

3-axis Acceleration / Temperature Sensor

USER'S MANUAL

Thank you very much for buying this GRAPHTEC product.

This product is a measurement sensor (hereafter "module") that connects to the GL100-N/GL100-WL.

These directions describe preparations and cautions before measurement.

To ensure safety, please read the operation instructions, etc.

For details on the warnings and how to handle this module, please read the Quick Start Guide or USER'S MANUAL included on the CD-ROM (included in the GL100 packaging)

Confirmation of the exterior

After opening the package, please confirm that there are no problems (scratches and dirt) on the exterior before use.

Confirmation of the attached items.

- User's manual (this book): 1

If by any chance faults are found, please contact the store where you bought the item.

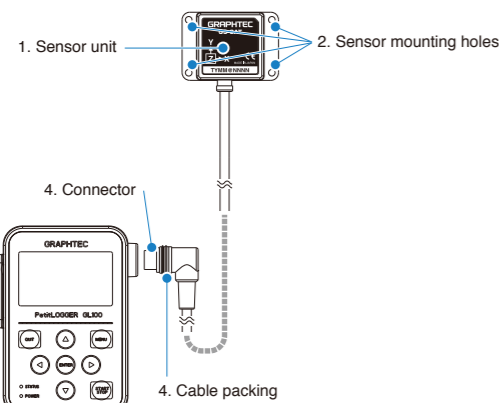
\* Please note that items mentioned in this book may change without prior notice.

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MANUAL-A

1 Part Names

This section describes the name and function of each part.



GL100 main module

1. Sensor unit ..... The 3-axis acceleration and temperature sensor are built in this module.
2. Sensor mounting holes .. Used to fix the sensor.
3. Connector ..... Used to connect to the connector on the GL100 module.
4. Cable packing ..... This packing is used when connecting the connector.

**CAUTION** This sensor unit is dustproof and splash-resistant to IP54 standards. It can be used in the same conditions as the module. Please take care not to drop or shock the sensor.

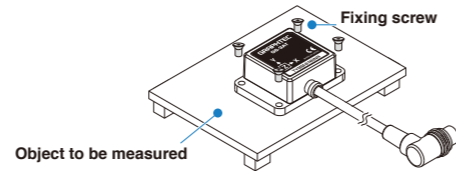
After connecting the GL100 to modules or sensors, please always check/set the time and date.

2 How To Mount The Sensor

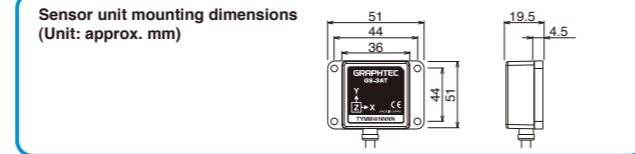
Check the operating direction of the sensor unit, then securely mount it using four M3 screws to what is to be measured.

1. Connecting to the module

When connecting this module, you can also use the GS extension cable (GS-EXC; sold separately) for more convenient connection.



**CAUTION** If the sensor's mounting is loose, it will give inaccurate readings.



< Extension cable >  
The module can be used approx. 1.5 m away from the GL100 by using an extension cable for GS (GS-EXC). However, you cannot connect and use multiple extension cables.

3 How To Measure

1. Power supply (Refer to Quick Start Guide or USER'S MANUAL.)

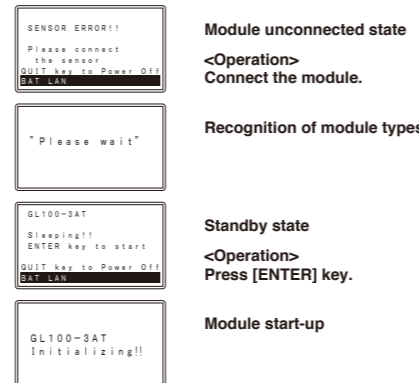
Connect this module while power is being supplied to the GL100 by a battery or USB cable.

2. Start-up and operation

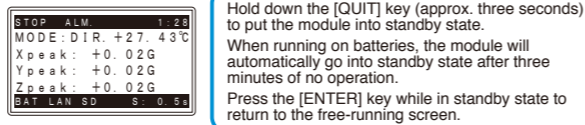
(1) Screen display menu flow

After power-on, the GL100 is ready for operation by holding down [MENU] key. When the module is connected, "Module Type Recognition" screen is displayed. When the module is not connected, "Module Unconnected State" screen is displayed.

Operate in accordance with the displayed instructions.



(2) Free-running screen



3. Setting

(1) Setting screen operation

Item selecting screen

Press the [MENU] key on the free-running screen to go to the setting screen.

<How to set>

Select the item with the directional keys (Δ▽◀▶) and press the [ENTER] key.



If the submenu shows ↑ ↓ then there are selections in those directions.

Numerical entry screen

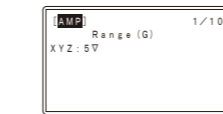
<How to set>

Numbers can be inputted by increasing or decreasing the value with the Δ and ▽ keys.



(2) AMP setting

Select the acceleration range (shared XYZ ranges)



AMP input condition settings (XYZ)

Range	2, 5, 10 (G) or 20, 50, 100 (m/s <sup>2</sup> )
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<Unit settings>

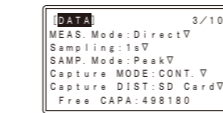
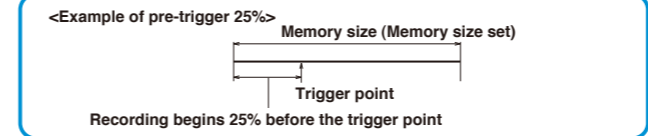
From the OTHER-2 screen, you can switch between acceleration displays in G or in m/s<sup>2</sup>, and between temperature displays in Celsius (°C) or Fahrenheit (°F).

(3) DATA setting

You can select data processing.

Direct : The value obtained by peak, average and RMS processes with respect to each set sampling is displayed. (Sub-sampling interval is fixed at 5 ms.)  
Peak: Displays the data's largest value  
Average: Displays the mean value  
RMS: Displays the root mean square value

Memory : At the selected sampling intervals, the set memory size contents will be recorded to the recording medium. If it is set to pre-trigger, data will be recorded starting at the set memory size percentage.



DATA recording condition settings

MEAS. Mode	Direct, Memory
Direct	
Sampling	500 ms, 1, 2, 5, 10, 20, 30 s, 1, 2, 5, 10, 20, 30, 60 min
SAMP. Mode	Peak, Average, RMS
Memory	
Sampling	5, 10, 20, 50, 100 ms
Memory size	16, 32, 64, 128 k
Pre-trigger	Off, 10, 25, 50, 100%
Capture MODE	CONT, 1 Hour, 24 Hour
Capture DIST	Memory, SD Card

(4) TRIGGER setting

Select the conditions for beginning data recording after measurement starts.

Off : Pressing the [START/STOP] key on this module will start/stop recording.  
Start : The recording will start with the trigger source conditions after pressing the [START/STOP] key. The recording will stop after pressing the [START/STOP] key.  
Stop : The recording will start after pressing the [START/STOP] key and will be stopped with the trigger source conditions.



TRIGGER capture condition settings

TRIG setting	Off, Start, Stop
TRIG Source	Off
Level / Mode	Level G ↑ H Value setting ↓ L * The level depends on the setting range.
Alarm	
Date	Date, Time

(5) ALARM setting

Set the alarm information. The parameters will vary depending on the setting range. Please set the number level.



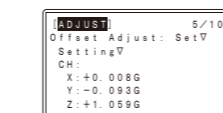
ALARM settings

Alarm	Off	Off
Level / Mode	Level G ↑ H Value setting ↓ L * The level depends on the setting range.	

(6) ADJUST setting

This function is used to adjust static acceleration value of the sensor unit installing state to zero level.

If the module is operated in an unstable state, the static acceleration value is not stable. Also, do not give external vibration, etc. during ADJUST setting.



ADJUST setting information

Offset Adjust	Set, Reset
Setting	Yes ENTER No QUIT

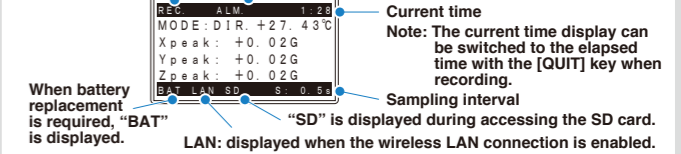
\* When ADJUST function is not used, set to Reset.

4 Recording

(1) Recording

Press the [START/STOP] key to start measuring with the set conditions.

After pressing [START] key, when the module is in awaiting recording start, "ARMED" is displayed, and then when recording is started, "REC" is displayed. When alarm occurs, "ALM" is displayed.



The module's status is shown with the lamp display.



STATUS (Orange)

Accessing SD card	Access light
Low battery	Flash once every 5 seconds
Alarm active	Flash once every 10 seconds

POWER (Green)

Power supplying	Flash once every 10 seconds
Wireless LAN connection possible status	Flash once every 5 seconds

**CAUTION** When accessing an SD card, do not remove the SD card. The data may not write properly or the SD card may be damaged. When "low battery" is displayed, replace the battery or connect the USB interface to supply power as soon as possible. Caution: Batteries cannot be replaced when recording data. Replace them after the recording has finished.

(2) Recording completion

- Press the [START/STOP] key to stop measuring.
- The screen display will change to the standby screen display.
- Press [ENTER] key to change to the free-running screen display.



5 How To Confirm The Data

Check the recorded data with the application software included with this module using the method below (for details, refer to the USER'S MANUAL).

- (1) Connect the USB interface and check the online data
- (2) Insert the SD card into PC and check the data directly
- (3) Check the data directly from PC via wireless LAN

6 Specifications

Item	Contents
Measurement data	XYZ Charge / Temperature
Acceleration range	±2 G (20m/s <sup>2</sup> ), ±5 G (50m/s <sup>2</sup> ), ±10 G (100m/s <sup>2</sup> )
Measured acceleration accuracy (Non-linearity)	±2% of F.S.
Band	0 to 100Hz
Noise	25 mGrms
Measurement temperature range	-10 to 50°C (14°F to 122°F)
Measured temperature accuracy	-10 ≤ TS ≤ 50 ±1.0 (°C)
Response time (temperature)	Approx. 300 sec.
Measurement mode	Memory mode and Direct mode
Memory capacity (Memory mode)	16, 32, 64, 128 k sample
Pre-trigger (Memory mode)	OFF / 10, 25, 50, 100%
Sampling interval	<Memory mode> 5, 10, 20, 50, 100 ms <Direct mode> 0.5, 1, 2, 5, 10, 20, 30 sec. 1, 2, 5, 10, 20, 30, 60 min.
Alarm	OFF / Level
ADJUST function	Set / Reset Note: This function will set the current static acceleration value to zero.
Waterproof sensor	IP54
Cable length	approximate 20 cm
Usage environment	-10 to 50°C, 80% RH or less (non-condensing)
External dimensions [WxDxH] (approximate)	51 x 36 x 19.5 mm (not including protruding parts)
Weight (approximate)	64g