

4ch Voltage / Temperature Terminal

USER'S MANUAL

Thank you very much for buying this GRAPHTEC product.

This product can be used as a measurement terminal (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.

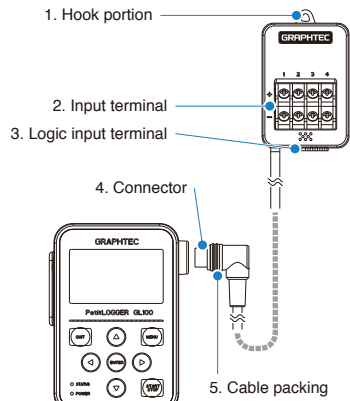
* Please note that items mentioned in this book may change without prior notice.

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MANUAL-V

1 Part Names

This section describes the name and function of each part.



GL100 main module

1. Hook portion Used to mount to a wall.
2. Input terminal Used to connect voltage input or thermocouple.
3. Logic input terminal Used to apply logic input.
4. Connector Used to connect to the connector on the GL100 module.
5. Cable packing This packing is used when connecting the connector.

CAUTION This module is not dustproof or waterproof. Please use it in a proper usage environment.

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

< 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.

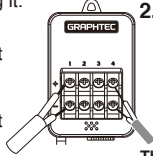
2 How To Connect

We will now explain how to connect the signal input cable.

1. Voltage input

Make sure to pay attention to the + and - terminals when connecting it.

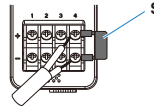
- + : High-voltage terminal (terminal input on the input signal's high-voltage side)
- : Low-voltage terminal (terminal input on the input signal's low-voltage side)



2. Thermocouple input
Connect thermocouple to the + and - terminals.

3. Current input

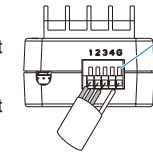
Attach shunt resistance when measuring the current input.



3. Shunt resistance
E.g. For 4-20mA, add 250Ω (±0.1%) resistance and measure with a 1-5V range.
* For shunt resistance, use the B-551 (option).

4. Logic / pulse input

- + : No. 1 to No. 4: High-voltage terminal (terminal input on the input signal's high-voltage side)
- : G: Low-voltage terminal (terminal input on the input signal's low-voltage side)



When inserting the cable, insert it while pressing here.

CAUTION • G is the GND terminal for this module.
• For the maximum input voltage, refer to "3 Regarding Maximum Input Voltage."

3 Regarding Maximum Input Voltage

To avoid break-downs or short-circuiting accidents, please make sure to abide by the items written below.

In case the input voltage exceeds the specifications, the circuit at the input part will break down. Please don't input it.

<Input terminal (+) / Input terminal (-) interval>
Maximum input voltage: DC60Vp-p

<Input terminal (-) / Input terminal (-) interval>
Maximum input voltage: 60Vp-p

<Input terminal (-) / GND terminal interval>
Maximum input voltage: DC60Vp-p
Withstand voltage: 350Vp-p/1min.

Logic/Pulse

<Input terminal (+) / GND terminal interval>
Maximum input voltage: DC24V

4 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.



Module unconnected state
<Operation>
Connect the module.



Recognition of module types

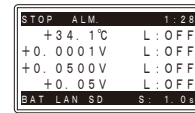


Standby state
<Operation>
Press [ENTER] key.



Module start-up

(2) Free-running screen



Hold down the [QUIT] key (approx. three seconds) to put the module into standby state. When running on batteries, the module will automatically go into standby state after three minutes of no operation. Press the [ENTER] key while in standby state to return to the free-running screen.

3. Setting

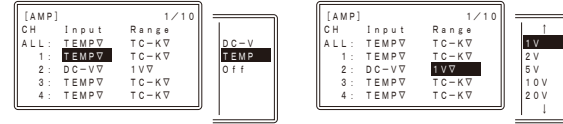
(1) Setting screen operation

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.

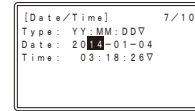


If the submenu shows ↑ ↓ then there are selections in those directions.

Numerical entry screen

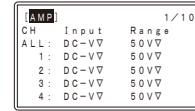
<How to set>

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



(2) AMP setting

Select the 4ch measurement content then select the voltage range.

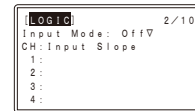


AMP input condition settings (4ch)

Range	DC-V	20, 50, 100, 200, 500mV, 1, 2, 5, 10, 20, 50V, 1-5V
TEMP	TC-K, TC-T	
Off		

(3) LOGIC setting

Select the 4ch logic measurement content. When setting the pulse, select the slope if new logic is "on."



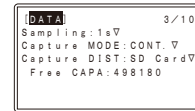
LOGIC input condition settings (4ch)

Off			
LOGIC	Input Slope	Off, On	
Pulse	Input Slope	Counts	↑H, ↓L
		Inst.	↑H, ↓L

(4) DATA setting

Set the Sampling and Capture Mode those will be recorded to the data recording media.

The recorded data's size will be displayed in the information for the SD card being recorded to. Please take note of it.



DATA recording condition setting

Sampling	500 ms, 1, 2, 5, 10, 20, 30s.
Capture MODE	1, 2, 5, 10, 20, 30, 60 min
Capture DIST	CONT, 1 Hour, 24 Hour
Capture DIST	Memory, SD card

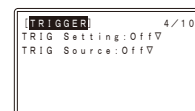
(5) TRIGGER setting

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
	↑H Value setting
	↓L Value setting
Alarm	OFF / Level
Date	Date, Time

(6) ALARM setting

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



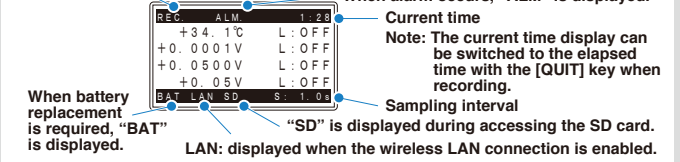
ALARM settings

Alarm	Off
Level / Mode	Level
	↑H Value setting
	↓L Value setting

5 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.



When battery replacement is required, "BAT" is displayed.

Current time
Note: The current time display can be switched to the elapsed time with the [QUIT] key when recording.
Sampling interval
"SD" is displayed during accessing the SD card.
LAN: displayed when the wireless LAN connection is enabled.

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.



6 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

7 Specifications

Item	Contents
Measurement data	Voltage / Temperature/Logic, Pulse count (Instant, Accumulation)
Measurement channels	Voltage/Temperature 4 channels Logic/Pulse count 4 channels
Input method	Scan system by Photo-MOS relay, All-channel isolated input
Measurement voltage range	20, 50, 100, 200, 500 mV 1, 2, 5, 10, 20, 50V 1-5V F.S.
Measured voltage accuracy	0.15 % of F.S.
Input resistance	1 MΩ ±5%
Temperature coefficient	Gain: ±0.01 % of F.S./°C Zero: ±0.02 % of F.S./°C
Allowable signal source resistance	300 Ω or less
Maximum input voltage	Input terminal + / - interval : 60Vp-p Input terminal / Input terminal interval : 60Vp-p Input terminal / GND interval : 60Vp-p
Withstand voltage	Input terminal / Input terminal interval : 350 Vp-p 1 min. Input terminal / GND interval : 350Vp-p 1 min.
Insulation resistance	Input terminal / GND interval : 50MΩ or more (at DC500V)
Common mode rejection ratio	90 dB or more (50/60 Hz signal source 300Ω or less)
Noise	48 db or more (+/- at short)
Measurement temperature range	<Thermocouple> K -200 to 1370°C T -200 to 400°C
Measured temperature accuracy	<K-type thermocouple> -200<TS<-100 ±(0.05% of rdg +2.0°C) -100<TS<1370°C ±(0.05% of rdg +1.0°C) <T-type thermocouple> -200<TS<-100 ±(0.1% of rdg +1.5°C) -100<TS<400°C ±(0.1% of rdg +0.5°C) Reference junction compensation accuracy : ±0.5°C
Logic/Pulse Input	Input voltage range: 0 to +24V (One line ground input) Input signal: No-voltage contact (a contact, b contact, NO, NC) Open collector, voltage input Input threshold voltage: approx. +2.5V Hysteresis: approx. 0.5 V (+2 to +2.5V)
Pulse measurement range	Instant : max. 200C / Sampling Accumulation: max. 65535C
Room temperature compensation	ON / OFF
Temperature unit	Select from °C (Celsius) / °F (Fahrenheit)
Sampling interval	0.5, 1, 2, 5, 10, 20, 30 sec. 1, 2, 5, 10, 20, 30, 60 min.
Alarm	OFF / Level
Cable Length	approximate 20 cm
Usage environment	-10 to 50°C, 80% RH or less (non-condensing)
External dimensions [WxDxH] (approximate)	46 × 66 × 35.5 mm (not including protruding parts)
Weight (approximate)	85 g