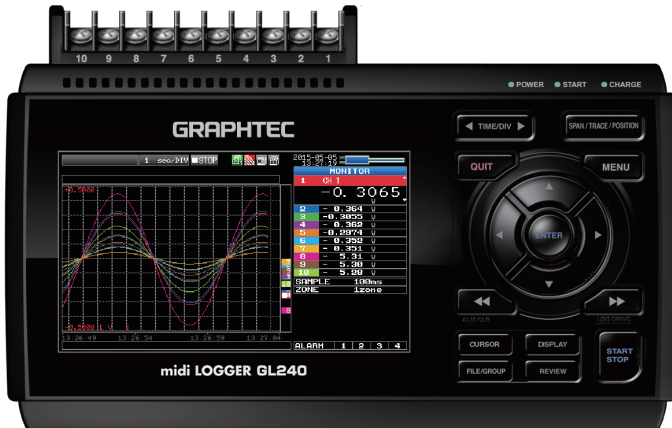


midi LOGGER GL240

Quick Start Guide

604249020 GL240-UM-850



GRAPHTEC

Thank you for choose the midi LOGGER GL240.
This Quick Start Guide describes the basic operations.
Please refer to the manual (PDF) in the CD-ROM for more information.

Checking the Outer Casing

After unpacking, check the GL240's Exterior to make sure that there are crack or other damage before use.

Checking the Accessories

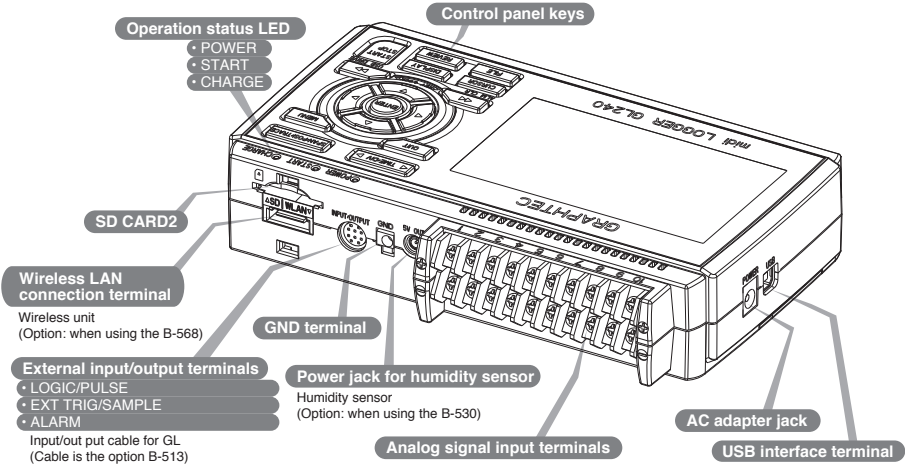
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- Ferrite core: 1
- CD-ROM : 1
- AC cable/AC adapter : 1

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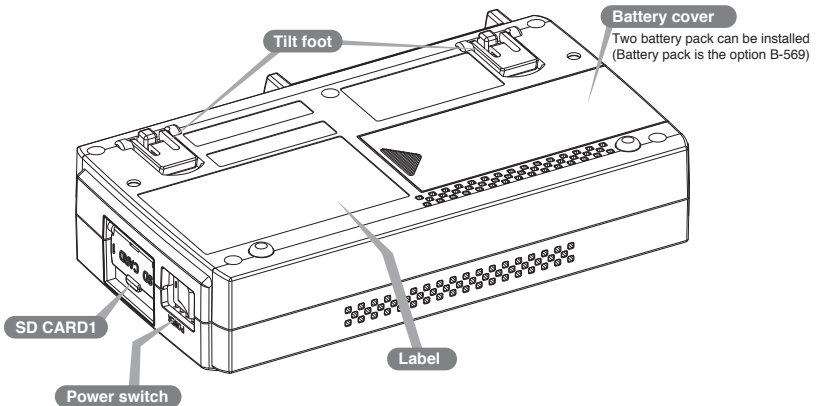
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Nomenclature

Top Panel

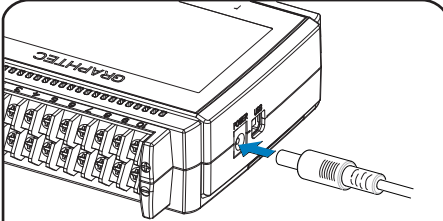


Bottom Panel



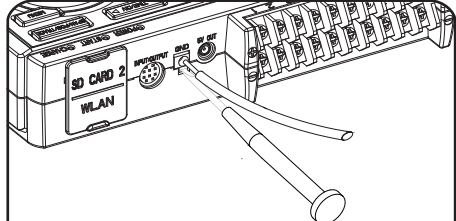
Connection Procedures

Connecting the AC Adapter



Connect the DC output of the AC adapter to the connector indicated as "DC LINE" on the GL240.

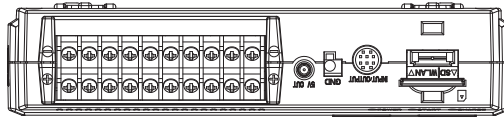
Connecting the Grounding Cable



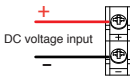
Use a flathead screwdriver to push the button above the GND terminal while connecting the grounding cable to the GL240. Connect the other end of the cable to ground.

Making Connections to the Analog Input Terminals

CH 10 9 8 7 6 5 4 3 2 1



Voltage input



Current input



Shunt resistor

Ex: The current is converted to the voltage in the shunt resistor.
For 4 to 20mA current input, installing 250 ohms (0.1%) resistor for converting 1 to 5V.
Note: 250 Ω shunt resistor is the option B-551.

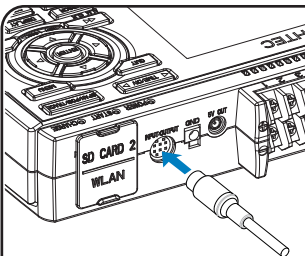
Thermocouple input



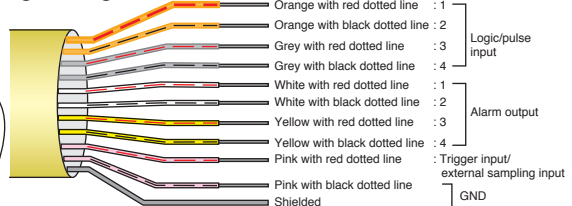
Compensation wire is used if it is required.

CAUTION: Connect wires to the specified channel, the channel number is shown on top of the terminal block.

Making Connections to the External Input/Output Terminals



< Signal assignment >



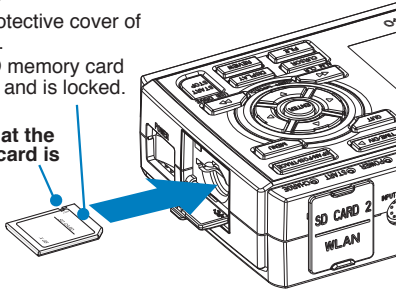
(For logic/pulse input, alarm output, trigger input, external sampling pulse input)

Mounting of the SD CARD 1

< How to mount >

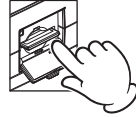
- (1) Open the protective cover of SD CARD 1.
- (2) Push the SD memory card until it clicks and is locked.

* Make sure that the SD memory card is not locked.



< How to remove >

- (1) The SD memory card is unlocked by pushing gently the SD memory card. Then, remove the SD memory card.



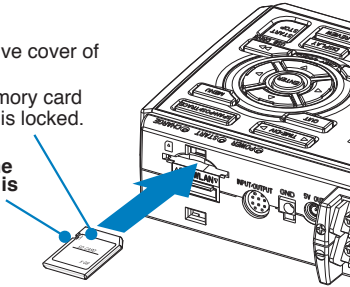
CAUTION: When removing the SD memory card, make sure that the SD card display on the display is green and then remove it.
The POWER LED blinks while accessing to the SD memory card.

Mounting of the SD CARD 2

< How to mount >

- (1) Open the protective cover of SD CARD 2.
- (2) Push the SD memory card until it clicks and is locked.

* Make sure that the SD memory card is not locked.



< How to remove >

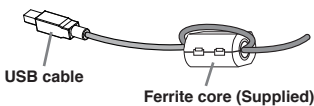
- (1) The SD memory card is unlocked by pushing gently the SD memory card. Then, remove the SD memory card.



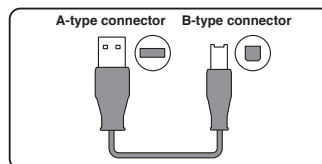
CAUTION: The SD memory card is unlocked by pushing gently the SD memory card. Then, remove the SD memory card.
When the optional wireless LAN unit is installed, the SD memory card cannot be mounted.
The POWER LED blinks while accessing to the SD memory card.

Connection of the USB cable

When connecting to the PC with the USB cable, attach the supplied ferrite core to the USB cable as shown in the following figure.



Using the cable with A-type and B-type connectors, connect between the midi LOGGER and PC.



This midi LOGGER complies with the EMC Directive in the state when the supplied ferrite core is attached to the USB cable.

Precautions to Observe When Performing Measurement

Maximum input voltage

If a voltage exceeding the specified value is input, the semiconductor relay in the input section will be damaged. Never input a voltage exceeding the specified value even for a moment.

< Between +/- terminals(A) >

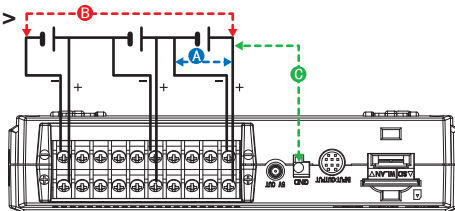
- Maximum input voltage: 60Vp-p (Range of 20mV to 1V)
110Vp-p (Range of 2V to 100V)

< Between input terminal/input terminal (B) >

- Maximum input voltage: 60Vp-p
- Withstand voltage: 350 Vp-p at 1 minute

< Between input terminal/GND (C) >

- Maximum input voltage: 60Vp-p
- Withstand voltage: 350 Vp-p at 1 minute



Warming-up

GL240 requests to have approximately 30 minutes warm-up in order to have the specified performance.

Unused channels

The analog input section has high impedance.

If it is open, measured value may vary due to noise.

In such a case, set to "Off" unused channels in the AMP setting menu or short the + and – terminals.

Noise countermeasures

If measured values fluctuate due to extraneous noise, conduct the following countermeasures. (Results may differ according to noise type.)

Ex 1 : Connect the GL240's GND to ground.

Ex 2 : Connect GL240's GND to measurement object's GND.

Ex 3 : Operate GL240 with batteries (Option: B-569).

Ex 4 : In the AMP settings menu, set filter to any setting other than "OFF".

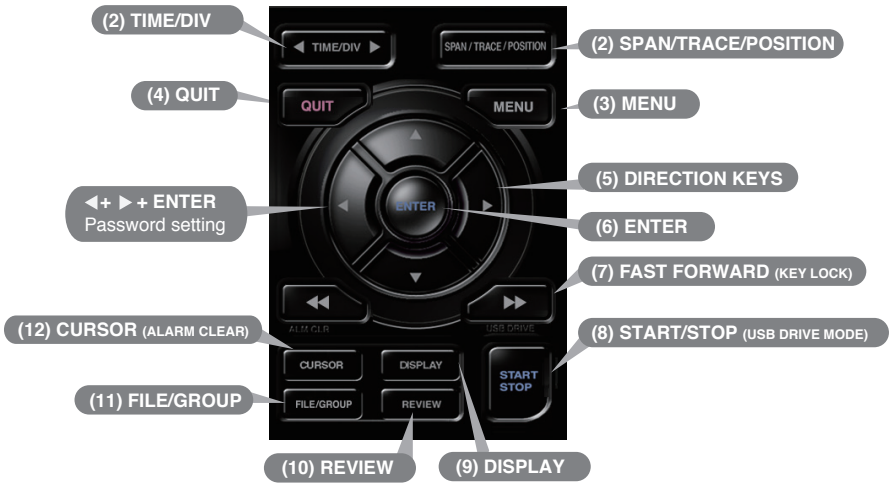
Ex 5: Set the sampling interval which enables GL240's digital filter (see table below).

Number of Measuring Channels *1	Allowed Sampling Interval	Sampling Interval which enables Digital Filter
1 channel or less	10 msec or slower *2	50 msec or slower
2 channels or less	20 msec or slower *2	125 msec or slower
5 channels or less	50 msec or slower *2	250 msec or slower
10 channels or less	100 msec or slower	500 msec or slower

*1 Number of Measuring Channels is the number of channels in which input settings are NOT set to "OFF".

*2 Temperature cannot be measured when the sampling interval is set to 10 ms/20 ms or 50 ms.

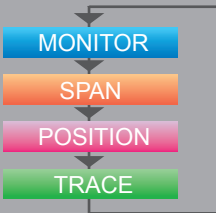
Descriptions of the Control Panel Keys



1. SPAN/TRACE/POSITION

This key enables SPAN, POSITION, and TRACE settings to be made independently for each channel. Each time this key is pressed, the display mode changes in the sequence shown below. Use the ▲ and ▼ keys to select the channel, and the ◀ and ▶ keys to change the setting values.

Points to Remember



Displays digital values (default).

Used to change span settings (change the waveform amplitude).

Used to change position settings (adjust the upper and lower values of the waveform).

Used to change trace settings (set the waveform display to On or Off).

* If the [QUIT] key is pressed when the GL240 is in the SPAN, POSITION, or TRACE mode, the display returns to MONITOR mode.

2. TIME/DIV

Press the [TIME/DIV] key to change the time axis display range on the waveform screen.

3. MENU

Press the [MENU] key to open a setup menu. Each time this key is pressed, the setup screen tabs change in the sequence shown below.

Points to Remember

```
graph TD; AMP[AMP] --> DAT[DAT (DATA)]; DAT --> TRG[TRG (TRIG)]; TRG --> IF[I/F]; IF --> LAN[LAN]; LAN --> OTH[OTH (OTHR)]; OTH --> AMP;
```

- **AMP Settings**
Used to set the input, range, filter and other settings.

- **Data Capture Settings**
Used to set settings such as the sampling interval, data capture destination, and calculations during data capture.

- **Trigger Settings**
Used to specify data capture start and stop conditions, and alarm conditions.

- **Interface Settings**
Used to set the USB ID.

- **Wireless LAN setting (displayed when the option is installed)**
Used to set the connection to the wireless LAN after the wireless unit is installed.

- **Other Settings**
Used to set the screen brightness, background color, and language, etc.

4. QUIT (LOCAL)

Press the [QUIT] key to cancel the settings and return them to their default status. If the device is in the Remote (Key Lock) status that the device is operated by the computer via the interface, press this key to return the device to the normal operating status (Local).

5. Keys (DIRECTION KEYS)

These keys are used to select menu setup items, to make span settings in the digital display area, to move the cursors during a data replay operation, and so forth.

6. ENTER

Press the [ENTER] key to enter the settings made in the setup menus, and to confirm your settings.

7. Keys (KEY LOCK)

Used to move the cursor at high speed during replaying or change the operation mode in the file box. Hold down both keys simultaneously for at least two seconds to enable key lock status.

To cancel key lock status, press them again for at least two seconds.

The key lock status can be confirmed in whether or not the key lock lamp on the monitor is lit in yellow.

* Pressing these keys simultaneously with the ◀ key + ENTER + ▶ key enables password protection for the key lock operation.

8. START/STOP (USB DRIVE MODE)

Press the [START/STOP] key to perform start and stop of a data capture while the GL240 is in the Free Running status.

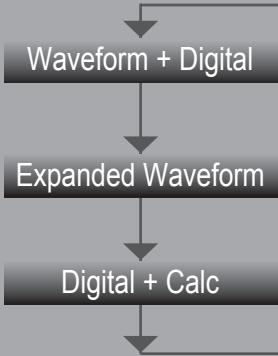
If this key is held down while the power to the GL240 is turned on, the GL240 is switched the SD memory card to the Drive Mode.

* For more information about the Drive Mode of the SD memory card, refer to the User's Manual in the supplied CD.

9. DISPLAY

Press the [DISPLAY] key

Points to Remember



- **Waveform + Digital**

This is the default screen when the GL240 is turned on, and both waveforms and digital values are displayed. The screen settings can also be changed by using the [SPAN/TRACE/POSITION] key.

- **Expanded Waveform**

Displays waveforms only.

- **Digital + Calc**

Displays large-size digital values and two types of calculation processing results. The calculation settings are made in the "DATA" menu. Use the ◀◀ key or ▶▶ key to switch digital display modes.

* For more information, refer to the User's Manual in the supplied CD.

10. REVIEW

Press the [REVIEW] key to replay captured data. If the GL240 is in the Free Running status, data files that have already been captured are replayed. If the GL240 is still capturing data, the data is replayed in a 2-screen format.

* A data replay operation will not be performed if data has not been captured.

11. FILE

Press the [FILE] key to operate saving the replaying data to the SD memory card, copying the screen, and saving/reading the settings as well as replacing the SD memory card during data capture.

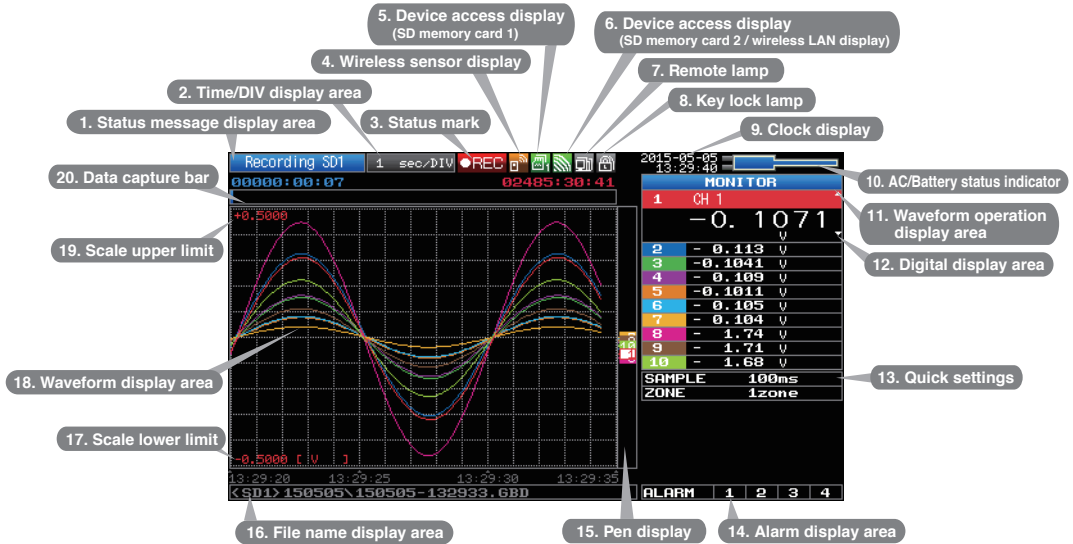
12. CURSOR (ALARM CLEAR)

Press the [CURSOR] key to switch between the A and B cursors during a data replay operation.

If the Alarm setting has been specified as "Alarm Hold", press this key to clear the alarm.

The alarm settings are made in the "TRIG" menu.

Descriptions of the Menu Screens



- 1. Status message display area** : Displays the operating status.
- 2. Time/DIV display area** : Displays the current time scale.
- 3. Status mark** : Displays the status mark.
- 4. Wireless sensor display** : Displayed when connecting the GL100-WL (GS sensor and terminal / module connection) to the wireless LAN.
- 5. Device access display (SD memory card 1)** : Displayed in red when accessing the SD memory card 1. When the SD memory card 1 is inserted, it is displayed in green.
- 6. Device access display (SD memory card 2 / wireless LAN display)** : Displayed in red when accessing the SD memory card 2. When the SD memory card 2 is inserted, it is displayed in green. (When the child unit is connected through the wireless LAN, the radio field intensity of the base unit is displayed. When setting to the base unit, the child unit (wireless sensor) which can be connected to the GL100-WL is one unit only.)
- 7. Remote lamp** : Displays the remote status. (Orange = Remote status, white = Local status)
- 8. Key lock lamp** : Displays the key lock status. (Orange = keys locked, white = not locked)
- 9. Clock display** : Displays the current date and time.
- 10. AC/Battery status indicator** : Displays the following icons to indicate the operating status of the AC power and the battery. (see right figure)
Note: Use this indicator as a guideline because remaining battery power is an estimate. This indicator does not guarantee the operating time with battery.
- 11. Waveform operation display area** : Displays the mode selected by the [SPAN/TRACE/POSITION] key.

Status mark

	Free Running status
	Trigger waiting status
	Capture end status
	Capturing recording status
	Data replay status

Status icon

SD memory card accessing
 SD memory card is inserted
 SD memory card is not inserted

Radio field intensity display of base unit (from Strong to Weak)

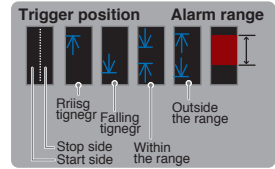
Wireless sensor registration /recognition display
 Wireless sensor registration /unrecognition display

AC/Battery Indicator

When the AC power supply is being used

	Battery power: 100 - 91%
	Battery power: 90 - 61%
	Battery power: 60 - 31%
	Battery power: 30 - 11%
	Battery power: 1% or less

- 12. **Digital display area** : Displays the input values for each channel. The ▲ and ▼ keys can be used to select the active channel (enlarged display). Moreover, the selected active channel is displayed at the very top of the waveform display.
- 13. **Quick settings** : Displays items that can be easily set. The ▲ and ▼ keys can be used to make a Quick settings item active, and the ◀ and ▶ keys to change the values.
- 14. **Alarm display area** : Displays the status of the alarm output. (Red = alarm generated, white = alarm not generated)
- 15. **Pen display** : Displays the signal positions, trigger positions, and alarm ranges for each channel. (see right figure)
- 16. **File name display area** : Displays the data capture file name during the data capture operation. When data is being replayed, the display position and cursor information are displayed here.
- 17. **Scale lower limit** : Displays the lower limit of the scale of the currently active channel.
- 18. **Waveform display area** : The input signal waveforms are displayed here.
- 19. **Scale upper limit** : Displays the upper limit of the scale of the currently active channel.
- 20. **Data capture bar** : Indicates the remaining capacity of the capture media during data capture. When data is being replayed, the display position and cursor information are displayed here.



Measurement Procedure

In this section we will provide a simple explanation of the data capture procedure: Preparations -> Setup -> Data Capture -> Data Replay.

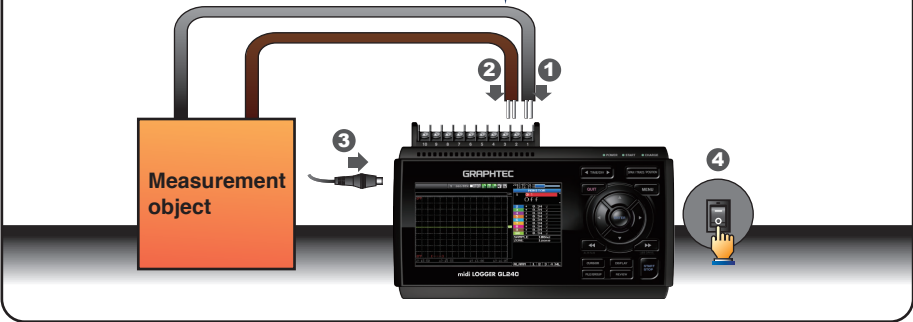
Voltage and temperature measurements are performed here.

- Purpose of data capture : To measure the voltage and temperature of the target objects
- Temperature thermocouple: T type Thermocouple, 100°C
- Voltage range : 1V
- Sampling interval : 1 sec
- Data save destination : SD1 (SD CARD1)

1. Preparations : How to Make the Preparations Required for Data Capture

1. Connect Thermocouple to the CH 1 terminal (Voltage).
2. Connect wire to the CH 2 terminal (Temperature).
3. Connect the AC power supply.
4. Turn on the power supply.

Connect securely!



2. Setup : How to Make the Settings

Make the settings required for data capture. Here we will make only those settings that are minimum requirement. The other settings will be not changed from the factory default settings.

Points to Remember

Basic Setup Menu Operation

The \blacktriangle , \blacktriangledown , \blacktriangleleft , and \blacktriangleright keys, [ENTER], and [QUIT] keys are used to set the condition on the setup menu. The current position of the cursor on the setup menu is displayed in green.

Use the \blacktriangle , \blacktriangledown , \blacktriangleleft , \blacktriangleright keys to move the cursor. When the [ENTER] key is pressed at the cursor position, a selection menu or a box of entering value is displayed.

If you press the [QUIT] key, the screen closes and the settings are canceled.

•Examples of selection menu operations (AMP screen)

1. Use the \blacktriangledown , \blacktriangle , \blacktriangleleft , \blacktriangleright keys to move the cursor to the Input parameter of CH 1 and then press the [ENTER] key.

AMP	DAT	TRG	I/F	LAN	OTH
•Display logic/pulse data					
CH:	Input	Sensor	Range		
ALL:M	DC		50 V		
1:M	DC		50 V		
2:M	DC		50 V		
3:M	DC		50 V		
4:M	DC		50 V		
5:M	DC		50 V		

2. A selection menu is displayed when the [ENTER] key is pressed. Use the \blacktriangledown and \blacktriangle keys to select "TEMP."

AMP	DAT	TRG	I/F	LAN	OTH
•Display logic/pulse data					
CH:	Input	Sensor	Range		
ALL:M	DC		50 V		
1:M	DC		50 V		
2:M	Off		50 V		
3:M	DC		50 V		
4:M	TEMP		50 V		
5:M	RI		50 V		

3. Press the [ENTER] key to confirm your selection.

AMP	DAT	TRG	I/F	LAN	OTH
•Display logic/pulse data					
CH:	Input	Sensor	Range		
ALL:M	TEMP	TC-T	2000°C		
1:M	TEMP	TC-T	2000°C		
2:M	DC		50 V		
3:M	DC		50 V		
4:M	DC		50 V		
5:M	DC		50 V		

(Note: Select "DC" for voltage measurement, and "TEMP" for temperature measurement.)



1. Press the [MENU] key to display the setup menu screen.

2. Set Input to "DC" and Range to "1V" for CH1, and set Input to "TEMP" and Sensor to "TC-T" for CH2.

- (1) Move the cursor to CH1 "Input" and select "DC" and then move it to "Range" and select "1V".

AMP	DAT	TRG	I/F	LAN	OTH
•Display logic/pulse data					
CH:	Input	Sensor	Range	Filter	
ALL:M	DC		50 V	OFF	
1:M	DC		50 V	OFF	
2:M	TEMP	TC-K	2000°C	OFF	
3:M	DC		50 V	OFF	
4:M	DC		50 V	OFF	
5:M	DC		50 V	OFF	
6:M	DC		50 V	OFF	
7:M	DC		50 V	OFF	
8:M	DC		50 V	OFF	
9:M	DC		50 V	OFF	
10:M	DC		50 V	OFF	

- (2) In the same way, move the cursor to CH2 "Sensor" and select "TC-T".



3. Select "Off" for all the other channels.

- (1) Using the procedure described above, select "Off" for CH 3 to CH 10.

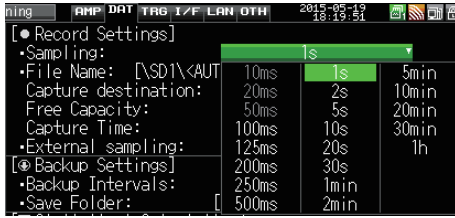
AMP	DAT	TRG	I/F	LAN	OTH
•Display logic/pulse data					
CH:	Input	Sensor	Range	Filter	EU Misc.
ALL:M	TEMP	TC-T	2000°C	Off	
1:M	DC		1 V	Off	
2:M	TEMP	TC-T	2000°C	Off	
3:M	Off				
4:M	Off				
5:M	Off				
6:M	Off				
7:M	Off				
8:M	Off				
9:M	Off				
10:M	Off				

4. Press the [MENU] key and open the "DATA" menu.



5. Set the sampling interval to "1s".

Move the cursor to "Sampling" and then select "1s".



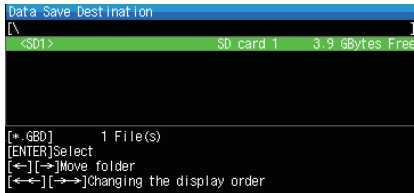
6. Set the Data Capture Destination to "SD memory card".

Here the "TEST" folder is created in the SD memory card, and then destination for the captured data is set to the TEST folder.

- (1) Move the cursor to the File Name parameter and then press the [ENTER] key.



- (2) The data saving destination box shown in the following screen opens. In the data saving destination box, set the SD1 (or SD2) as a capture destination.



- (3) Move into the folder by pressing the [▶] key and move the cursor to the "Create New Folder" and then press the [ENTER] key. The Folder Name Input menu is displayed.

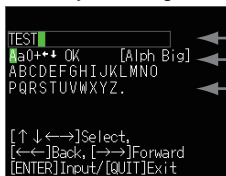
- (4) A text input box is displayed. Let's create a folder named "TEST".

(1) In the text type select; delete; insert; confirm items, move the cursor to the A using the ◀ and ▶ keys.

(2) The selected text is displayed.

In the text select, move the cursor to the text using the ▲, ▼, ◀ and ▶ keys and then press the [ENTER] key.

Input "TEST", move the cursor to [OK], and then press the [ENTER] key to enter your setting.



Text input box

(1) Select the text type, delete, insert, confirm

(2) Select the character



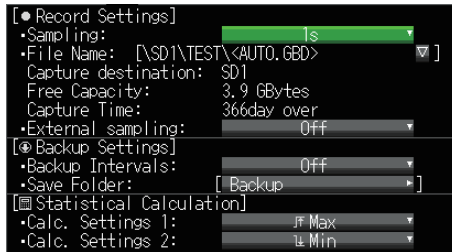
(6) Select the "TEST" folder and then press the [ENTER] key to return to the Capture setting screen.

(7) Move the cursor to **OK** and then press the [ENTER] key.



The data is recorded with the automatic file naming in the <TEST> folder of the mounted SD memory card.

(8) Available space in specified memory device and time for data capture are displayed in the lower part of the Record Settings menu. The data capture time can be checked.



Minimum required setting for data capture is completed.

3. Data Capture : How to Capture Data

All of setting for the data capture have been set, capturing data can be started now. During the data capture operation, let's also replay some data that was captured previously.



1. Starting data capture

- (1) Press the [START/STOP] key.
- (2) A confirmation message is displayed.

Start data capture?

[ENTER]Yes [QUIT]No

- (3) Press the [ENTER] key to start data capture.

2. Screen status during data capture

Once data capture has started, progress of data capture is shown. The displayed time is counting up or down.

capturing message



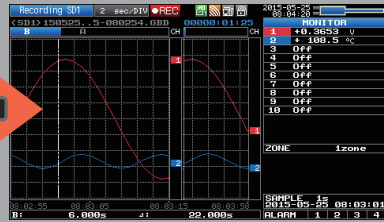
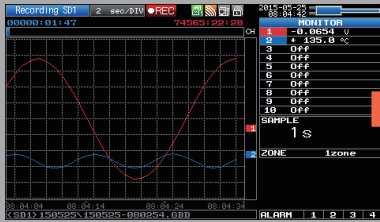
elapsed time

remaining time for data capture

(The indication becomes ++++ when the data capture time is 9999 hours or more.)

Points to Remember

Data can be replayed while being captured by pressing the [REVIEW] key. Data can be replayed during the data capture operation from the beginning to the point that has been captured. During the replay, you can check arbitrary level values and such by moving the cursor. You can return to the data capture screen by pressing the [REVIEW] key again.



* When the [DISPLAY] key is pressed, you can switch between the 1-screen and 2-screen.



3. Stopping data capture

Press the [START/STOP] key to end the data capture operation.

- (1) Press the [START/STOP] key.

Stop data capture?

[ENTER]Yes [QUIT]No

- (2) A confirmation message is displayed. Press the [ENTER] key.
- (3) Data capture ends, and the GL240 goes into the Free Running status.

The operation of data capture is completed.

4. Data Replay : How to Replay Captured Data

Since the data capture has been completed, let's replay the captured data. The captured file is saved in the "TEST" folder of the SD memory card that has been set in the "2. Setting".

Because the file name is automatically assigned, the file, for example "20150201-123456.GBD" is created in GBD-formatted file ((Year)(Month)(Day) – (time).GBD).

The (Year)(Month)(Day) – (time) is the time that you start the data capture.



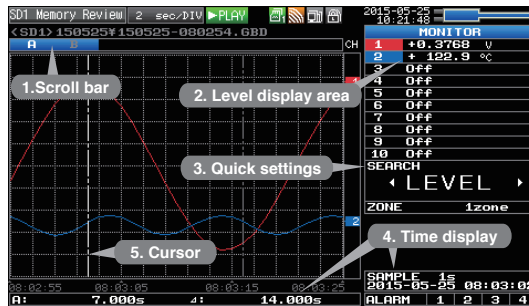
1. Selecting a file to replay

- (1) Press the [REVIEW] key.
- (2) Since the file you want to replay has the file name that was appended automatically when the data was captured, move the cursor to the [OK] button and then press the [ENTER] key.



- (3) The Replay screen opens.

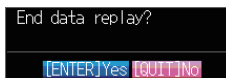
2. Replay screen



- (1) **Scroll bar** : Displays the position within the whole data and the display width.
- (2) **Level display area** : Displays the levels of A and B cursors and the difference between the A and B values.
- (3) **Quick settings** : Use the ◀▶ keys to search the previous or next level. (Note: Make search settings in the menu.)
- (4) **Time display** : Displays the sampling interval and the time of the cursor.
- (5) **Cursor** : Displays the cursor. (Note: Press the CURSOR key to switch between A and B cursors.) Move the cursor using the ◀▶ keys or the ◀◀▶▶ keys. Desired level values and time can be checked by moving the cursor.



- Press the [QUIT] key to end the data replay operation.
- A confirmation message is displayed. Press the [ENTER] key.



Data replay ends, and the GL240 goes into the Free Running status.

Explanation of basic operation in the GL240 is completed.

The GL240 has many other convenient functions. Please refer the next five pages for details.

Convenient Functions

The GL240 has various functions that enable it to be used more effectively. The selected three functions are described with details in the following.

Trigger Functions to Control Data Capture Start/Stop Operations

Trigger functions can be used to control the timing of the start of a data capture operation, and the timing of the end of a data capture operation.

Points to Remember

For example...

The trigger function performs operations such as the following:

- Start data capture when the voltage exceeds 1 V
- Stop data capture at 1:00 pm
- Perform control via external input

Here data capture is started in the condition as "Start data capture when the CH 1 temperature exceeds 20°C".

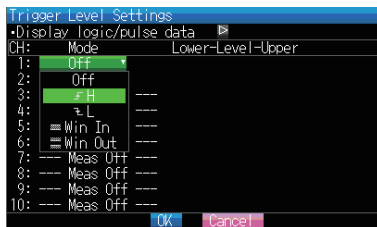
(1) Press the [MENU] key and open the "TRIG" menu.



(2) Move the cursor to "Start Source" and select "Level".

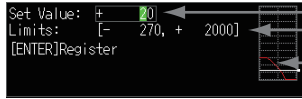


(3) Press the [ENTER] key according to the "Level Settings" . The "Trigger Level Settings" screen is displayed. Move the cursor to the "Mode" parameter for the CH1, and then select "Hi".



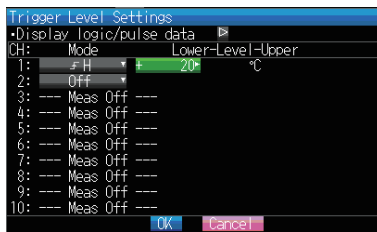


- (4) Move the cursor to the "Level" parameter next to the "Mode" parameter and then press the [ENTER] key.
- (5) The input box shown in the following screen is displayed. Select "20". Use the ◀ and ▶ keys to move to the cursor to the second digit from the right, and the ▲ and ▼ keys to change the value. Press the [ENTER] key.



- Numerical value input box
- Lower and upper limit for setting.
- Waveform area for confirmation Lower
- Use the ▲ and ▼ keys to change the values.
- Use the ◀ and ▶ keys to move the digit.
- Use the [ENTER] key to enter the value.
- Use the [QUIT] key to cancel the setting.

- (6) When the screen changes to the following screen, move the cursor to the **OK** button and then press the [ENTER] key.



- (7) The screen returns to the TRIG menu screen. Press the [QUIT] key to return the GL240 to the Free Running status.
- (8) Press the [START/STOP] key to start data capture. If the trigger condition has not been satisfied, the GL240 goes into the "Armed" status as shown on the following screen.



When the trigger condition is satisfied, the data capturing is started.



Span, Position and Trace Functions to Adjust the Waveform Display

Trigger functions can be used to control the timing of the start of a data capture operation, and the timing of the end of a data capture operation.

Points to Remember

The span, position and trace operations can be performed while the GL240 is in the Free Running status, while it is capturing data, and while it is replaying data. The changes are applied to the displayed data only, the change is not affected to the captured data.

1. How to Make a Span setting

The Span parameter is used to adjust the amplitude of the input waveform. This setting is made in the aforementioned Free Running status.

- (1) Set the displayed span for CH 2 to 100°C.
- (2) Press the [SPAN/TRACE/POSITION] key to select the SPAN mode.

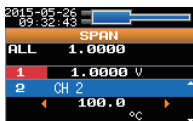


Points to Remember

The currently selected mode (SPAN, POSITION or TRACE) can be checked by looking at the "Waveform Operation Display Area".

- (3) Use the ▲ and ▼ keys to make CH 2 active (enlarged display).
- (4) Use the ◀ and ▶ keys to change the Span value. Here the value for span is set to 100°C.

When this setting has been changed, the waveform screen scale will be set to "+100.0 to +0.0".

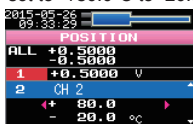


2. How to make a Position setting

The Position parameter is used to adjust the position of displayed waveform that is set by the upper and lower values.

- (1) Press the [SPAN/TRACE/POSITION] key to select the POSITION mode.
- (2) Use the ▲ and ▼ keys to make CH 2 active (enlarged display).
- (3) Use the ◀ and ▶ keys to set the Position value to "+80.0°C to -20.0°C".

When this setting has been changed, the waveform screen scale will be set to "+80.0°C to -20.0°C".



3. How to make a Trace setting.

The Trace parameter can be used to specify the selected waveform to be visible or invisible on the display.

- (1) Press the [SPAN/TRACE/POSITION] key to select the TRACE mode.
- (2) Use the ▲ and ▼ keys to make CH 1 active (enlarged display).
- (3) Use the ◀ and ▶ keys to select Off.

When this setting has been changed, the CH 1 waveform is not displayed.



Specifications

Standard Specifications

Item	Description																										
Number of analog channels	10 channels																										
External input and output functions	Trigger input or External sample pulse (1ch), Logic input (4ch) or Pulse input (4ch), Alarm output (4ch)																										
PC interface	USB 2.0 (HighSpeed supported) , Wireless LAN (Required to install optional module.)																										
Built-in memory device	SD memory card slot: 2 slots SD memory card: 4GB (standard supplied one card), however one file can be data-captured up to 2GB.																										
Number of analog channel	10ms/1ch MAX 10/20/50/100/125/200/250/500ms, 1/2/5/10/20/30sec 1/2/5/10/20/30min, 1hour, External * In the case of 50 ms or less, available settings vary depending on the input settings and number of CHs to be measured.																										
Back-up functions	Setup parameters: EEPROM/Clock: Lithium battery																										
Clock accuracy (ambient temperature 23°C)	±0.002% (approx. 50 seconds per month)																										
Operating environment	0 to 45°C, 5 to 85%RH (0 to 40°C when operated in batteries/15 to 35°C when battery is charging)																										
Power supply	AC adapter : 100 to 240 VAC, 50 to 60 Hz DC input : 8.5 to 24 VDC (26.4 V max.) Battery pack (option) : 7.2 VDC (2900 mAh)																										
Power consumption	AC power consumption * when using the AC adapter provided as a standard accessory																										
	<table border="1"> <thead> <tr> <th>No</th> <th>Condition</th> <th>Normal</th> <th>During recharging battery</th> </tr> </thead> <tbody> <tr> <td rowspan="2">1</td> <td rowspan="2">When the LCD is on</td> <td>AC100 V</td> <td>16 VA</td> <td>36 VA</td> </tr> <tr> <td>AC240 V</td> <td>24 VA</td> <td>52 VA</td> </tr> <tr> <td rowspan="2">2</td> <td rowspan="2">When the screen saver is operating</td> <td>AC100 V</td> <td>15 VA</td> <td>35 VA</td> </tr> <tr> <td>AC240 V</td> <td>22 VA</td> <td>51 VA</td> </tr> </tbody> </table>	No	Condition	Normal	During recharging battery	1	When the LCD is on	AC100 V	16 VA	36 VA	AC240 V	24 VA	52 VA	2	When the screen saver is operating	AC100 V	15 VA	35 VA	AC240 V	22 VA	51 VA						
	No	Condition	Normal	During recharging battery																							
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	2	When the screen saver is operating	AC100 V	15 VA	35 VA																						
			AC240 V	22 VA	51 VA																						
	DC current consumption * Normal condition: LCD brightness is set to MAX.																										
	<table border="1"> <thead> <tr> <th>No</th> <th>Condition</th> <th>Normal</th> <th>During recharging battery</th> </tr> </thead> <tbody> <tr> <td rowspan="2">1</td> <td rowspan="2">+24 V</td> <td>When the LCD is on</td> <td>0.24 A</td> <td>0.61 A</td> </tr> <tr> <td>When the screen saver is operating</td> <td>0.22 A</td> <td>0.59 A</td> </tr> <tr> <td rowspan="2">3</td> <td rowspan="2">+12 V</td> <td>When the LCD is on</td> <td>0.42 A</td> <td rowspan="2">Recharging battery is not possible.</td> </tr> <tr> <td>When the screen saver is operating</td> <td>0.37 A</td> </tr> <tr> <td rowspan="2">5</td> <td rowspan="2">+8.5 V</td> <td>When the LCD is on</td> <td>0.58 A</td> <td rowspan="2">Recharging battery is not possible.</td> </tr> <tr> <td>When the screen saver is operating</td> <td>0.53 A</td> </tr> </tbody> </table>	No	Condition	Normal	During recharging battery	1	+24 V	When the LCD is on	0.24 A	0.61 A	When the screen saver is operating	0.22 A	0.59 A	3	+12 V	When the LCD is on	0.42 A	Recharging battery is not possible.	When the screen saver is operating	0.37 A	5	+8.5 V	When the LCD is on	0.58 A	Recharging battery is not possible.	When the screen saver is operating	0.53 A
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External dimensions (approximate)	[WxDxH] :188x117x42 mm																										
Weight (approximate)	500 g * AC adapter and battery are not included.																										
Vibration-tested conditions	Equivalent to automobile parts Type 1 category A classification																										

External Input/Output Functions

Item	Description
Input specifications (pulse/logic, trigger/ External sampling)	Maximum input voltage : 0 to +24V (single-ended ground input)
	Input threshold voltage : approximate +2.5 V
	Hysteresis : approximate 0.5 V (+2.5 V to +3 V)
Alarm output specifications	Output format : Open collector output (5 V, 10 kΩ pull-up resistance) * Refer to the User's Manual in the supplied CD-ROM for more information.

Specification of the input section

Item	Description		
Number of input channels	M3 screw type terminal (Rectangular flat washer) 10 channels		
Method	Photo MOS relay scanning system, all channels isolated, balanced input		
Scan speed	10ms/1Ch		
Measurement ranges	Voltage	20/50/100/200/500 mV, 1/2/5/10/20/50/100 V, 1-5 V F.S.	
	Temperature	Thermocouple : K, J, E, T, R, S, B, N, W (WR5-26)	
		Temperature range : Fixed	
Humidity	0 to 100% (voltage 0 V to 1 V scaling conversion) * B-530 (optional) use		
Measurement accuracy *1 (23°C ±5°C) • When 30 minutes or more have elapsed after power was switched on • Sampling 1 s / 10 ch • Filter ON (10) • GND connected	● Voltage : ±0.1% of F.S. ● Thermocouple *1: Thermocouple diameters T, K: 0.32 Φ, others: 0.65 Φ		
	Type	Measurement Temperature Rang	
	R/S	0≤TS≤100°C	±5.2°C
		100<TS≤300°C	±3.0°C
		R: 300<TS≤1600°C	± (0.05% of rdg +2.0°C)
		S: 300<TS≤1760°C	± (0.05% of rdg +2.0°C)
	B	400≤TS≤600°C	±3.5°C
		600<TS≤1820°C	± (0.05% of rdg +2.0°C)
	K	-200≤TS≤100°C	± (0.05% of rdg +2.0°C)
		-100<TS≤1370°C	± (0.05% of rdg +1.0°C)
E	-200≤TS≤100°C	± (0.05% of rdg +2.0°C)	
	-100<TS≤800°C	± (0.05% of rdg +1.0°C)	
T	-200≤TS≤100°C	± (0.1% of rdg +1.5°C)	
	-100<TS≤400°C	± (0.1% of rdg +0.5°C)	
J	-200≤TS≤100°C	±2.7°C	
	-100<TS≤100°C	±1.7°C	
N	100<TS≤1100°C	± (0.05% of rdg +1.0°C)	
	-200≤TS<0°C	± (0.1% of rdg +2.0°C)	
W	0≤TS≤1300°C	± (0.1% of rdg +1.0°C)	
	0≤TS≤2000°C	± (0.1% of rdg +1.5°C)	
Reference contact compensation accuracy		±0.5°C	
A/D converter	16-bit Delta-Sigma A/D converter (Effective resolution: approx. 1/40,000 of ± range)		
Temperature coefficient	Gain : 0.01% of F.S./°C Zero : 0.02% of F.S./°C * Occurs when sampling interval is 10, 20, or 50 ms.		
Maximum input voltage	Between +/- terminals : 20mV to 1Vrange (60Vp-p) 2V to 100V range (110Vp-p)		
	Between input terminal/input terminal : 60Vp-p		
	Between input terminal/GND : 60Vp-p		
Withstand voltage	Between input terminal/input terminal : 1 minute at 350Vp-p		
	Between input terminal/GND : 1 minute at 350Vp-p		
Common mode rejection ratio	At least 90 dB (50/60 Hz; signal source 300Ω or less)		
Noise	At least 48 dB (with +/- terminals shorted)		

Installation Guide

This guide describes how to install the GL240 application software.

System Requirements

This software can be installed on a PC which fulfills the following conditions.

- OS : Windows 8.1 (32Bit/64Bit)
Windows 8 (32Bit/64Bit)
Windows 7 (32Bit/64Bit) * Starter Edition are not supported.
Windows Vista (32Bit/64Bit)
* The OSs which OS maker support has been completed are not supported.
- CPU : Pentium4 1.7GHz or higher
- Memory : 256MB or more (512MB or more recommended)
- HDD : 200MB (1GB recommended) additional space required for installing the application software
- Display : Resolution 1024 x 768 or higher, 65535 colors or above
(16 Bit or higher)
- Others : CD-ROM drive (for installation from a CD) and USB port are necessary.

To Install the USB Driver

To connect this unit to a PC with the USB interface, a USB driver must be installed in the PC.

A USB driver and the USB driver installation manual are stored on the supplied CD-ROM. Install the USB driver according to this manual.

(The manual location: D:\USB Driver\English\GL-USB-UM152.PDF)

Note: D: drive name of CD-ROM. The letter of CD-ROM drive vary it with the CD-ROM drive of your PC.

To Install GL240 Application Software

To install the application software which sets and controls the GL240, follow the directions below.

1. Insert the accompanying midi LOGGER GL240 CD-ROM in the PC's CD drive.
2. Select [Start] > [Run] to open the [Run] window.
3. In the [Open] field, type in "D:\GL100_240_840-APS\Setup_English.exe" and press [OK].
The installer starts.
4. Follow all directions displayed by the installer to continue.

Note: D: drive name of CD-ROM. The letter of CD-ROM drive vary it with the CD-ROM drive of your PC.

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Specifications are subject to change without notice.

GL240 Quick Start Guide
(GL240-UM-850)

June 1, 2015
1st edition-01

Publisher GRAPHTEC CORPORATION