



DATA PLATFORM GL7000

Modular Data Acquisition PLATFORM

General Purpose Data Acquisition System

Next Generation Data Acquisition Unit with Touch Panel Control

On-Demand Signal Acquisition

Embedded Monitoring and Datalogging Solution



Attach up to 10 input/output modules in a mixed condition environment



Corresponds to various measurement types (physical, mechanical, and electrical)

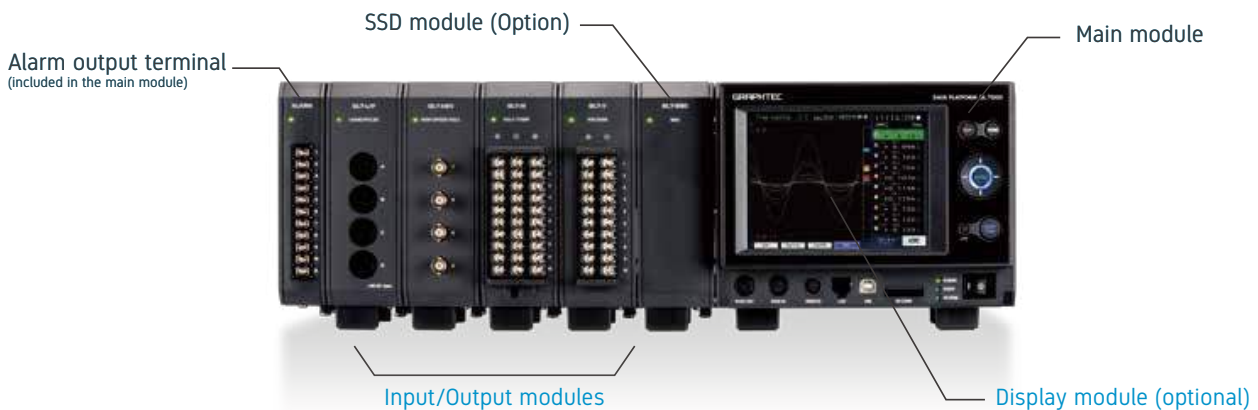


Supports a variety of storage media including a SSD module with a capacity of 128GB

New Generation Data Acquisition Platform - GL7000 - Display module allows a stand-alone operation or an embedded systems environment with touch-panel control

Input/output module has capacity to attach up to 10 units with mixed signals (temp, high voltage, high speed, strain, vibration, etc.)

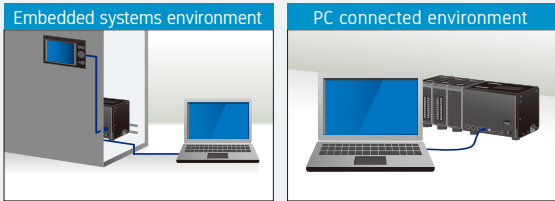
Allows up to 112 channels in one main unit by attaching up to 10 units of the input/output modules.*1
Detachable display module enables the GL7000 to be used in a stand-alone platform or to be embedded into the acquisition system.
Control and monitoring via the PC or display module may be done independently or in conjunction with one another.



MODULE OPTIONS (8 TOTAL) - Compatible with various electrical, mechanical, and physical measurement needs.

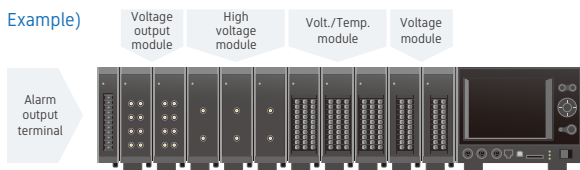
Voltage Module GL7-V	Volt./Temp. Module GL7-M	High-speed Voltage Module GL7-HSV	High Voltage Module GL7-HV
DC Strain Module GL7-DCB	Charge Module GL7-CHA	Voltage Output Module GL7-DCO	Logic/Pulse Module GL7-L/P

LAN straight cable (CAT5 or higher class, length up to 10m) allows an extended display option for:

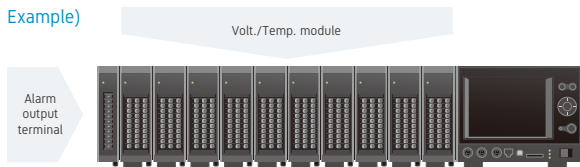


Maintains the maximum sampling speed even when the number of input/output modules are increased *1

- Each of the 10 units can include a different input/output module *2



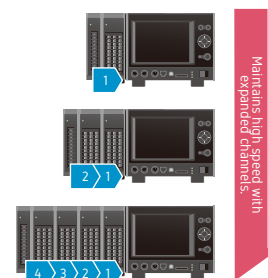
- Up to 10 input/output modules of the same kind can be attached to one main unit *2



Up to 10 input/output modules can be attached to one main unit *2

Example)

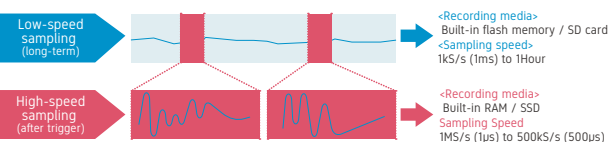
- Using Volt/Temp Module
- 10 ch being used, Max. sampling speed 100S/s (10ms interval)
- 20 ch being used, Max. sampling speed 100S/s (10ms interval)
- 40 ch being used, Max. sampling speed 100S/s (10ms interval)



*1. Maximum sampling speed will depend on the data destination.
(RAM and optional SSD module is the fastest, Flash memory, SD Card will be slower.)
*2. If different types of modules are attached, the effective sampling speed of the system is up to the fastest sampling speed among the installed modules.
When the maximum sampling speed of the module is slower than the maximum sampling speed of the fastest amplifier, signal will be sampled with maximum sampling speed of the module. The same data is saved with the system sampling speed until new data is captured on the slower units.

Dual-Sampling Feature (Firmware version 2.0 or later)

Dual sampling speed can now be configured at the same time. While recording long intervals on the slow sampling speed, trigger set can start recording dynamic transient signals at a fast sampling speed.



The display unit incorporates a touch panel system to provide convenient on-site operation

The display unit incorporates a touch panel system to provide convenient on-site operation

Touch the icon, move to the next setting menu screen.

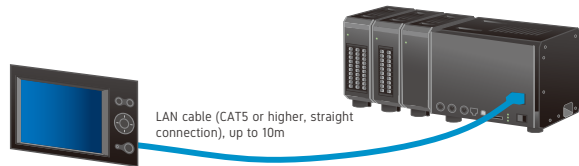


The display waveform is able to expand or shrink.



Function menu icons (Firmware version 2.0 or later)

The display unit can be separated from the main unit with a LAN cable



Four Different Display Methods

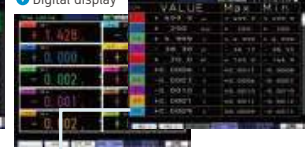
Each of the 10 units can include a different input/output module *2

Y-T display



Stored recording can be displayed in double-screen mode even while the current recording is on-going.
 * Available when the destination of data file is the Built-in flash memory / SD memory card / SSD unit (optional).
 * Sampling interval should be the 100ms or longer.

Digital display



Both digital and statistical values can be displayed at the same time.
 * Select two functions from the Ave. / Max. / Min. / Peak value and Off.
 * Sampling interval should be 100ms or longer.

XY display



FFT display



Supports multiple types of storage, 128GB SSD is available as an option

1 Built-in RAM

RAM is built into each of the amplifier modules to allow savings of up to 2 million samples. Increasing the number of channels does not decrease the data capture duration.

3 SD memory card

SD card slot (supports SDHC, up to 32GB) is standard on the main module. Captured data can be saved directly on the SD card when sampling speed is slower than 1ms (sampling speed: 1k Samples/s). Supports hot-swap where SD memory card can be replaced during recording without any data loss.* The captured data can be transferred easily to the PC during offline condition.

* The hot-swap is possible when the sampling is slower than 100ms.

2 Built-in Flash memory

4GB of Flash memory is built into the main module. Captured data can be saved directly to the flash memory when sampling speed is less than 1ms (1k Samples/s). Non-volatile memory (saved data is retained even if the power is turned off).

* The storage capacity might differ by its production date.

4 SSD module (128GB)

Option



SSD module needs to be set next to the main module.

Allows multiple recording of large amount of data to be saved when optional SSD module is used. It has a high vibration resistance and the captured data can be saved directly to the SSD when sampling is not faster than 1µs.*

Advantage of SSD • Retain the data even when power is off • High vibration resistance • High-speed access

* The number of modules are limited. * The storage capacity might differ by its production date.

Maximum sampling speed and the data capturing time *1

Input Module	Storage Device	Number of units, Max. sampling speed (interval)			Capturing time when single module is attached (when 10 modules are attached)				
		Attached to 1 or 2 modules	Attached to 3 or 4 modules	Attached to 5 to 10 modules	1MS/s (1µs)	100KS/s (10µs)	1KS/s (1ms)	100S/s (10ms)	1S/s (1s)
High-speed Voltage Module	Built-in RAM (2Msamples)		1MS/s (1µs)		2sec. (2sec.)	20sec. (20sec.)	33min. (33min.)	5hrs. (5hrs.)	23days (23days)
	Built-in Flash memory (4GB)		1kS/s (1ms)		N/A	N/A	72hrs. (10hrs.)	32days (4days)	3269days (440days)
	SD memory card (32GB)*2		1kS/s (1ms)		N/A	N/A	83hrs. (11hrs.)	34days (4days)	3495days (470days)
	SSD (128GB)*2	1MS/s (1µs)	500KS/s (2µs)	200KS/s (5µs)	4min. (N/A)	44min. (6min.)			
High Voltage Module	Built-in RAM (2Msamples)		1MS/s (1µs)		2sec. (2sec.)	20sec. (20sec.)	33min. (33min.)	5hrs. (5hrs.)	23days (23days)
	Built-in Flash memory (4GB)		1kS/s (1ms)		N/A	N/A	109hrs. (17hrs.)	45days (7days)	4577days (715days)
	SD memory card (32GB)*2		1kS/s (1ms)		N/A	N/A	117hrs. (18hrs.)	48days (7days)	4893days (764days)
	SSD (128GB)*2	1MS/s (1µs)	500KS/s (2µs)	200KS/s (5µs)	4min. (N/A)	44min. (11min.)			
DCstrain*3 & Charge Module	Built-in RAM (2Msamples)		100KS/s (10µs)		N/A	20sec. (20sec.)	33min. (33min.)	5hrs. (5hrs.)	23days (23days)
	Built-in Flash memory (4GB)		1kS/s (1ms)		N/A	N/A	72hrs. (13hrs.)	32days (5days)	3269days (544days)
	SD memory card (32GB)*2		1kS/s (1ms)		N/A	N/A	83hrs. (13hrs.)	34days (5days)	3495days (582days)
	SSD (128GB)*2	100KS/s (10µs)			44min. (6min.)				
Voltage Module	Built-in RAM (2M samples)		1kS/s (1ms)		N/A	N/A	33min. (33min.)	5hrs. (5hrs.)	23days (23days)
	Built-in Flash memory (4GB)		1kS/s (1ms)		N/A	N/A	42hrs. (4hrs.)	17days (2days)	1760days (204days)
	SD memory card (32GB)*2		1kS/s (1ms)		N/A	N/A	45hrs. (5hrs.)	18days (2days)	1882days (218days)
	SSD (128GB)*2		1kS/s (1ms)		N/A	N/A	45hrs. (5hrs.)	18days (2days)	1882days (218days)
Volt./Temp. Module	Built-in RAM (2Msamples)		100S/s (10ms)		N/A	N/A	5hrs. (5hrs.)	23days (23days)	
	Built-in Flash memory (4GB)		100S/s (10ms)		N/A	N/A	17days (2days)	1760days (204days)	
	SD memory card (32GB)*2		100S/s (10ms)		N/A	N/A	18days (2days)	1882days (218days)	
	SSD (128GB)*2		100S/s (10ms)		N/A	N/A	18days (2days)	1882days (218days)	

*1 Capturing time values are approximately. Data is saved as GBD format files. When data is saved in CSV format, maximum sampling speed will be 10ms regardless of the captured destination and module type. Value of the capturing time is also different from above. (Data cannot be saved to built-in RAM using the CSV format.)
 *2 The file size of the captured data is limited up to 4GB on firmware version 2.0 or later, 2GB on firmware version 1.6 or before.
 *3 Reference recording time is for up to 8 modules. (max GL7-DCB and GL7-CHA modules is 8.)

Useful functions for data saving and replay

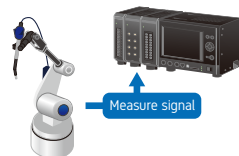
- SD memory card exchange
- Ring capture
- Relay capture
- Data search
- Movement by cursor
- Statistical calculation with cursor

The SD card can be replaced during recording when the sampling interval is 100ms or slower. When data capturing stops, the most recent data is stored in the memory. Creates data file up to 4GB continuously without losing any recording. (Firmware version 2.0 or later : up to 4GB, Firmware version 1.6 or before : 2GB)
 *In firmware version 2.0 or later, data capacity or capturing time can be set flexibly by users. Specific value (measured value, alarm point) of a particular channel in the recorded data can be searched and found automatically. The cursor can be moved automatically to a specified time in the recorded data. The statistical calculation (average, max, min, P-P, effective value) can be determined in between the recorded data specified by the cursor.

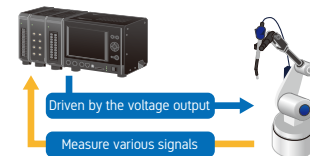
Supports measurement and simulation testing using the voltage output module (GL7-DCO)

Allows a simulation testing by outputting the measured data from signals recorded from various input modules and outputs the data through the voltage output module (GL7-DCO).

1 Captures the abnormal signal



2 Outputs the saved data for driving equipment, and the signal of various points are measured simultaneously



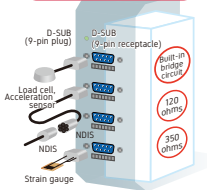
* Signals that are being captured may not be output at the same time. The output current is max 10mA for each channel. Total output current of the unit is 40mA. If the target object needs to be driven by external power, than a power amplifier may be needed.

DC Strain Module GL7-DCB



Setting sensor calibration value is unnecessary!

Supports TEDS



Main features

- Easily measure strain gauges using built-in bridge circuit for both 120 and 350 ohm gauges
- Supports excitation power for bridge circuit in constant voltage or current
- Supports TEDS sensors
- Supports a low-pass and anti-aliasing filter
- Enable high-precision measurement in remote sensing and shunt calibration function

Strain Voltage Res. 4ch/unit	Strain gauge TEDS sensor	Max. 100kS/s (10µs)
------------------------------	--------------------------	---------------------

Supported sensor

- Strain gauge : 1 gauge in 2-wire, 3-wire, or 4-wire
 2 gauges in 3-wire, 4-wire, or 5-wire
 4 gauges in 4-wire, or 6-wire
- Strain type sensor : 4-wire or 6-wire

Connector for input

Standard accessory

D-SUB type connector (standard accessory : 4pcs)



Option

Screw terminal adapter (B-560A)



* It can be used without connector cover by using included terminal hold bracket. The terminal holding bracket can be purchased for replacement as option B-560AP.

Standard accessory

Input cable with NDIS type connector (B-561)



Option

Extension cable for B-560 / B-560A (B-560-05)

Compensations for High-precision measurement

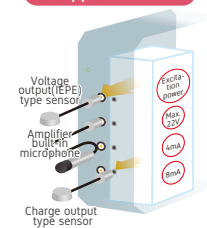
- Remote Sense : Eliminates the influence from the lead wire resistance
- Shunt calibration : Gain compensation of strain measurement

Charge Module GL7-CHA



Setting sensor calibration value is unnecessary!

Supports TEDS



Main features

- Supports charge and voltage output type sensors
- Now compatible with microphones (Firmware version 2.0 or later)
- Supports TEDS sensors
- Wide variety of filter functions allows high-precision measurements
- Support RMS (effective value) measurement

Charge Voltage 4ch/unit	Charge IEPE sensor	Max. 100kS/s (10µs)
-------------------------	--------------------	---------------------

Sensors and input connector type

There are various types of the charge or IEPE type sensors which can be measured by setting the sensor sensitivity and an engineering scaling function.

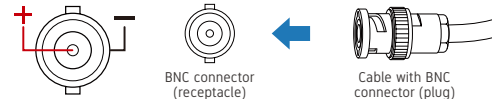
Charge output type sensor

Supported acceleration sensor : 0.01pC/(m/s²) to 999.9pC/(m/s²)



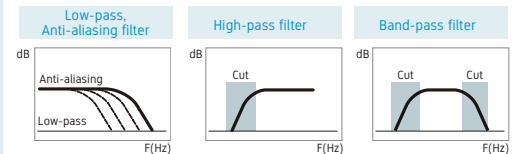
Voltage output (IEPE) type sensor

Supported acceleration sensor : 0.01mV/(m/s²) to 999.9mV/(m/s²)
 Supported microphone sensor : 0.2mV/Pa to 100mV/Pa



High-precision measurement using various filters

High-precision signal is able to be captured by the high-pass, low-pass, and anti-aliasing filter.



Voltage Output Module GL7-DCO



Main features

- Recorded measurement data can be output as an analog voltage, and reproduce the measured anomalies and recorded data (Temperature, humidity, logic/pulse data is excluded.)
- The reference signal for the test created by the GL-Wave Editor (EXCEL macro) can be output into an analog voltage (Signal: Sine wave, pulse wave (any duty ratio), ramp, triangle wave, simple arbitrary waveform, DC.)
- Output voltage: Max. 10V (Output current: Max ±10mA/ch or ±40mA/unit.)

Output voltage 8ch/unit	Max. 100kS/s (10µs)	Captured data Arbitrary waveform
-------------------------	---------------------	----------------------------------

Output terminal and conversion cable

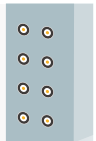
Option

Output cable with BNC connector (B-562)



Output terminal :

SMA (Subminiature version A) connector



Method of analog voltage output

- * GL-Connection and GL-Wave Editor software are standard accessories.
- * GBD is an abbreviation for Graphtec Binary Data.

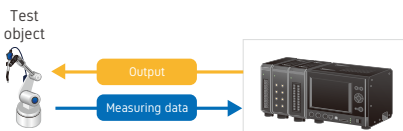
Three functions 1 Outputs the stored measuring data 2 Outputs the generated signal 3 Outputs the edited measuring data

Case 1

Outputs a signal without a PC

* The GL7000 cannot generate arbitrary data by itself.

Data : Saved measurement data
 Waveform : Sine, pulse, ramp, triangle, or DC

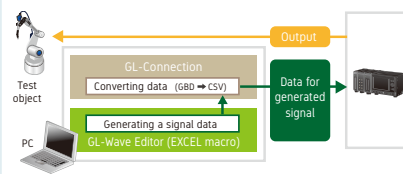


* Data that is currently recording cannot be output to the DCO module.

Case 2

Outputs a signal using the module and the PC software

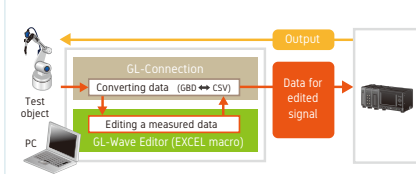
Data : Arbitrary data generated by the software
 Waveform : Sine, pulse, ramp, triangle, or DC



Case 3

Outputs an edited signal using the module and the PC software

Data : Edited measuring data
 Waveform : Sine, pulse, ramp, triangle, or DC



High Voltage Module GL7-HV

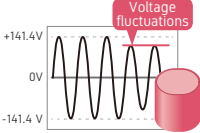
Main features

- High input voltage (Maximum: 1000V)
- Input coupling of DC and AC
- Real-time RMS measurement

Voltage 2ch/unit	Max. 1000V input	Max. 1MS/s (1µs)
---------------------	------------------------	------------------------

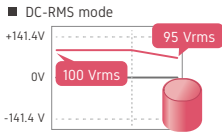
Measuring in RMS (effective value)

Normal mode



Volume of data to be recorded becomes large because the sampling speed needs to be fast to recognize the waveform.

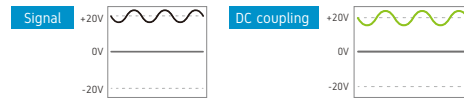
RMS measurement



Volume of data recorded becomes small because the sampling speed does not need to be as fast recording the RMS value.

DC- or AC-coupling

By using the DC and AC coupling feature, the voltage signal of a small signal superimposed on the input signals or the absolute voltage value can be recorded.

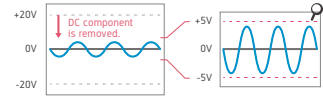


Small AC component is superimposed on the DC component.

Measures the accumulated value of the DC and AC components. (Absolute voltage of signal.)

AC coupling

It is possible to remove the superimposed DC components from the coupled AC signal allowing only the small AC components to be measured.



High Speed Voltage Module GL7-HSV

Main features

- All isolated input channels (4ch/unit)
- 1MS/s high speed simultaneous sampling
- Maximum input voltage 100V
- Supports low-pass filter

High speed voltage 4ch/unit	Max. 1MS/s (1µs)	Simultaneous sampling Isolated
--------------------------------	------------------------	-----------------------------------



Voltage Module GL7-V

Main features

- All isolated input channels (10ch/unit)
- 1KS/s Simultaneous sampling
- Maximum input voltage 100V
- Supports low-pass filter

Voltage 10ch/unit	Max. 1KS/s (1ms)	Simultaneous sampling Isolated
----------------------	------------------------	-----------------------------------



Voltage/Temperature Module GL7-M

Main features

- All isolated input channels (10ch/unit)
- Supports multiple input types
(4-20mA current loop using 250 ohms shunt)
- Voltage : max. 50V
- Temperature : Thermocouple and RTD
- Humidity : optional sensor (B-530)

Voltage /Temp. 10ch/unit	Max. 100S/s (10ms)
-----------------------------	--------------------------



Supports one humidity sensor per module (B-530). Additional humidity sensors require an external power supply for the sensors.

Logic/Pulse Module GL7-L/P

Main features

- Switching mode between logic or pulse 16ch/unit
- Logic mode: 1MS/s sampling, Pulse mode: 10KS/s sampling
- Available dedicated cables

Logic /Pulse 16ch/unit	In Logic, Max. 1MS/s (1µs)	In Pulse, Max. 10KS/s (100µs)
---------------------------	----------------------------------	-------------------------------------

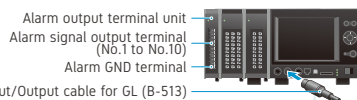


Attachable number of modules: up to 7 modules using Logic mode, up to 2 modules using Pulse mode. In the Pulse mode, there is a limitation of the sampling speed by the number of channels used.

Reliable measurement with useful functions

External I / O (Input/Output) and Alarm output

Output module is used for triggering, external sampling, start/stop, and auto-balance for input and output using the Input/Output cable for GL (B-513 optional). The signals related to the status of alarms are output from the terminal on the alarm output module.



Alarm output signal specifications

- Open collector output (pull-up resistance 10KΩ) < Rating of the output element >
- Max. voltage: 50V
- Max. current: 2.0 A
- Max. dissipation: 0.6W

- Input**
- Start/Stop control (1ch)
 - External trigger (1ch)
 - External sampling (1ch)
 - Executing auto balance (1ch)
- Output**
- Trigger status (1ch)

WEB and FTP server for remote control and data transfer / Direct USB connection to the main unit

WEB server Web browser function allows remote control and remote monitoring of waveform analysis.

FTP server Data can be transferred between the server and GL7000.

USB drive mode The USB drive mode function enables data to be transferred to the PC from the main module built-in flash memory, SD card memory, or the SSD by drag & drop feature. You can then easily delete the files from the file explorer.

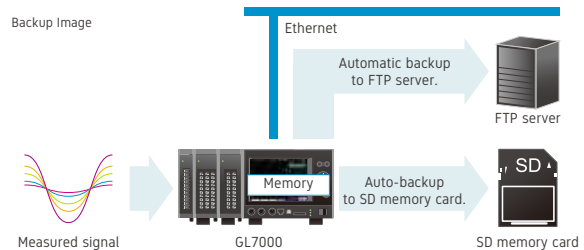
* While using the FTP server or the USB drive mode, data files that are being recorded cannot be transferred to the PC.

- WEB, FTP server function
- USB drive mode



Backup settings

The GL7000 has a function that periodically backs up recording data (refer to the chart below). Here, the user can set the conditions for data backup.



Destination of data	Backup destination			Backup intervals	Off, 1, 2, 6, 12, 24 hour(s)
	SD card	SSD	FTP		
Built-in flash memory	Yes	Yes	Yes	Backup destination	SD memory card, SSD, FTP
SD memory card	No	Yes	Yes		
SSD	Yes	No	Yes	* You can not specify the same location as the backup destination and recording destination. * When the recording format is "CSV", the backup function is not available. * When Ring recording is set to on, the backup function is not available.	

NTP client function

The clock on the GL7000 is periodically synchronized with the NTP server.

High performance and useful software GL-Connection It is able to display in the format that cannot be displayed in the GL7000

Recording safety measures include backing up the data on to the PC

Application software allows a real time saving of the data while the data is being captured on to the memory of the GL7000.



Built-in memory

Storage on GL7000 Transferred data to the PC

Built-in RAM	Captured data is transferred and saved to the PC after the completion of the measurement. During the measurement, free-running mode allows the display of the real time data but not the recording. (Real-time recording is not available using the built-in RAM as the recording destination.)
Built-in flash memory /SD memory card	Captured data is stored to the media and also transferred to the PC simultaneously. Max sampling speed: 1ms/unit when it is saved in the GBD format, 1ms/unit when it is in the CSV format.
SSD	Captured data is transferred and saved to the PC after the completion of the measurement. During the measurement, free-running mode allows the display of the real time data but not the recording. (Real-time recording is not available using the built-in RAM as the recording destination.)

* Real time recording on the PC can be saved as a CSV file while the data is saved as a GBD file on the main GL7000. Maximum sampling speed for this feature is 1ms.

Customized screens for Data Acquisition Professionals

Various control and setting screens for simplified operation



- ◆ Setup screen
It is easily recognize the unit to be connected by graphical image on the display.
- ◆ Setting menu screen
Setting menu on the GL Connection software is similar to the setup screen on the GL7000.

Data analysis with Oscospe/Oscospe2 (ONO SOKKI)
※ GL7000 GBD data can be imported directly to Oscospe.

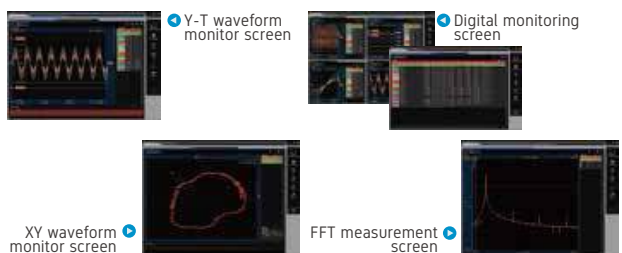


◆ GL-Wave Editor (Excel macro)

- ◆ Setting menu for the voltage output module
Setup for the output function using the GL7-DCO module is set on the GL-Wave Editor (EXCEL macro) with customized data platform for specified measurement.

Display options

Allows YT waveform, XY waveform, digital monitoring and FFT measurement (same as the main GL7000 unit)



Multiple window option allows waveforms to be displayed in various forms

* It is required version 2.20

Splits up to 4 windows and each window can display different format (Y-T, XY, FFT, and digits).



- ◆ Dual windows
 - ◆ Quad windows
 - ◆ Quad windows displaying mixed format
- Cursor Synchronization* :**
When displaying multiple windows, the cursor positions can be synced.
- Module Settings List* :**
Settings of multiple modules can be displayed simultaneously, and setting conditions can now be saved as CSV data.
- Disable saving data to PC* :**
selection for enabling or disabling data recording on the PC and only to the main unit GL7000.
- Remote Lock On/Off Feature* :**
Setting operation is available on GL7000 under control of GL-Connection.

Useful functions for GL-Connection Software

Supports a user-friendly mouse movement that enables changes in the setting and the related display waveform

Display size of the waveform can be changed using a drag feature on the dotted line with the PC controlled mouse.

The position of the waveform can be shifted up or down using the mouse.

The scale of the waveform can be changed using the mouse wheel operation.

Time division can be shifted using the mouse wheel operation.

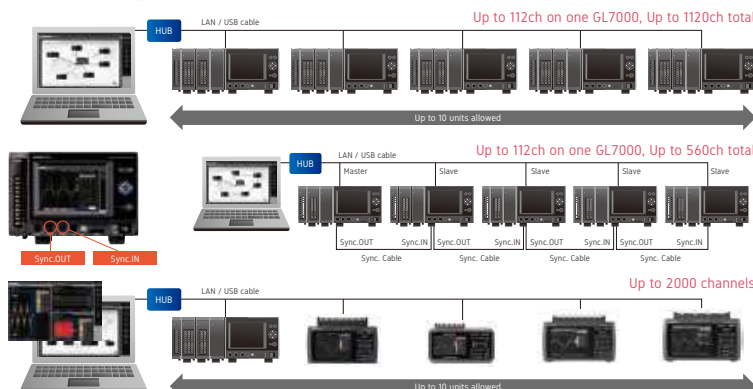
Large-scale channel measurements

Up to 1120 channels can be recording using the PC platform
10 units of the GL7000 can be connected through 1 PC software using the LAN or the USB hub.

Up to 5 units of the GL7000 can be fully synchronized using the sync. cable

The start/stop trigger, and sampling can be synchronized in the GL7000 when they are connected by a sync cable. The master and slave units are automatically identified. Data is stored in each main unit individually.

Allows connections of Graphtec's midi LOGGER series Maximum channel is up to 2000 when 10 units of GL840 is connected
midi LOGGER series
- GL2000, GL980, GL900-4 and GL900-8, GL840, GL820, GL240, GL220
- can all be viewed in real time.



SDK (Software Development Kit) is offered for free Software Development Kit (SDK) is available for real time data transfer and beyond for custom application developed for your need.

- USB driver
- Manual (Main unit controls, data communication, data file, etc.)
- Sample program (in Visual C++, Visual Basic, .NET framework)
- Key commands have been set as modules for simpler implementation with LabVIEW. (Connection, Waveform Display, Digital Indicator, CSV conversion, file acquisition)

Item	Description
Number of module	Attached to up to 10 modules (*1). Max. 112 channels in 1 of GL7000
External Input/Output signals (*2)	Start/Stop, External trigger, External sampling, Auto balance (*3) Signal type: Contact (relay), Open collector, Voltage Trigger, Busy (*3), Alarm (10 channels) (*4) Signal type: Open collector (pulled-up by resistor 10 kΩ)
Trigger, Alarm function	Start or Stop capturing data by the trigger Trigger action Trigger repeat Trigger source Trigger determination conditions for measured signal Alarm determination condition (*6) Alarm output (*7)
Calculation function	Number of data before trigger: Up to specified number of captured data Between channels Addition, Subtraction, Multiplication and Division for two analog inputs (Sampling speed is limited up to 10 Samples/s (100 ms interval).) Available arithmetic element and the output destination is the analog input channel 1 to 100.)
Move function of the display range	Select two calculations from Average, Peak, Max., Min. in real time and replay (*8)
Search function	Search for analog signal levels, logic signal pattern, pulse signal levels or alarm point in captured data
Annotation function	Comment can be set in each channel (up to 31 alphanumeric characters)
Message / Marker functions	Message: The registered messages or entered message is able to be recorded for any timing. Up to 8 messages can be pre-registered. Marker: Marker is able to record for occurring alarm or power failure. Resume automatically in the same condition after power is recovered as when the power failure occurred during data capture (*9)
Resume	
FFT analysis function (Firmware ver. 1.20 or later)	Analyzing frequency range Number of points Window function Averaging Channels Functions Display mode
Interface to PC	Ethernet (10 BASE-T/100 BASE-TX) USB 2.0 (High speed)
Network function	WEB server, FTP server, FTP client, NTP client, DHCP client
USB drive mode	Emulate the USB memory device (*10)
Storage device	Built-in RAM (2 million samples, built-in amplifier module), Flash memory (4 GB, built-in the main module) (*11) SD card (Support SDHC, up to 32GB Slot, SSD (Approx. 128GB) (*11))
Data saving function	Sampling speed (Interval) Captured data (*12) Data in built-in RAM Auto save (*12) Capturing mode (*12) Ring (*14) Backup (*12) Dual sampling function (*18)
Engineering scale function	

(*1) Excluding the function module as the Display module or SSD module. In case of the DC Strain module (GL7-DCB): up to 8 modules. In case of the Logic/Pulse module (GL7-L/P): input mode is selected in the logic or pulse for each module, up to 7 modules when the module is used in the logic mode, up to 2 modules when the module is used in the pulse mode.
 (*2) The Input/Output cable (B-510) (Output for connecting the signal). The Auto balance signal input and the Busy signal output are available in the DC Strain module (GL7-DCB).
 (*3) It is available on the DC strain module (GL7-DCB).
 (*4) The alarm signals are outputted on the terminal block attached to the main module as standard accessory.
 (*5) It is available on the Logic/Pulse (GL7-L/P) module.
 (*6) Method of detection
 Volt_Temp module
 The alarm is detected every 5 seconds when the sampling interval is longer than 5 seconds and reported.
 The alarm is detected in the sampling interval when the sampling interval is shorter than 5 seconds and reported.
 Other modules
 The alarm is detected every 1 ms when the sampling interval is shorter than 1 ms. The alarm is detected in the sampling interval when the sampling interval is set between 2 ms to 5 seconds and reported. The alarm is detected every 5 seconds when the sampling interval is longer than 5 seconds and reported.
 (*7) It is available when the captured data is saved to the built-in RAM.
 The pre-trigger function may not be available in combination with the trigger settings.
 (*8) The result of real time calculation is displayed in the digital display mode.
 (*9) Available sampling speed is the 10 samples/s (100 ms interval).
 When the captured data may not be available in RAM, the captured data is not maintained after a power failure is occurred.
 When destination is set to the built-in Flash or the SD memory card, it may have a problem by a power failure if it is being accessed to write data. If the memory device is not damaged, the closed data file is maintained. The file is closed every minute while data is being captured. This function is not available when the FFT mode or the Voltage Output module (GL7-DCO) is used.
 (*10) The USB drive mode is started by setting of the switch on the main module. It can be also started when the power is turned on while pressing the START/STOP key on the display module.
 (*11) Capacity of memory device may be smaller depending on time of production.
 (*12) The SD memory card is not included as a standard accessory. Compatible SD card type: SDHC, SDXC Speed class 4 or faster. The SSD module (GL7-SSD) is an option.
 (*13) The file for recording data is limited up to 4GB on firmware version 2.0 or later, 2GB on firmware version 1.6 or before.
 (*14) The capacity for saving the data is limited up to 4GB on the available memory when the captured data destination is set to a device other than the built-in RAM. Available sampling speed is up to 10 samples/s (100ms interval).
 (*15) When the captured data destination is set to the built-in Flash or the SD memory card, sampling speed is limited up to 100 samples/s (10 ms interval). In case of using the SSD module (GL7-SSD), sampling speed is limited up to 50 thousand samples/s (20 μs interval) when 1 or 2 modules are attached.
 (*16) The Sync cable (B-559) is required when this function is used. The synchronizing function is available only with GL-Connection.
 (*17) This function is able to be available when sampling speed is set up to 10 samples/s (100 ms interval).
 (*18) Both slow and high speed sampling can only be recorded in GBD format.
 When Event (high-speed) capturing destination is extended SSD unit, it takes a few seconds for event capturing.
 Following actions are not available:
 • External sampling • Ring / FFT recording • Back up feature • Dual screen feature (playback while recording)
 • XY / FFT function • Synchronization operating with multiple GL7000
 • Configuring with only Voltage module (GL7-V) or Voltage/Temperature module (GL7-M)
 (*19) When data destination is specified to the RAM or SSD on the GL7000, the captured data can not be saved on the PC in real time. The data in the RAM or SSD on the GL7000 can be saved to the PC after the data capturing is completed.
 (*20) Supports only GL7000 with firmware version 2.0 or later & GL-Connection version 2.2 or later.
 (*21) Most operations can be selected by both the touch panel and the cursor keys.
 (*22) When the display mode is mounted at an angle using the bracket, the display module is connected to the main module by a LAN cable that is attached to the display module as a standard accessory.

Software specifications	Model name	GL-Connection
Supported OS	Windows 10 / 8.1 / 8 / 7 (32/64-bit edition)	
Functions	Control GL7000, Real-time data capture, Replay data, Data format conversion	
Controlled unit	Up to 10 units with GL7000, GL2000, GL980, GL900, GL840, GL820, GL240, GL220 GL7000 only: max. 1120 channels Mixing with GL series: max. 2000 channels	
GL7000 Settings control	Input settings, Memory settings, Trigger and Alarm settings, Other settings	
Captured data (*19)	• Built-in RAM (Binary format), Built-in Flash memory (Binary, CSV format), SD memory card (Binary, CSV format), SSD (Binary, CSV format) The sampling speed is limited by the number of channels used when data is saved in the CSV format. (1 ms per channel. When 10 channels are set, sampling is limited to 10 ms.) * When captured data is saved to the built-in RAM or SSD, data cannot be saved on the PC in real time.	
Displayed information	Analog waveform, Logic waveform, Pulse waveform, Digital values	
Display mode	Y-T waveform with digital values, XY graph in real time/replay saved data (ver. 1.20 or later), FFT measurement (ver. 1.20 or later), Cursor information, Capture condition, Alarm information Measuring condition setting list (*20) Content channel number, line color, annotation, input type, measuring range, filter, unit, span, scaling Function: Output in CSV format, Link to detailed setting	
File operation	Converts binary data to the CSV data (specific period, all data in one file, multiple files), Creates a new file with compression or by consolidating multiple files.	
Warning function	Send e-mail to the specified address when the alarms occur	
Statistical calculation	Replaying data: Maximum, Minimum, Peak, Average or RMS in between cursors	
Search function	Search specified signal level, point, alarm point, and time	
Cursor synchronization (*20)	Synchronizing cursor position on multiple screens displaying different data file From the beginning: Synchronize the cursor position from the beginning of each screen Position from present: Synchronize from the current cursor position of each screen It allows to make setting operation using control panel on GL7000 even when GL7000 is under the control of software.	
Release of remote lock of GL7000 (*20)	Operation screen can be locked (It is unlocked with a password).	
Operation lock	Operating frequency range Number of points Window function Averaging Channels Functions Display mode	
FFT analysis function (Firmware ver. 1.20 or later)	0.08, 0.2, 0.4, 0.8, 1.6, 2, 3.2, 4, 8, 20, 40, 80, 200, 400, 800 Hz, 2, 4, 8, 20, 40, 80, 200, 400 kHz 500, 1000, 2000, 4000, 10000 Rectangular, Hanning, Hamming, Blackman, Flat-top, Exponential Summation average, Exponential average, Peak hold Y-T, Linear, Power, PSD, Cross, Transfer function, Coherence, COP	
Data recording destination selector (*20)	Selecting to record data to GL7000 only or PC together with GL7000	
Creating output data function (Version 1.40 or later)	Saved data file (GBD/CSV format) in the PC. Saved data file (GBD format) in the GL7000. Generated simple waveform (DC voltage and sine, triangle, ramp, pulse waveform) * This function is available when the analog voltage output module (GL7-DCO) is attached to the GL7000. The signal is output from the GL7-DCO module.	
Display module GL7-DISP (option)	Model number Display device Operation Displayed language Input cable Displayed information Connection cable Standard accessories External dimensions (W x D x H) Weight	
SSD module GL7-SSD (option) specification	Model number Storage device Capacity (*23) Sampling speed Attached to Attached to Attached to External dimensions (W x D x H) Weight	
Options and accessories	Item Sync cable Carrying tool Storage case Probe set for Logic input Input cable: Safe probe - BNC Input cable: BNC - BNC Input cable: Banana - BNC Input cable: Banana - BNC Clip, Alligator (small size) (*26) Clip, Alligator (middle size) (*26) Clip, Grabber (*26) Input/Output cable for GL Humidity sensor (*27) Shunt resistance Input connector, screw terminal Terminal holding bracket Extension cable Input cable, NDIS - D-SUB Output cable, BNC - SMA	

(*23) Capacity of memory device may be smaller than above depending on time of production. The file for recording data is limited up to 4GB on firmware version 2.0 or later, 2GB on firmware version 1.6 or before.
 (*24) The sampling speed in the GL7000 is limited to the faster sampling speed of attached input module. When the selected sampling speed is the GL7000 is faster than the module, the sampling is done in fastest sampling on the module.
 The same value is stored in the memory device in the selected sampling speed until data is renewed by the next sampling.
 (*25) When the sampling speed in the GL7000 is selected to be 1 MS/s (1 μs) or 500 KS/s (2 μs), the number of available channels in the Logic/Pulse module will be limited.
 (*26) Red and black (per 1 unit). Connectable with RIC-143, RIC-147.
 (*27) Measurable temperature range: -25 ~ 80°C