptop computer with USB port
• USB cable A to C
• Software installation package

Windows operating system

The following Microsoft™ Windows operating systems can be used:
• Windows 7
• Windows 8
• Windows 10

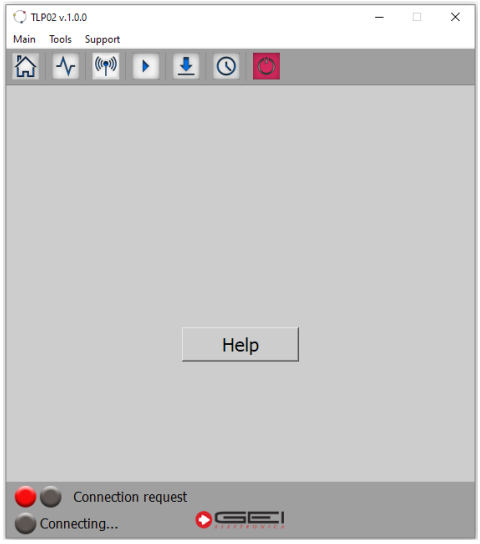
FTDI: Drivers included

INSTALLING SOFTWARE

Prior to installing the software ensure the following:
• The host device is turned on.
• The GWT-4 logger is powered (internal blue light is illuminated) when USB is connected.
• The USB cable is connected to both the host device and the software is loaded onto the USB supplied.
Double click on the setup.exe file and follow the instructions to complete the software installation

RUNNING THE SOFTWARE

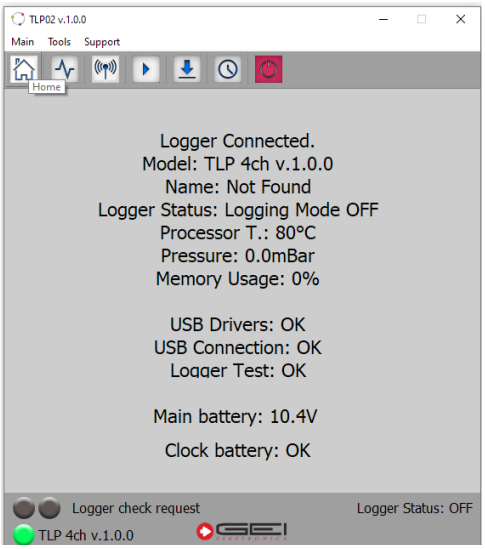
Connect the USB cable to both devices before using the GWT-4 software. Open the software on the host device and the following screen could be shown. During the connection of the two devices the red lights in the bottom left will flash and once the connection is successful the green light will remain on.



HOME PAGE

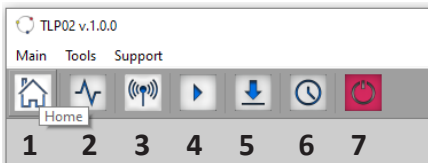
A successful connection is confirmed and this message will be shown every time the **"Home"** icon is pressed.
The following information is provided:
• Logger connection status;
• The data logger model & firmware version;
• The set logger name;
• Logging status;
• Battery health;
• Temperature of the logger, microcontroller core;
• Memory usage;

- Status of the Drivers;
- Status of the USB connection;
- Status of the automatic logger operation test.
- Atmospheric pressure (if available).

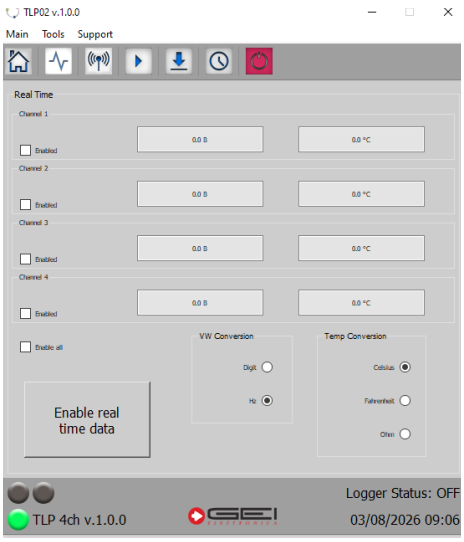


MENU ICONS

- **1. Home page**
- **2. Real time** - allows real time checking of the sensors
- **3. MOBILE config** - mobile settings for remote server configuration
- **4. Logger config** - set logging intervals and dates
- **5. Download data** - download & append data in raw or Engineering unit format
- **6. Time sync** - synchronise the date & time from the host device to the logger
- **7. Exit -** closes the software



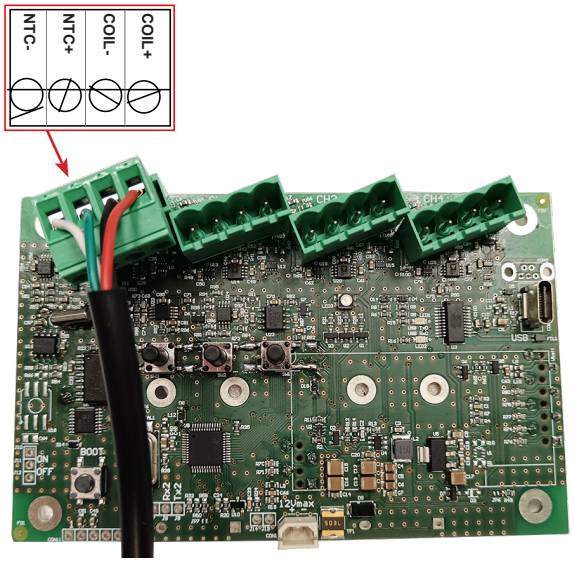
REAL TIME READINGS

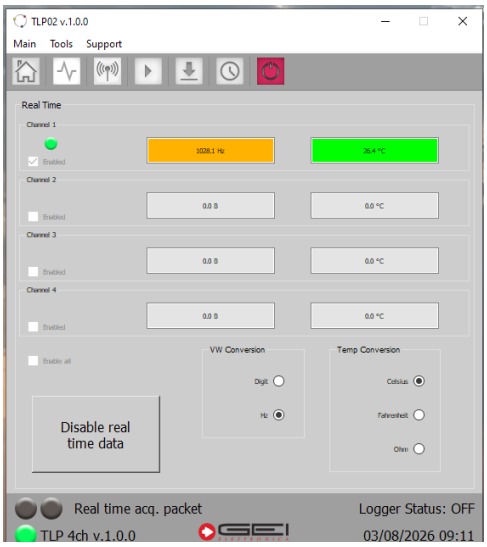


Select the **"Real Time"** icon. This allows you to see real time readings to confirm that each sensor is working or where real time readings are required. To start real time readings select **"Enable real time data"**.

CONNECTING SENSORS

Confirmation that this mode is working can be seen by the message **"Real time acq."** packet and the two red buttons will flash as each reading is taken. Box highlighted in red means no sensor is connected. Box highlighted in green means sensor succesfully acquired. Box highlighted in orange means raw data output (HZ, OHM). To stop real time press the **"Disable real time data"** button.

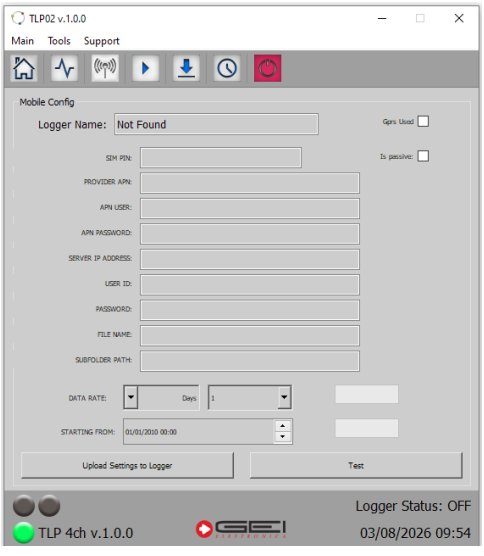




MOBILE CONFIGURATION

REMOTING DATA

GWT-4 can be equipped with modules for remoting acquired data to an FTP server. The server can be accessed via 2G/4G mobile network. The fields of the dedicated software tab must be properly filled in order to correctly send data to the FTP server. Starting from a date and time, with a rate defined by the operator, the GWT-4 logger sends acquired data values to an FTP server.



The data can be stored in a subfolder defined by the operator or in the Root path. If a subfolder is used for data storage, this must be created manually by the operator.

FTP used : Select the check box to enable FTP features.

Passive: The setting is used to switch between active and passive mode FTP transmission.

SIM PIN / SSID: The pin code of the mobile sim card must be filled in this field. If the pin code is not used please leave the field empty. When the Wi-Fi connection is used, the SSID name of the network must be set.

MOBILE APN / PASSWORD: This field must be filled with the mobile APN provided by your mobile provider and that is used to connect to the Internet. If wi-fi mode is selected this field must contain the password of the network where the module has to be connected.

SERVER IP ADDRESS: The IP address of the FTP, in the format a.b.c.d, must be written in this field.

USER ID: This field must be filled with your FTP access credentials, user part.

PASSWORD: This field must be filled with your FTP access credentials, password part.

FILE NAME: Please write in this field the name of the file used to store data on the FTP server. The files will be saved as a *.csv text file in the format name_DDMMYYYYHHmmSS.csv where name: is the name stored in the **"FILE NAME"** fiels.
- DD: Day;
- MM: Month;
- YYYY: Year;
- HH: hours;
- mm: minutes;
- SS: seconds.

According to this format, any file stored on the FTP server has unique name.

SUBFOLDER PATH: If needed, each GWT logger data can be stored in specific subfolders in order to organize data on the FTP server. Please leave this field empty to store data in the root folder.

WARNING!
If a subfolder is used it must be manually created on the FTP server as the logger is not able to generate it independently.

DATA RATE: lease set the desired transmissions data rate setting to proper values on the two available combo boxes.

STARTING FROM: The date and time of the first data transmission can be fixed with this box.

NOTE: Current date and time at the moment the software is opened is the default value. If not modified it shows a date and time in the past. For this reason, when a new configuration of GWT -4 is set and the PC connection removed, the GWT-4 logger sends available data to FTP server before moving to sleep mode. This procedure is useful to test FTP feature functionality.

Test: The test button is used to send a demo TXT file to the FTP server and check settings coherence. While the logger sends data to the server, a couple of bars are shown, one to visualize mobile signal strength and the second reports the steps performed by the logger in order to correctly perform an FTP transmission. A red error writing is shown If something goes wrong. Looking at when the error comes is a useful way to debug the procedure and understand which setting is set wrong.

Download Setting from Logger: Press this button to get the current setup values.

Upload Settings to Logger: Once filled the whole field of the setup windows please press this button to store the values in the GWT-4 datalogger.

LOGGER CONFIGURATION

This section allows the logger to be configured to the project requirements.

---> Channels Channels can be selected individually or you can select all. Select the **"Logger config"** icon.

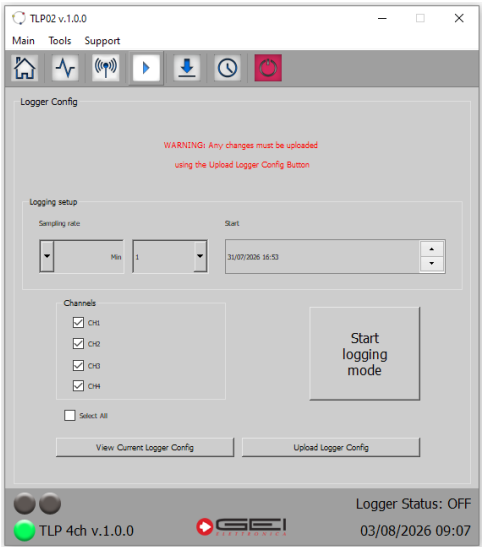
---> Sampling rate: The sampling rate (interval) can be selected in Seconds/Minu-tes/Hours/Days.

---> Date: Can be set from Start to Stop using the calendar.

NOTE: To change day/month/year/hour/minute place the cursor over each unit and use the up and down arrows or the wheel to select the required value.

---> Configuration of logger: Once all the settings have been selected they need to be uploaded to the data logger. Select **"Upload Logger Config"**. At this stage you have the option to confirm or to cancel To confirm select **"YES"**. All the entered data will then be uploaded to the logger to cancel select **"Abort"**. This will take you back to the previous screen.

---> Configuration confirmed : If all fields are filled in correctly then the Logger successfully configured message will be displayed.



START & STOP LOGGING STATUS

If the Logger Status is **"OFF"** it is necessary to select **"Start logging mode"**. Before the logging mode starts **"Confirmation"** of the logging configuration is displayed. If all is correct select "YES" to set to logging mode. Confirmation that the **"Logger Status"** is "ON" is confirmed in the bottom right panel. To start the actual logging it is necessary to remove USB cable from the logger. Select **"Exit"** to close.

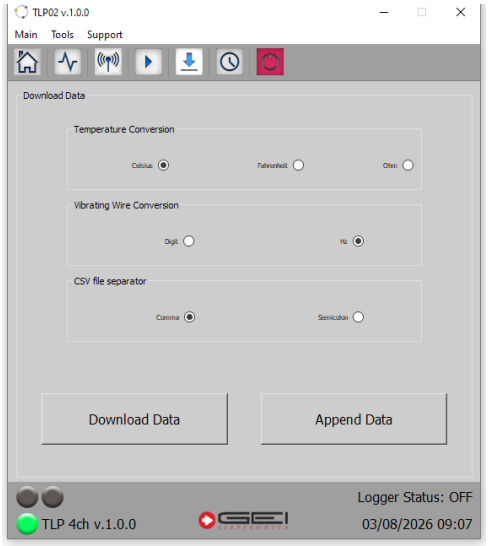
NOTE: THE USB CABLE MUST BE REMOVED TO START LOGGING
Once data collection is complete and the logger is to be left unused and in order to safeguard battery life and memory it is necessary to select **"Stop logging mode".**
If you forget to set the logger to **"Start Logging Mode"** on pres-sing the **"Exit"** button you will be prompted to confirm if you want to exit before starting the **"Logging Mode"**.

DOWNLOAD & APPEND DATA

It is not necessary to select the **"Stop Logging Mode"** in order to download data but as soon as the USB is connected the logger will stop logging. Downloading or appending can therefore by carried out in any mode. The data can also be downloaded in different units by selecting the relevant ones.

---> Select Download Data: The downloading is confirmed by the horizontal blue bar filling from left to right, the red buttons flashing and the message **"Data download packet"**. On completion of downloading the browser will open to allow you to select the location to save the data

The software creates *.csv files. Both digit values or data units are available in the output *.csv file. The *.csv file separator can be set in the dedicated group box. Comma or semicolon separators are available. Check in Control Panel, Regional and language options, for your operating system default settings. If the software and the Operating system settings match, the correct *.csv file preview is shown while opening the file with Excel. There is also a facility to Append all downloaded data to an existing file. This can be useful if the memory has to be cleared.



---> Select Append Data: On completion the browser will open to allow you to select the location to append the data.

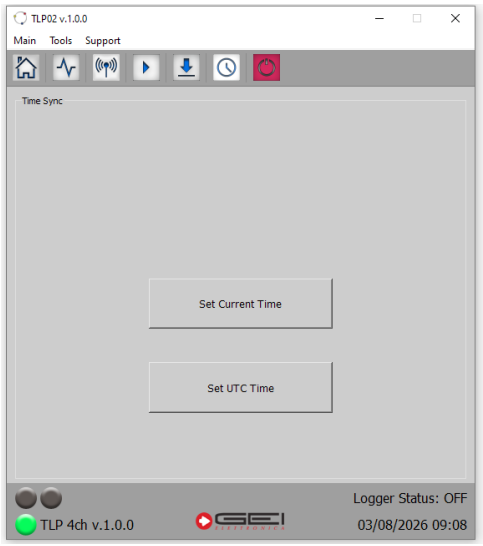
WARNING!: IF NO CLEAR OPERATION IS APPLIED BETWEEN DIFFERENT LOGGING SESSIONES MULTIPLE APPENDS CAN PRODUCE DUPLICATED DATA

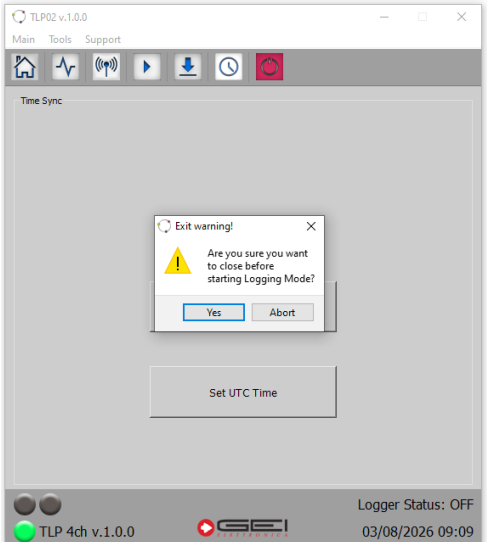
SYNCHRONISING DATE AND TIME

Click on the **"Time Sync"** icon to synchronise the date and time to the host device.

MEMORY FORMAT

In order to clean old data configuration or the firmware has been updated it is necessary to carry out a Memory Format.
IT IS RECOMMENDED TO DOWNLOAD ALL DATA BEFORE MEMORY FORMATTING AS THIS WILL DELETE ALL OLD AQUISITIONS.
Select **"Memory Format"** cycle and select **"YES"**.





KEYS FUNCTIONALITY

With the board not connected to the USB port:
Press button 1 to turn on the board
- Double-click button 1: Forced acquisition of all available channels
- Double-click button 2: Forced upload to the FTP server
- Double-click button 3: Start automatic acquisition mode

Note: During the double-click event, the first press of any button causes the red LED to flash.

COLOR CODE DURING ACQUISITION

- At the start of acquisition

The red LED lights up.

- At the end of vibrating wire acquisition

Slow **GREEN** flash: High-resolution acquisition successful
Slow **YELLOW** flash: Low-resolution acquisition successful
Slow **RED** flash: Vibrating wire acquisition error

- At the end of NTC thermistor acquisition

Fast **GREEN** flash: Temperature acquisition successful
Fast **RED** flash: Temperature acquisition error

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