

# GRAPHTEC



## midi LOGGER GL240

Compact, Standalone 10-Channel Datalogger



✔ Wireless LAN capability | remote monitoring & datalogging

✔ Extended memory capacity using SD memory card

✔ Flexible input system for wide array of applications

✔ Max sampling interval up to 10ms

✔ Ability to access additional (GL100) sensors & adapters

✔ Smartphone access



Communication with PC or Smart Device using optional Wireless LAN Unit B-568

(WLAN Unit B-568)



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# Accommodates a wide variety of measurements

## Multifunction analog input ports

Contains a highly isolated input mechanism which ensures that signals are not corrupted by noise from other channels. The 240's inputs are suitable for combined measurements from voltage, temperature, humidity, logic, and pulse signals.

## 4 channels of Logic/Pulse inputs

Supports 4-channel logic or pulse signal inputs. Pulse mode allows cumulative, instant, or rotational values for industrial measurement capability with speed and flow.

|                 |   |  |   |
|-----------------|---|--|---|
| <b>Voltage</b>  | Ranges from 20mV to 100V  | <b>Pulse</b>   | 4 channels*<br>Accumulating, Instant or RPM |
| <b>Temp.</b>    | Thermocouple type: R, S, B, K, E, T, J, N, W<br>RTD types (for GL840 only): Pt100, JPt100, Pt1000 | <b>Logic</b>   | 4 channels*                                 |
| <b>Humidity</b> | 0 to 100%RH - using optional sensor (B-530)   | * Requires optional input/output cable (B-513).<br>Select either Pulse or Logic input. |   |

# 4.3-inch color LCD

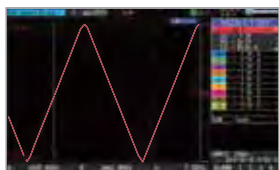
GL240 has a 4.3-inch wide LCD screen (WQVGA: 480 x 272 dots) for monitoring data. Data can be displayed in waveform or digital form option. Parameter settings can be displayed on the screen.



Waveform display (Analog + Digital)



Digital display



Dual display (Current + Past)



Waveform display (Analog only)

# Useful functions

## Alarm output function

Based on set conditions for each channels, alarm signals can be placed using the four channel alarm output ports.\*

\* Input/output cable (B-513 option) is required to connect the alarm output ports to external buzzer/light mechanism.

## USB drive mode

USB drive mode function enables data to be transferred to the PC from GL240 by drag & drop feature.

## Navigation function

Simple to use navigation screen allows setting operation for measurement and wireless LAN adapter.

# Maximum sampling interval of up to 10ms

Provides faster sampling rates for voltage measurements. You are able to achieve up to 10ms sampling speed when limiting the number of channels in use.

| Model | Sampling interval | Number of channel | 10ms  | 20ms      | 50ms    | 100ms | 200ms     | 500ms     | 1s        | 2s        |
|-------|-------------------|-------------------|-------|-----------|---------|-------|-----------|-----------|-----------|-----------|
|       |                   |                   | GL240 | Measuring | Voltage | Yes   | Yes       | Yes       | Yes       | Yes(10ch) |
|       |                   | Temperature       | N/A   | N/A       | N/A     | Yes   | Yes(10ch) | Yes(10ch) | Yes(10ch) | Yes(10ch) |

\* This chart is applicable when the captured data is saved in the GBD binary file format. Limited sampling speed is available when digital sensors and GL100-WL are used as a remote monitoring device.

# Supports large-size SD memory card for reliable long term measurement

New GL series carries two SD memory card slots for storage device. The SDHC type SD memory card is supported up to 32GB. 4GB SD memory card comes as a standard accessory installed in the first slot.

Capturing time\* (When all 20 or 10 analog channels are being used with Logic/Pulse inputs turned off.)

| Model | Sampling | 10ms       | 50ms       | 100ms   | 200ms   | 500ms    | 1s       | 10s      |          |
|-------|----------|------------|------------|---------|---------|----------|----------|----------|----------|
|       |          | GL240      | GBD format | 41 days | 88 days | 103 days | 207 days | over 365 | over 365 |
|       |          | CSV format | 3 days     | 11 days | 16 days | 36 days  | 91 days  | 182 days | 365 days |

\* Figures are approximate. File size of captured data is 2GB in GBD or CSV file format on this chart. Sampling interval is limited by the number of channels in use. (10ms: 1ch, 50ms: 5ch, 100ms: 10ch) Limited sampling speed is available when digital sensors and GL100-WL are used as a remote monitoring device.

## Ring capture function

The most recent data is saved when the memory is configured in ring memory mode. (Number of capturing data is 1000 to 2000000 points)

## Relay capture function

Data is continuously saved to multiple files up to 2GB without losing any data until capturing is stopped when the memory is configured in the relay mode.

## Hot-swapping the SD memory card

SD card can be replaced during data capturing when the sampling interval is 100ms or slower.

## 3 Types of Power Source

Choose from AC power supply, DC supply\* or the rechargeable battery pack.\*

\* DC power drive cable (B-514) and battery pack (B-569) are optional accessories.

## Networking features

### Web & FTP server function

GL240 can be controlled externally via a network on the WEB browser, which also supports monitoring and transfer of signals and captured data.

### FTP client function

Captured data is periodically transferred to the FTP server for backup.

### NTP client function

The clock on the GL240 is periodically synchronized with the NTP server. \* The GL240 needs to be connected to a LAN environment using the available Ethernet/WLAN ports.

# High performance software with useful functions for the PC (GL100\_240\_840-APS)

## Supports GL840, GL240, GL100

Up to 10 units of GL840, GL240 and GL100 can be connected to 1 PC simultaneously. Up to 1000 channels are supported.

## Controls settings for GL840, GL240, GL100

## Various measurement screen

Displays data in Y-T waveform, digital monitoring, statistical calculation result.

The direct-Excel function enables captured data to be written directly to an Excel file.

## File operation

Data captured in multiple files can be merged into a single file. Using the *combine* function, data can be imported as a new channel overlaying on top of each other. The *bind* function connects the data

## Useful functions

### Scheduling function

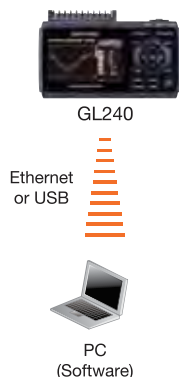
Create a schedule for your monitoring to start and stop at selected time, and set an automatic measurement schedule.

### Group function

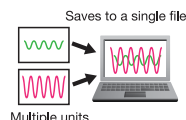
Multiple units can be managed, such as controlling start or stop simultaneously. Data captured by each unit is saved in a single file.

## Data format conversion

Converts the GBD (Graphtec Binary Data) format to CSV format. The file size is reduced using the compression function saving a value at particular time point of a specified interval. Or, it will save



Schedule table is able to create easily using mouse.



# High quality performance and measurement software with useful functions for the PC & smart device environment

## For PC (GL100\_240\_840-APS)

Software for the PC is included as a standard accessory.

- Monitor and save captured data remotely
- Control the GL240
- Additional functions

• Scheduling function • Group function • Data format conversion • File operation And more!

## For Smart device (GL-Connect)

Apps for the smart devices are available on the Android OS and iOS platforms. Download them free from the individual stores.



\* Please type "graphtec" to search for the app.

### ■ Monitoring captured data

Real time captured data can be displayed as digital values in real time on the smart device apps. The saved data on the GL240 main body can also be displayed in waveform display format.

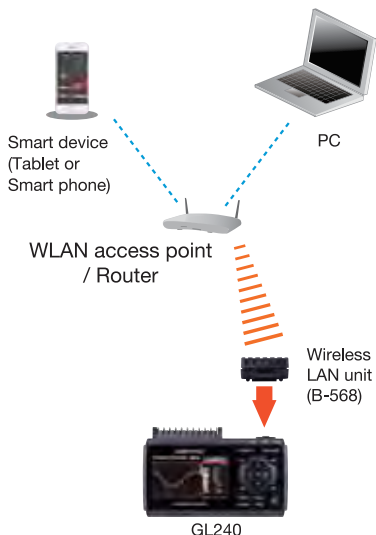
\* Captured data will not be saved on the smart device.

### ■ Set and control simple functions

Dedicated control features allow remote start and stop, setting the sampling interval, and setting the alarm conditions.

### ■ Control the settings remotely

Web server function of the GL240 allows remote control and monitoring using this application.



## Wireless Measurement Using WLAN (option)

Wireless LAN option enables the wireless communication with other devices. Connects to the GL100-WL wireless unit remotely when set as an access point. When set as a station, PC and smart devices will be able to access the WLAN unit directly.

### ■ Combining GL100-WL and GL240

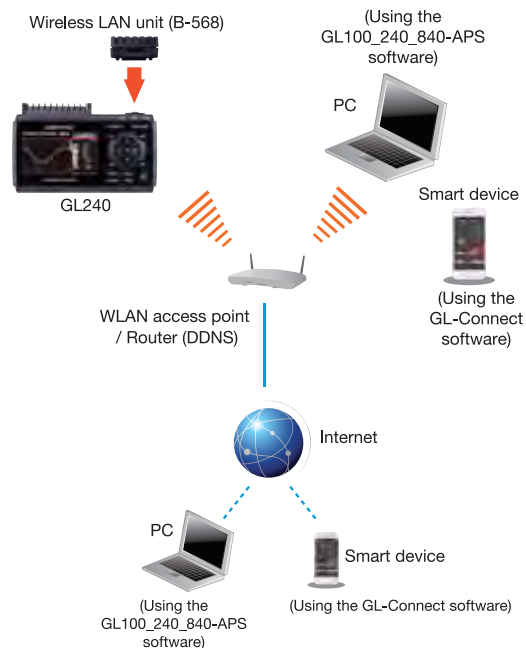
GL100-WL can now be connected to the GL240 as a remote sensor using the WLAN feature. You can expand your measurement variety by adding the sensors available on the GL100-WL unit. The measured value will then appear in a single file along with the measurement values from the GL240 main inputs. GL240 will now take in direct information from the GL100-WL units.

### ■ Communication with the PC or Smart device

GL240 units can be connected to a LAN (Local Area Network) via an WLAN access point. Measured data can be monitored and controlled via a PC or a smart device using the application software. Configuration can be set via the network.



Sensors and input terminals/adapters for the GL100



| GL240 Main unit specifications      |  |   |
|-------------------------------------|--|---|
| Item                                | Description  |   |
| Number of analog input channels     | 10 channels  |   |
| External input/output *1            | Input *2   | Trigger or Sampling (1 channel), Logic/Pulse (4 channels)   |
|                                     | Output *3  | Alarm (4 channels)  |
| Sampling interval                   | 10 ms to 1 hour (10ms to 50ms: voltage only) *4, External signal   |   |
| Time scale of waveform display      | 1sec. to 24 hour /division   |   |
| Trigger,                            | Trigger action   | Start or stop capturing data by the trigger   |
| Alarm function                      | Repeat action  | Off, On (auto rearmed)  |
|                                     | Trigger source   | Start: Off, Measured signal, Alarm, External, Clock, Week or Time<br>Stop: Off, Measured signal, Alarm, External, Clock, Week or Time   |
|                                     | Condition Setting  | Combination: OR or AND<br>Analog signal: Rising (High), Falling (Low), Window-in, Window-out<br>Logic signal: Pattern (combination of each input signal in high or low)<br>Pulse (number of count): Rising (High), Falling (Low), Window-in, Window-out |
|                                     | Alarm output   | Outputs a signal when alarm condition occurs in the input signal *5   |
| Pulse input function                | Rotation count (RPM)   | Counts the number of pulses per sampling interval and converts to rpm (rotations per minute), Number of pulses for one rotation may be set to 50, 500, 5000, 50k, 500k, 5M, 50M, 500M rpm/F.S. (rpm./Full Scale)  |
|                                     | Accumulating count   | Accumulates the number of pulses from the start of measurement 50, 500, 5000, 50k, 500k, 5M, 50M, 500M C/F.S. (Counts/Full Scale)   |
|                                     | Instant count  | Counts the number of pulses per sampling interval 50, 500, 5000, 50k, 500k, 5M, 50M, 500M C/F.S. (Counts/Full Scale)  |
| Calculation function                | Between channels   | Addition, Subtraction, Multiplication, and Division for analog input  |
|                                     | Statistical  | Select two calculations from Average, Peak, Maximum, Minimum, RMS   |
| Search function                     | Search for analog signal levels, values of logic or pulse or alarm point in captured data  |   |
| Interface to PC                     | USB (Hi-speed), WLAN (using B-568 option)  |   |
| Storage device                      | Media  | Internal 4GB memory with optional SD card slot (support SDHC, up to 32GB)*6   |
|                                     | Saved contents   | Captured data, Setting conditions, Screen copy  |
| Capturing mode                      | Mode:  | Normal, Ring, Relay   |
|                                     | Relay:   | Saves most recent data (Number of captured data: 1000 to 2000000 points) *7<br>Saves data to multiple files without losing data until data capturing is stopped   |
| Replay Data                         | Replays captured data that was saved in the GL240 (in BGD or CSV format)   |   |
| Scaling (Engineering unit) function | Measured value can be converted to the specified engineering unit<br>• Analog voltage: Converts using four reference points (gain, offset)<br>• Temperature: Converts using two reference points (offset)<br>• Pulse count: Converts using two reference points (gain) |   |
| Action during data capture          | • Displaying parst data (using dual display mode (Current + Past data))<br>• Hot-swapping the SD memory card<br>• Saving data in between cursors   |   |
|                                     |  |   |
| Display                             | Size   | 4.3-inch TFT color LCD (WQVGA: 480 x 272 dots)  |
|                                     | Language Information *8  | English, French, German, Chinese, Korean, Russian, Spanish, Japanese<br>Waveform in Y-T with digital values, Waveform only, Digital values and statistics values  |
| Operating environment               | 0 to 45 °C, 5 to 85 % RH (non condensed)<br>(When operating with battery pack 0 to 40 °C, charging battery 15 to 35 °C)  |   |
| Power source                        | AC adapter   | 100 to 240 V AC, 50/60 Hz (1 pc of adapter is attached as standard accessory)   |
|                                     | DC power   | 8.5 to 24 V DC (DC drive cable (option B-514) is required)  |
|                                     | Battery pack   | Mountable battery pack (battery pack (option B-569): 7.2V DC, 2900mAh)  |
| Power consumption *9                | Max. 36 VA   |   |
| External dimensions (W x D x H)     | Approx. 188 x 117 x 42 mm (Excluding projections)  |   |
| Weight *10                          | 500 g  |   |

| Software specifications for PC |  |  |
|--------------------------------|--|--|
| Item                           | Description  |  |
| Model name                     | GL100_240_840-APS  |  |
| Supported OS                   | Windows 8.1, 8, 7, Vista (32/64-bit edition)   |  |
| Supported device               | GL840 (USB, Ethernet, WLAN), GL240 (USB, WLAN), GL100 (USB, WLAN)  |  |
| Functions                      | Control the GL series, Real-time data capture, Replay data, and Data format conversion   |  |
| Supported units & channels     | Up to 1000 channels total, Up to 4 groups (number of units is limited by model)  |  |
| Settings control               | Input condition, Capturing condition, Trigger/Alarm condition, Report, etc.  |  |
| Capturing data                 | Saved to PC  | Saves captured data in real time (in GBD binary or CSV format) |
|                                | Saved to GL unit   | Saves to the SD memory card (in GBD binary or CSV format)      |
| Displayed information          | Y-T waveform, Digital values, Report, X-Y graph (specified period of data, data reply only), Two displays for the current and past data, and Statistical calculation |  |
| File operation                 | Converting data format to CSV from GBD binary, merge multiple data files in the time axis or as an additional channel  |  |
| Warning function               | Send e-mail to the specified address when the alarms occur   |  |
| Statistical calculation        | Maximum, Minimum, and Average during data capturing  |  |
| Report function                | Creates the daily or monthly report automatically  |  |

| Software specifications for Smart device |  |  |
|--|--|--|
| Item                                     | Description  |  |
| Model name                               | GL-Connect   |  |
| Supported OS                             | Android 4.1 to 4.4, iOS 7/8  |  |
| Supported device                         | GL840 (WLAN), GL240 (WLAN), GL100 (WLAN)   |  |
| Functions                                | Control the GL series, Display measured data in waveform or digital value                          |  |
| Supported units                          | Up to 10 units   |  |
| Settings control                         | Start/Stop, Sampling interval  |  |
| Capturing data                           | Saves captured data in the GL main body (data cannot be saved in the smart device)                 |  |
| Displayed information                    | Data captured in real time by digital value, Replay the data stored in the GL body by the waveform |  |

| Options and Accessories          |              |   |
|----------------------------------|--------------|---|
| Item                             | Model number | Description   |
| Wireless LAN unit                | B-568        | WLAN adapter, IEEE802.11b/g/n                                     |
| Battery pack                     | B-569        | Rechargeable Lithium-ion battery (7.2 V, 2900mAh)                 |
| Input/Output cable for GL series | B-513        | 2 m long (no clip on end of cable)                                |
| DC drive cable                   | B-514        | 2 m long (no clip on end of cable)                                |
| Humidity sensor                  | B-530        | With 3 m long signal cable (with power plug)                      |
| Shunt resistor                   | B-551-10     | 250 ohms (it converts the signal to the "1-5V" from the "4-20mA") |
| AC power adapter                 | ACADP-20     | Input: 100 to 240 V AC, Output: 24 V DC                           |

- Due to the possibility of equipment or PC failure, the data files on the instrument will not be guaranteed to be held on the memory. Please make a backup of data whenever possible to avoid data loss.
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For using equipment in correctly and safely

Before using it, please read the user manual and then please use it properly in accordance with the description.  
To avoid malfunction or an electric shock by current leakage or voltage, please ensure a ground connection and use according to the specification.

| GL240 Analog input specifications |   |  |                      |
|-----------------------------------|---|--|----------------------|
| Item                              | Description   |  |                      |
| Input method                      | All channels isolated balanced input *11, Scans channels for sampling                 |  |                      |
| Type of input terminal            | Screw terminal (M3 screw)   |  |                      |
| Measurement range                 | Voltage   | 20, 50, 100, 200, 500 mV, 1, 2, 5, 10, 20, 50, 100 V, and 1-5V F.S. (Full Scale) |                      |
|                                   | Thermocouple  | Type: K, J, E, T, R, S, B, N, and W (WR65-26)                                    |                      |
| Humidity                          | 0 to 100 % RH - using the humidity sensor (option B-530)                              |  |                      |
| Filter                            | Off, 2, 5, 10, 20, 40 (moving average in selected number)                             |  |                      |
| Measurement accuracy *12          | Voltage   | ± 0.1% of F.S. (Full Scale)  |                      |
|                                   | Temperature (Thermocouple)*13   | Type   | Measurement accuracy |
| R                                 |   | 0 ≤ TS ≤ 100 °C  | ± 5.2 °C             |
|                                   | 100 < TS ≤ 300 °C   | ± 3.0 °C   |                      |
|                                   | 300 < TS ≤ 1600 °C  | ± (0.05% of rdg. + 2.0 °C)   |                      |
|                                   | 0 ≤ TS ≤ 100 °C   | ± 5.2 °C   |                      |
| S                                 | 100 < TS ≤ 300 °C   | ± 3.0 °C   |                      |
|                                   | 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)  |                      |
| R,J,C.                            |   | ± 0.5 °C   |                      |
| A/D converter                     | Sigma-Delta type, 16 bits (effective resolution: 1/40000 of the measuring full range) |  |                      |
| Maximum input voltage             | Between (+) / (-) terminal  | 20 mV to 1 V range: 60 Vp-p  |                      |
|                                   | Channels (+) / (-)  | 2 V to 100 V range: 110 Vp-p   |                      |
| Max. voltage (withstand)          | Channel / GND   | 60 Vp-p  |                      |
|                                   | Between channels  | 350 Vp-p (1 minute)  |                      |
|                                   | Channel / GND   | 350 Vp-p (1 minute)  |                      |

| Wireless LAN unit (option) specifications |   |
|---|---|
| Item                                      | Description   |
| Model number                              | B-568   |
| Supported GL series                       | GL840, GL240  |
| Communication method                      | Wireless communication (using radio waves in the 2.4GHz band)   |
| Supported WLAN system                     | IEEE802.11b/g/n   |
|   | WPS: Push button or PIN method<br>Security protocols: WEP64, WEP128, WPA-PSK/WPA2-PSK, AKIP/AES<br>Communication distance: Approx. 40m (depending on the conditions of radio communication)   |
| Installed location                        | Attached to the SD CARD slot number 2 on the GL840/GL240<br>* When the wireless LAN unit is installed, the SD memory card cannot be used in slot number 2   |
| Function                                  | Access Point mode: Communicate with the GL100-WL as a remote sensor (captured data in the GL100-WL is transferred to GL840/GL240)<br>Station mode: Communicate with PC or Smart device (control GL840/GL240 and transfer the data from GL840/GL240) |
| Connected number of GL100-WL              | GL840: Up to 5 units of the GL100-WL<br>GL240: 1 unit of the GL100-WL   |

- \*1. Input/Output cable for GL (option B-513) is required to connect the signal.
- \*2. Input signal;
  - Voltage range: Up to 24V (common ground)
  - Signal type: Voltage, Open collector, Contact (relay)
  - Threshold: Approx. + 2.5 V (Hysteresis: Approx. 0.5V (2.5V to 3V))
- \*3. Output signal: Open collector (pull-up to 5V by 10kΩ resistor)
  - <Maximum rating of the output transistor>
    - Voltage: Max. 30V, • Current: Max. 0.5A, • Collector dissipation: Max. 0.2W
- \*4. Minimum interval varies by number of channels used.
- \*5. Output port can be specified in each input channel.
- \*6. 4GB SD memory card is installed to slot 1 as standard accessory.
- \*7. Size of the capture data will be limited to 1/3 of available memory.
- \*8. Display mode is switched every time the dedicated key is pressed. In magnified digital value mode, the displayed channel number can be specified. In the waveform display mode, the changing of the time scale will be effective from the point of the next displayed data.
- \*9. Rating under maximum power consumption using the AC adapter, with LCD display on, and battery pack being charged.
- \*10. Excludes AC adapter and battery pack.
- \*11. The terminal "b" for using the RTD is connected each other across all channels.
- \*12. Subject to the following conditions:
  - Room temperature is 23 °C ± 5 °C.
  - When 30 minutes or more have elapsed after power was turned on.
  - Filter is set to 10.
  - Sampling rate is set to 1 sec, using 10-channel.
  - GND terminal is connected to ground.
- \*13. Wire size of thermocouple used is 0.32mm diameter in the T type and 0.65mm diameter in other types.

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