midi LOGGER
GLT400　Product Introduction

Graphtec Corporation

GLT400 Product Concept

Application of GL series
- Standalone and PC base data logger that used in Research and Development purpose.
- Mounted and embedded into the cabinet or system.

GL840
Embedded on cabinet

■ Target

Industry	Automotive	Electronics	Machinery	Construction	Agriculture
Section	R/D	Q/A Q/C	PE (NEW)		
GLT400 Purpose	Embedded into the system (NEW)				
	Remote control and monitoring by PC				
	Remote terminal unit of GL840				

GLT400 is multi-purpose data logger

GLT400 Configuration

Expandability allows flexibility to configure for different measurement conditions

GLT400 Functions

■ **Analog Signal Input Terminal (selectable from 3 types)**

- Standard terminal(B-564)
- Screwless terminal(B-564SL)
- Withstand high-voltage high-precision terminal(B-565)

■ **Wireless LAN terminal /SD Card Slot**

＊ When the wireless LAN unit has been inserted, the SD memory card cannot be inserted

■ **Mode Selection Switch**

- STAND ALONE
  Standalone, Connecting with PLC or PC
- USB DRIVE
  Internal memory is recognized as a removal disk, this mode facilitates file manipulation such as transfer and deletion.
- Remote
  GLT400 as a terminal unit of GL840

■ **CLEAR**
Alarm clear

■ **Power Switch**

■ **FUNCTION**
On-Push Wireless Connection (WPS) , replace SD card, and etc.

■ **START/STOP**

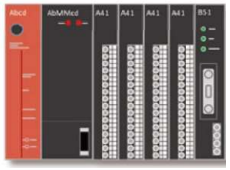
■External Input/ output terminals、PC I/F terminal (USB/ Ethernet), AC adapter jack, USB PD Port, GND terminal, 5V output terminal, M4-L5 nut (Use for cable clamp, etc.)

Multi-purpose Data Logger：Embedded Application

■ Embedded into system with no display design

Recording the data into the device memory and real-time data transfer to PLC and PC concurrently.

Recording data can be transferred to PLC as additional I/O



Bidirectional communication between PLC and GLT400 via Modbus /TCP, Start or stop command can be sent from PLC.

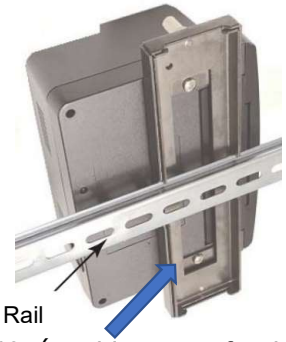
GLT400 is embedded on system Data is being monitored on PC

Remote control and monitoring via ethernet, wireless LAN or USB.
(PC Software is Standard Accessory)
＊Please see the detail on page 7.

STAND ALONE

■ Mountable on Din Rail

Option: Bracket for DIN Rail(B-540)



Bracket for Din RailB-540（enable to use for both main unit and terminal）

■ SDK (Software Development Kit) is offered for free (Applying from Graphtec Web))

- Command list
- LabView VI
- Modbus/TCP specification sheet

custom application developed for your need

Multi-purpose Data Logger：Embedded Application

■Embedded into system with PLC

＜＜Analog input module from PLC manufacture (Reference) ＞＞

		Company M		Company O		Company K	
Model		Q68TD-G-H02	Q68AD-G	NX-TS3104	NX-AD4603	KV-TP40	KV-AD40V
Number of analog channels		8	8	4	8	4	4
Input Voltage		――――	DC－10V～10V	――――	DC－10V～10V	DC－10V～10V	DC－10V～10V
Temp.	T/C	B,R,S,K,E,J,T,N		K,J,T,E,L,U,N,R,S,B, WRe5-26、PLⅡ	――――	K,J,T,E,N,R,S,B, WRe5-26	――――
	RTD	――――		――――	――――	Pt100, JPt100	――――
Current		――――		――――	――――	0～20mA/4～20mA	――――

The advantage that using GLT400 instead of PLC analog input module.

- **Input voltage range more than 10V.**
  Analog input module on PLC is 10V or less.
- **Requiring high channel numbers.**
  Analog input module on PLC has 8ch or less per module.
- **Needs to measure Temp. and Voltage together**
  Separate analog input modules are required.

Advantage to use GLT400 as PLC analog input module.

Good function for on-site operation
In-progress data can be checked via Web browser function without disconnecting Modbus communication with other devices.

Multi-purpose Data Logger ：Remote control and monitoring by PC

■ Connecting with PC

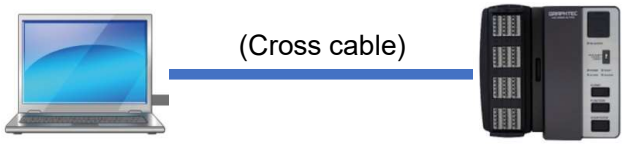
Recording the data into the device memory and real-time data transfer PC concurrently.

Remote monitoring the data on PC

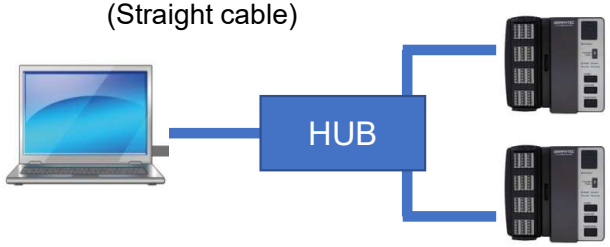
Connect via Ethernet, Wireless LAN or USB

＜＜Ethernet Connection＞＞

●1 to 1 connection

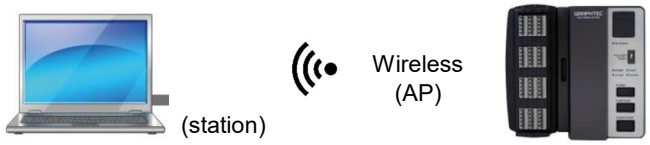


●Multiple devices connection



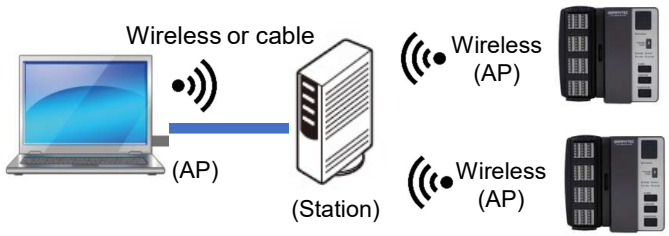
＜＜Wireless LAN Connection＞＞

●1 to 1 connection



●Multiple devices connection

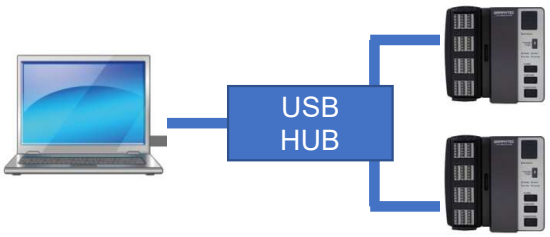
Enable to connect with Router by WPS



＜＜USB Connection＞＞

●1 to 1 connection

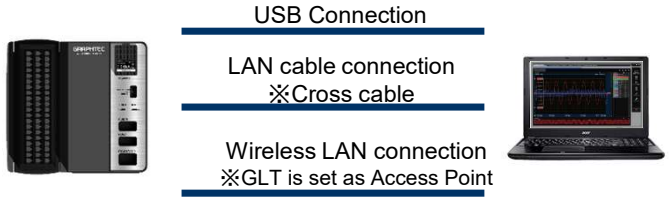
●Multiple devices connection



Example of Remote control and monitoring by PC

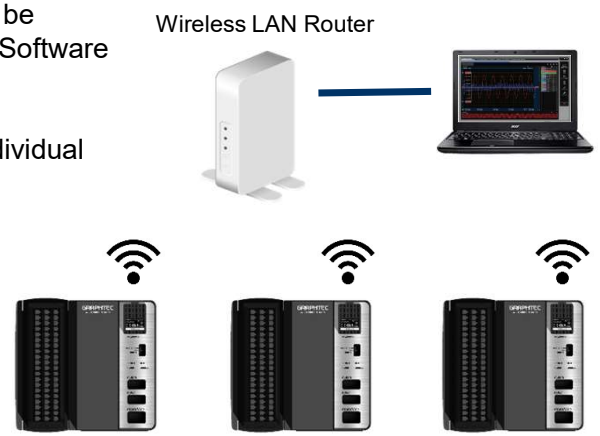
Network Connection 1
- USB cable connection
- LAN cable connection
- Wireless LAN connection (Access Point)

Control and monitoring by Software on PC



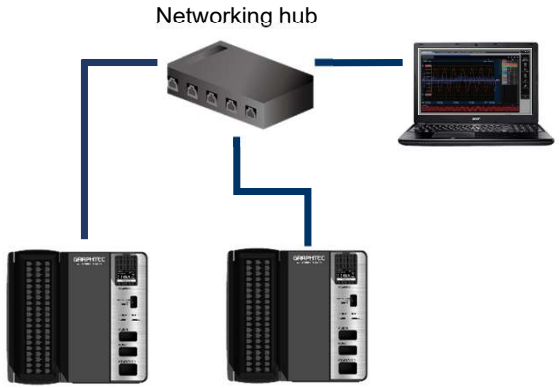
Network Connection 2

Multiple devices (Max. 20 units) can be remote monitored and controlled by Software (GL-connection).
※Setting GLT400 as station.
※Each GLT400 is recognized as individual device from the router.



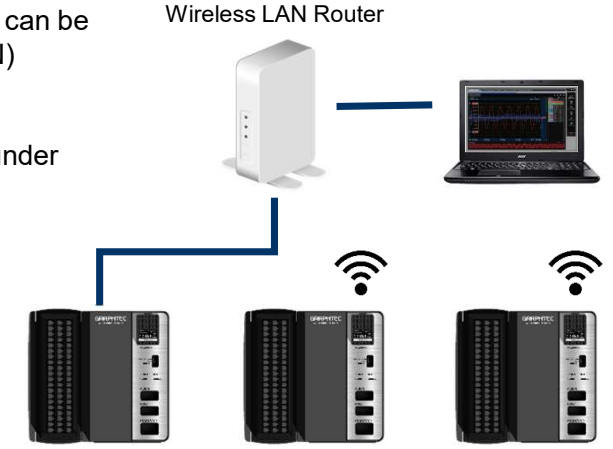
Network Connection 3

GLT400 can be connected with PC via networking hub.
※PC recognize each GLT400 as individual device.
※PC and GLT400 must be placed under same network environment.



Network Connection 4

The connection method of GLT400s can be mixed (LAN cable and Wireless LAN)
※PC recognize each GLT400 as individual device.
※PC and GLT400 must be placed under same network environment.

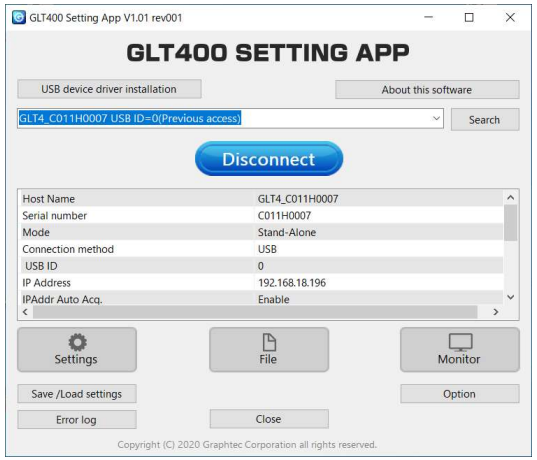


Multi-purpose Data Logger: Remote control and monitoring by PC

■ Standard Accessory for 2 types of PC software and web browser function

●Simple Operation S/W : GLT400 SETTING APP

・Main unit setting
・Transferring device data to PC
・Display recorded data
(Digital value)



＊GLT400 SETTING APP support to connect 1 device at the time.

Operating pattern on the setting menu is similar as device setting menu.

＜＜Arbitrary connection＞＞
Connect and disconnect the GLT400 while recording is in progress.

●Advanced Function S/W : GL Connection

・Main unit setting
・ Transferring device data to PC
・Display waveform graph and digital value
・Data replay
・File conversion
・etc.

Max 20 units of GLT400 and Max. 1000ch can be connected.

＜＜Continuous connection＞＞
GL-Connection has capability of setting, control, and displaying the recorded data. GLT400 can be disconnect while recording is in progress, but it only displays the data from the device being re-connected.

Multi-purpose Data Logger: Remote control and monitoring by PC

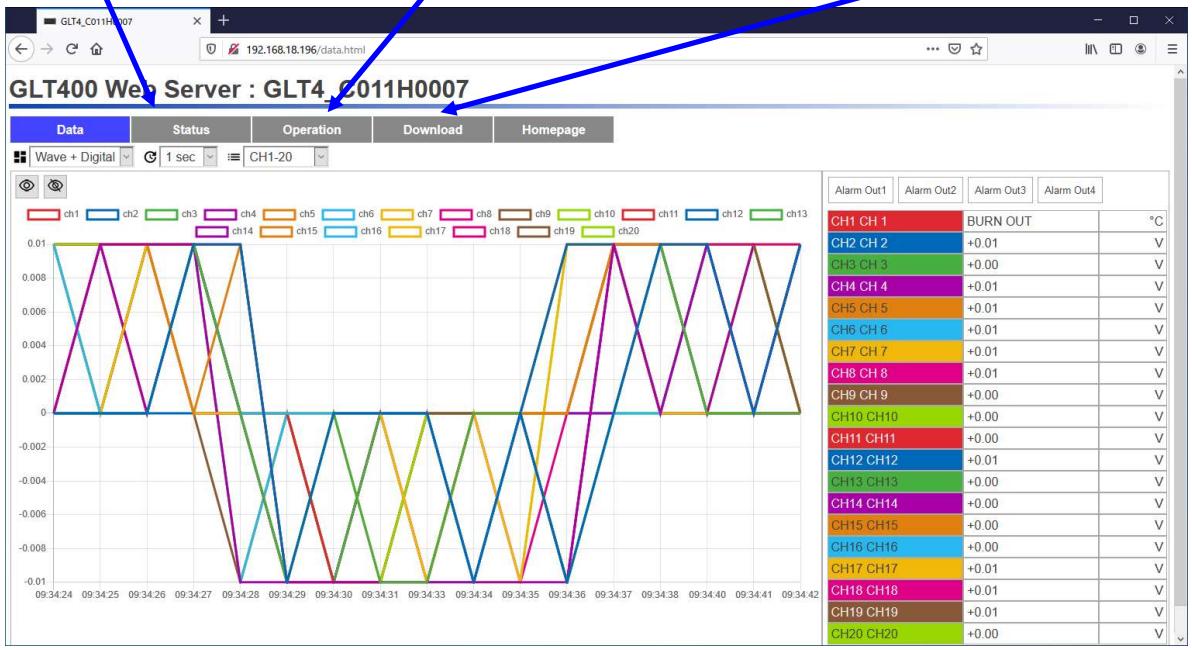
●WEB Browser

GLT400 can be controlled, monitored, and data transferred to PC via web browser.
Device setting needs to be done from software.

Display recording status

Simple setting such as Start/ Stop, Sampling interval and etc.

Downloading the data to PC



<<Supported browser>>
・Google Chrome(Recommended)
・Microsoft Edge
・Fire Fox

Not necessary to download and install the dedicated software.

<<Arbitrary connection>>
Connect and disconnect the GLT400 while recording is in progress.

Multi-purpose Data Logger: Remote control and monitoring by PC

■ Available functions on 2 software and web browser.

		GLT400 SETTING APP	GL-Connection	WEB browser
Device connection	Wire LAN	●	●	●
	Wireless LAN	●	●	●
	USB	●	●	×
Device setting		●	●	×*1
Device control（Start/Stop）		●	●	●
Display data	Digital value	●	●	●
	Waveform	×	●	●
	Other	×	●	×
Connect/ Disconnect during recording		●	×*2	●
Data transfer to PC		●	●	●
File conversion（CSV）		×	●	×

*1：Only sampling interval setting
*2：Connect/ disconnect during the recording , but after the reconnection, the data monitoring function is only available.

Multi-purpose Data Logger ： Remote terminal unit of GL840

■ GLT400 can be remote terminal unit of GL840

Max. 5 units of GLT400 can be connected as remote terminal unit of GL840（Max. 200ch (Incl. GL840 terminal) per GL840）

Remote terminal of GL840
Data being transferred to GL840

GLT400's data is display real time and saved on GL840

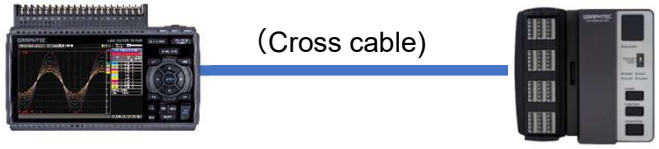
Connecting via Ethernet or Wireless LAN

GLT400 can be controlled, and setting can be changed by GL840. Captured data on GLT400 is being centralized on GL840.

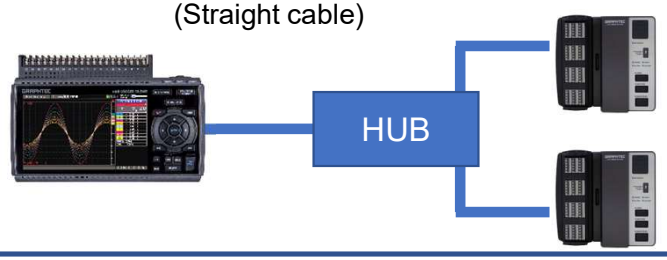
REMOTE

＜＜Ethernet Connection＞＞

●1 to 1 connection

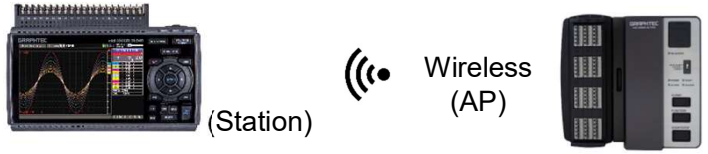


●Multiple devices connection



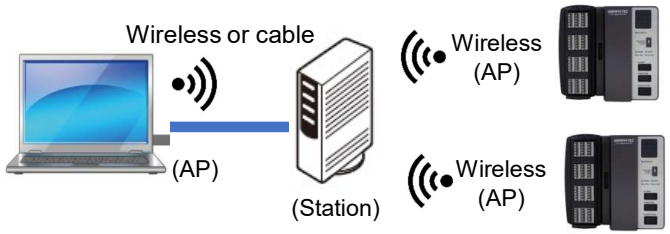
＜＜Wireless connection＞＞

●1 to 1 connection



●Multiple devices connection

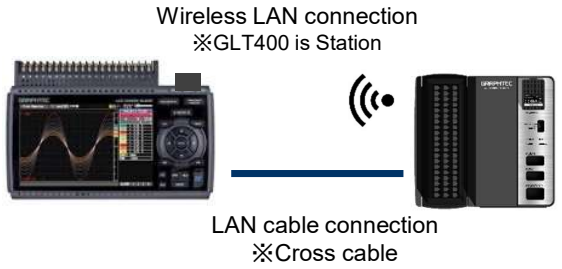
Enable to connect with Router by WPS



※GL840 can not be connected as station

Example of remote terminal unit of GL840

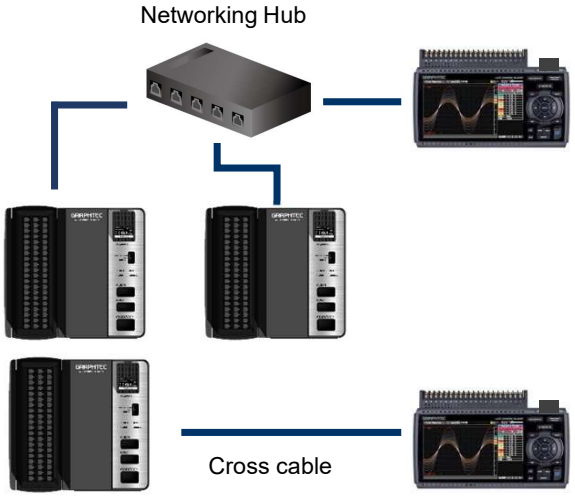
Network connection 1
- LAN cable connection
- Wireless LAN connection (Access Point)
- Controlling by GL840



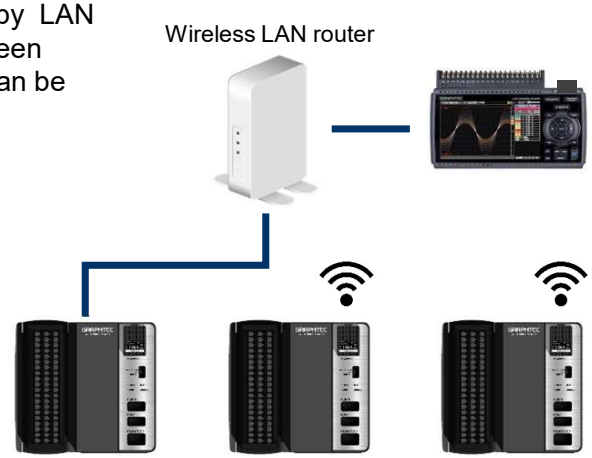
Network Connection 2
GL840 is Access Point、
GLT400 is station

※When GLT400 is connected as remote terminal of GL840, Logic/ Pulse on GLT400 is disable.

Network Connection 3
GLT400 and GL840 are connected via networking hub



Network Connection 4
GL840 and router must be connected by LAN cable. However, The connection between GLT400 and router is selectable and can be mixed (LAN cable and Wireless LAN)



Adaptable to a wide range of operating environment

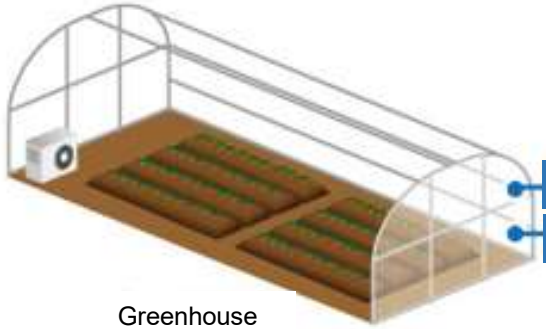
Achieving the wide operating temperature from -20 to 60℃. The driving the device by mobile battery (USB-PD).
Adaptable in outdoor applications.
（Not waterproof、enclosure is advisable for outdoor application）

Environmental monitoring

GLT400

Router

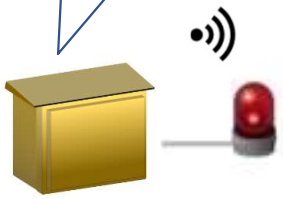
PC



Greenhouse

Temp.

Temp.



Alarm output

＜＜Caution＞＞

Below items are not complied with -20 to 60℃ operating environment specification

- AC adapter
  0 to 45℃
- Withstand high-voltage high-precision terminal
  0 to 45℃

Selectable terminal for different applications

■ Terminal Line-up

			Standard terminal (B-564)	Screwless terminal (B-564-SL)	Withstand voltage terminal (B-565)
				 NEW	
Number of analog channels			20ch/terminal		
Input terminal type			M3 screw type terminal	Screwless terminal	M3 screw type terminal
Measure range	Voltage		20mV～100V		
	Temp.	T/C	K・J・E・T・R・S・B・N・C WRe5-26)		
		RTD	Pt100・JPt100・Pt1000（IEC751） ※3 wire		
	Humidity		Humidity: using the humidity sensor (option B-530)		
Maximum input voltage			60Vp-pV(Channel/GND)		300Vp-p (Channel/GND)
Accuracy			±0.1% of F.S.		±(0.05% of F.S. +10μV)

※Terminals (B-564、B-564SL、B-565) can be mixed.
However, if you mix with B-565 with B-564 or B-564-SL,
the specification of B-565 will be equivalent as B-564 or B-564-SL.

Terminal Base Cover(B-588)
Compatible with all the terminals
※Except using with shunt resistor (B-551)


NEW

Channel Expandability(Min. 20ch to Max. 200ch)

■ The way of connection can be chosen

● Cable connection between main body and terminal

● Cable connection between main body and terminal / terminal and terminal.

● Direct connection (w/o cable)

Connection cable for extension terminal

50cm type: B-567-05
2m type: B-567-20

<<Configuration of direct connection >>

	20ch	40ch	60ch	80ch	100ch	120ch	140ch	160ch	180ch	200ch
GLT400 Body	1	1	1	1	1	1	1	1	1	1
Terminal base	1	2	3	4	5	6	7	8	9	10
Terminal	1	2	3	4	5	6	7	8	9	10

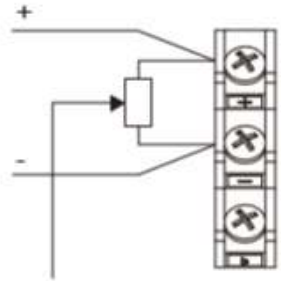
Other than voltage and temperature measurements

■4～20mA Current measurement

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

Shunt resistor250Ω(B-551)

※Not compatible with B-564-SL



Shunt resister

＜＜Converting Current→Voltage＞＞
V=IR
If 4mA→4mA＊250Ω=1V
If 20mA→20mA＊250Ω=5V

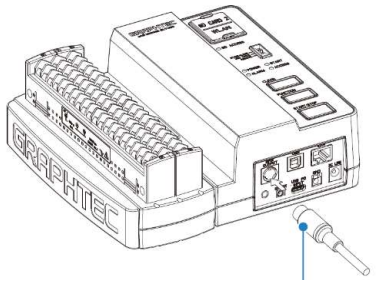
Converting voltage to other unit (Scaling settings diversify the measurement.

■Logic / Pulse signal measurement

The Input/output cable for GL (B-513: Option) enables 4 ch logic or pulse measurement.
※STANDALONE Mode Only

STAND ALONE

Input / Output cable
(B-513)



Input / Output cable
(B-513)

Logic：Measuring the 2 states of a binary values (0 or 1)
Pulse：Selectable (Revolution/ Counts/ Inst. Mode) per channel

Alarm output function

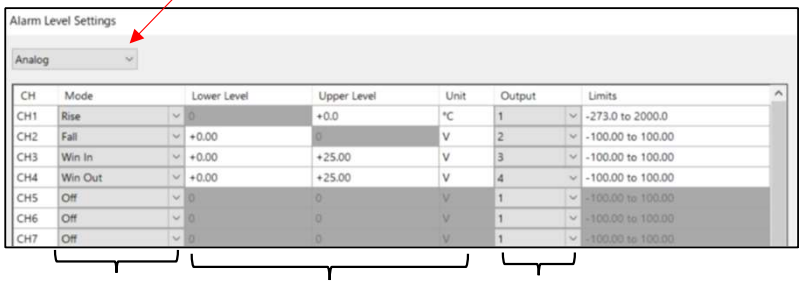
■ Alarm level and output port can be set for each channel

When alarm is “ON”, 3 ways to notify the alarm status. (Alarm Lamp/ Email notification/ Open connector output)

＜＜Alarm setting on GLT400 SETTING APP＞＞

Alarm signals can be placed using the four channel alarm output ports based on set conditions for each channel.

Select Analog/ Logic/ Pulse



↑H
↓L
Window In＊
Window Out＊
※Not selectable
In logic mode

Condition can be set by mode

Set alarm output port 1 to 4

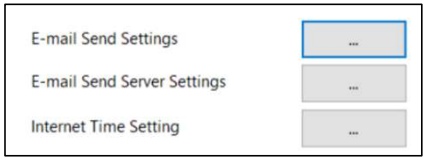
*When “Remote” mode is selected, only 1 alarm output port is available. .

Alarm ON

● Alarm Lamp on device

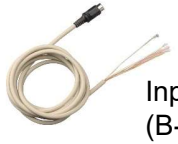
● Email Alarm Notification

Send the notification to designated email address registered on GLT400 (Setting on GLT400 SETTING APP)

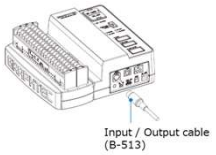


● Alarm Output

Output : 4 channels (“REMOTE” 1 channel only)
Output format : Open collector output
+5 V, 10 KΩ pull-up resistance



Input / Output cable (B-513)



Sampling interval and capturing time

■ Built-in 4GB Flash memory

Selectable from 2 types of file format
- Graphtec Binary Data(GBD)
- CSV Data which can be open by Excel

※ 1 File size is up to 2GB

SD Card Slot
Support SDHC. Up to 32 GB
※SD card cannot be used on the slot while the wireless LAN unit is used.

Built-in 4GB Flash memory

＜＜Number of channel and sampling interval＞＞

Sampling interval		10ms	20ms	50ms	100ms	200ms	500ms	1s	2s
Number of Channel		1	2	5	10	20	50	100	200
Measuring	Voltage	●	●	●	●	●	●	●	●
	Temp.	-	-	-	●	●	●	●	●

＜＜Sampling Interval and Capturing time (When all 20 analog channels are being used, File size of captured data is 2GB)＞＞

Sampling interval	10ms	50ms	100ms	200ms	500ms	1s	10s
GBD Format	31 days	77 days	95 days	108 days	270 days	Over 365	Over 365
CSV Format	3 days	11 days	16 days	21 days	54 days	109 days	Over 365

Useful functions

■FTP backup functions

Periodically backing up recording data to FTP server.

Backup Interval：1H・2H・6H・12H・24H・per file
When the upload is succeeded, the file can be deleted automatically from device memory.

Long term Data recording

FTP server

G-DRIVE

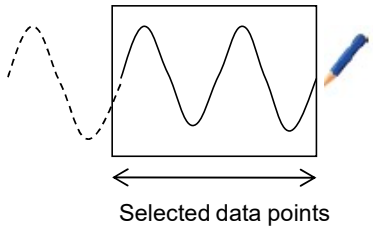
Third party cloud service

More possibilities
- IP Camera data
- Remote monitoring and control
- Centralizing recorded data

■ Ring capture / Relay capture function

● Ring capture function

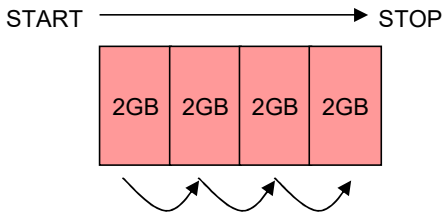
The old data is deleted, and most recent data is saved.
When stop the recording, selected data point is saved.



Using with stop trigger, only able to capture necessary data.

● Relay capture function

Data is continuously saved to multiple files up to 2GB without losing any data until capturing is stopped. The multiple files can be joined on GL-Connection.

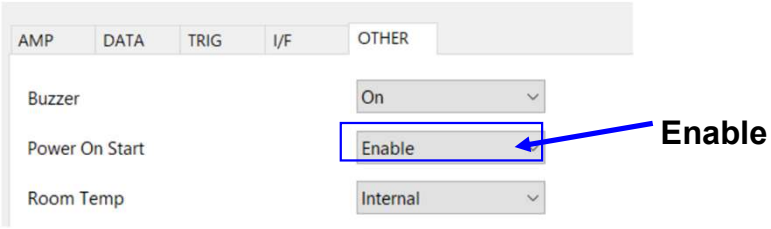


Suitable for long data recording

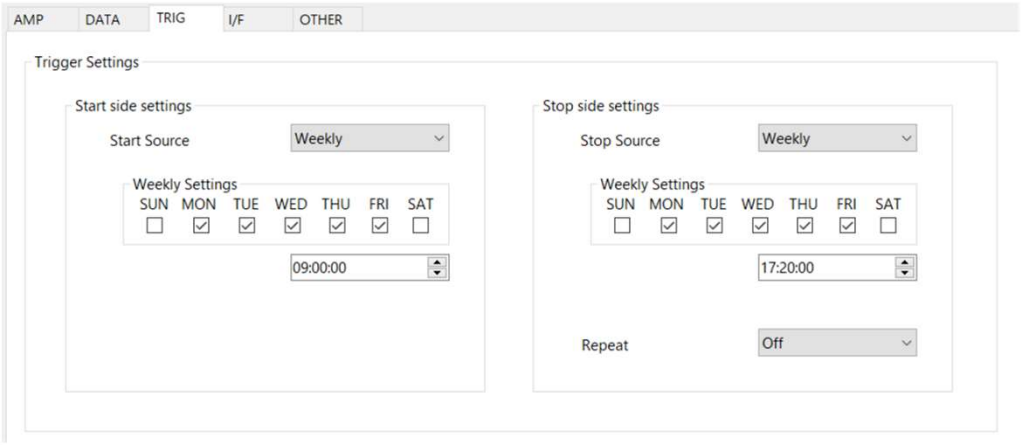
Useful functions

■ Power On Start & Start / Stop Trigger

● Power On Start
Initiates measurement as soon as the GLT400 is turned on.

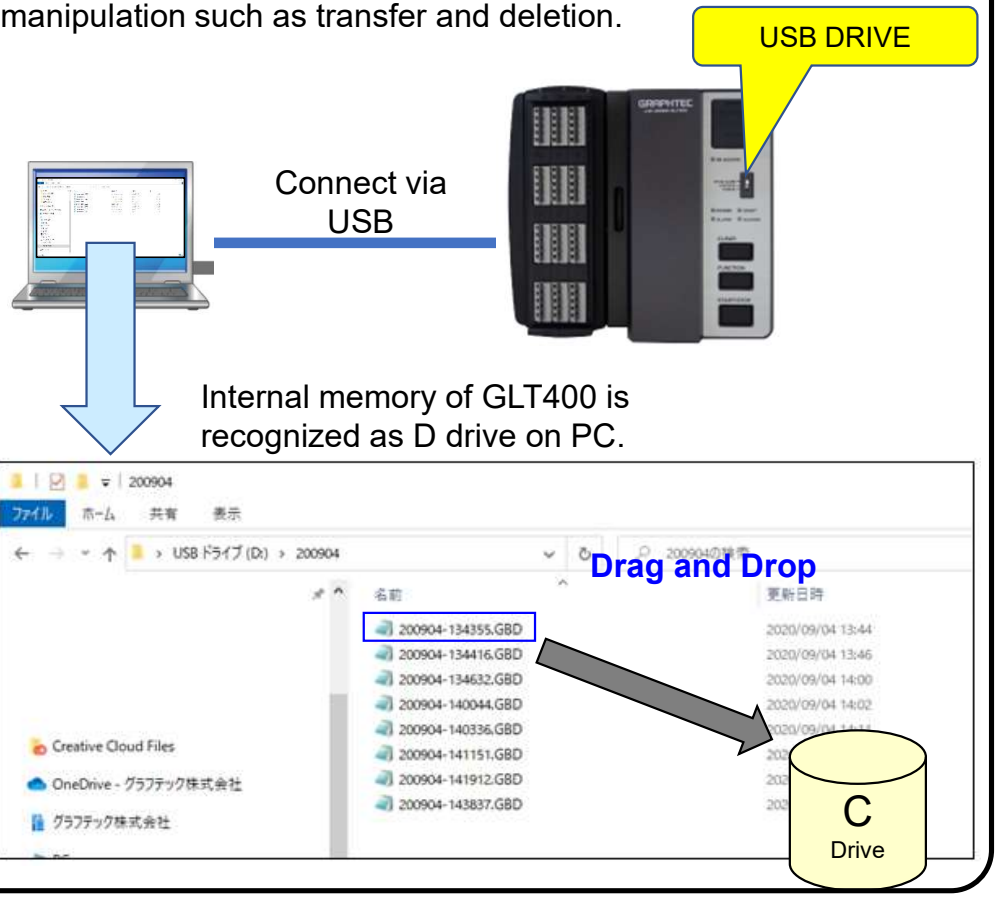


● Start / Stop Trigger
If Start / Stop Trigger is set on “Weekly”, the start / stop capturing data at the specified time on days of week.



■ USB Drive Mode

Internal memory is recognized as a removal disk, this mode facilitates file manipulation such as transfer and deletion.



Selectable power source for different application

■ AC100 to 240V

Powered from AC adapter (Standard accessory
※Not complied with -20 to 60℃ operating environment specification

Complied with -20 to 60℃ operating environments
Toki Trading Ltd Model：IPU25A-108

■ DC12V・24V

Powered from DC Drive Cable
（Suitable for embedded and mounted purpose）

DC Drive Cable

■ USB PD

USB Type C connector
The driving the device by mobile battery (Supported USB-PD).

USB-PD Mobile Battery
Manufacture: Anker
Power Core+ 26800
Capacity：26800mAh
GLT400 Power consumption：0.7A(12V時)
Driving Hour（Appx.）：38 hours

Comparison Chart (Graphtec Product)

		GLT400	GL840
Number of terminal units (channel)		Max. 10 units (200ch)	Max. 10 units (200ch)
Type of terminal	Standard terminal	○	○
	Screwless terminal	○	○
	Withstand Terminal	○	○
Logic / Pulse channel number		4ch	4ch
Port for GS Sensor		×	○
Master / Remote connection		Remote terminal unit of GL840	GLT400・GL100(WLAN only) as remote terminal unit
Max. sampling speed		10ms/ch	10ms/ch
Memory	Internal	Appx. 4GB	Appx. 4GB
	External	SD Card	SD Card
PC IF		Ethernet, WLAN(OP)・USB	Ethernet, WLAN(OP)・USB
MODBUS TCP Protocol		○	×
Wireless LAN WPS Connection		○	×
PC Software		GLT400 Setting APP・GL-Connection	GL100_240_840-APS・GL-Connection
Display		×	○(7 inch TFT Color)
Power Source		AC100・DC8.5～24V・USB PD	AC100・Battery (OP)DC8.5～24V
Operating Environment		-20～60℃ (except B-565、AC adapter)	0℃～45℃
Dimension / weight	Dimension	187.5×183×65.5mm (B-564 is attached)	240W × 158H × 52.5 mm
	Weight	1090g (B-565 is attached)	1010g

Options and accessories

Item	Model number	Description
Standard terminal	B-564	20ch input terminal, multi-input type
Screwless terminal	B-564SL	20ch screwless input terminal, multi-input type
Withstand high-voltage high-precision terminal	B-565	20ch input terminal, withstand-high-voltage type
Base unit for input terminal	B-566	Base unit for input terminal
Connection for extension terminal	B-567-05	Cable to connect GL840 and B-566, 50 cm long
	B-567-20	Cable to connect GL840 and B-566, 2 m long
Wireless LAN unit	B-568	WLAN adapter, IEEE802.11b/g/n
Bracket for DIN rail	B-540	Bracket for DIN rail (GL840 main body)
Terminal Cover	B-588	
Input/output cable for GL series	B-513	2m long (no clip on end of cable)
DC drive cable	B-514	2m long (no clip on end of cable
Humidity sensor	B-530	With 3 m long signal cable (with power plug)

Q&A

Q1. Is GLT400 Modbus/TCP Master or MODBUS/TCP Slave ?
A1. Master. PLC send the start/ stop/ data transfer command to GLT400, and GLT400 will response to PLC.

Q2. If GLT400 is connected as remote terminal unit of GL840, can it be control and monitored by GL240_GL840-APS?
A2. YES

Q3. If AC adapter and USB-PD are connected, is the power switches to USB PD when the AC power shut down? Additionally, if mobile battery runs out of power, the file is being closed automatically??
A3. Automatically switches to AC to USB PD. However, if mobile battery runs out of power, the file is not being closed.
(Battery capacity can not be monitored by GLT400)

Q4. Is Grouping function on APS and virtual synchronizing function available on GL-Connection?
A4. YES. Window will be divided by device. Additionally, window is format can be customizable on GL-Connection.

Q5. Is GLT400 able to control via PC (S/W) while GLT400 is being connected with PLC?
A5. GLT400 can be controlled both PLC and PC at the same time. However, it may be a bit confusing if 2 controllers sending same or different commands, so we recommend
PLC => Start and Stop signal
PC => Monitoring purpose (Minimal control signals)

Q6: When we set GL840 (Master) and GLT400 (Slave), is GL840 can be operatable without terminal unit (B-564)?
A6: Yes. It is possible, however if you operate GL840 without terminal, GL840 will automatically drive with the dummy terminal. When you used w/o terminal, please switch off all the channels on dummy terminal. Please also cover the terminal connector socket avoiding the dust.

Q 7: When GL840 (Master) and multiple GLT400s (Slaves) are connected, each GLT400 can be control individually??
Q: No.

Comparison Chart

			Graphtec	Hioki			
			GLT400	LR8450-01(WLAN)+U8551		LR8450-01(WLAN)+LR8531	
Number of terminal units (channel)			Max. 10 units (Max. 200ch)	Connection module 4units+WLAN module 7 units (Max. 330ch)	○	Connection module 4 units + WLAN module 7 units (Max. 330ch)	○
Logic / Pulse channel number			4ch	8ch	○	8ch	○
Input type	Voltage		20mV～100V	10mV～100V	○	10mV～100V	○
	Temp.	T/C	K, J, E, T, R, S, B, N, C	K, J, E, T, N, R, B, C	=	K, J, E, T, N, R, B, C	=
		RTD	Pt100,Pt1000,JPt100	Pt100,Pt1000,JPt100	=	Pt100,Pt1000,JPt100	=
	Humidity		Dedicated sensor	Dedicated sensor	=	Dedicated sensor	=
	Resistance		N/A	Yes	○	Yes	○
	Logic/ Pulse		Pulse : Inst. /Revolution/Count Logic : 1 or 0	Pulse : Revolution/Count Logic : 1 or 0	×	Pulse : Revolution/Count Logic : 1 or 0	×
Sampling interval			10ms/ch	10ms/ユニット(U8551 : 15ch)	○	10ms(LR8531 : 15ch)	○
Memory	Internal		Appx. 4GB	N/A	×	N/A	×
	External		SD Card	SD Card/USB Memory	○	SD Card/USB Memory	○
PC I/F			Ethernet・WLAN(OP)・USB, Modbus TCP	Ethernet・WLAN・USB	=	Ethernet・WLAN・USB	=
Power Source			AC100・DC8.5～24V・USB PD	AC100・Battery（OP)・DC10～30V	×	AC100・Battery（OP)・DC10～30V	×
Operating temperature			-20～60℃(Except B-565、AC Adapter)	-10℃～50℃	×	-20℃～55℃（LR8531 Environment)	×
Dimension / Weight	Dimension		187.5×183×65.5mm (B-564 attached)	272W × 198H × 63D mm (2 units attached)	×	Main unit : 272W × 145H × 43D mm Unit : appx. 154W×106H×57D mm	×
	Weight		1090g(B-564 attached)	1108g（excl. unit)	=	Main body : 1108g・unit : 386g	=