

GL500

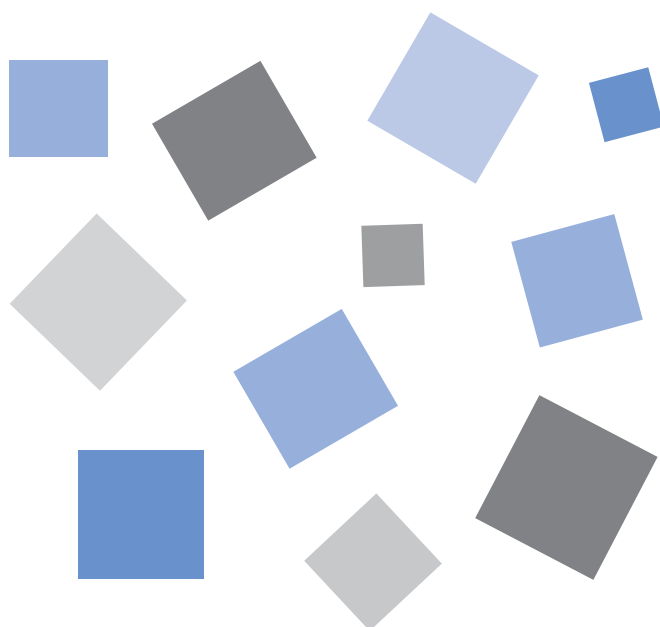
midi LOGGER dual

Version 2.00

Supplementary User's Manual

MANUAL NO. GL500-UM-551

This manual is the Supplementary User's Manual for the GL500 Version 2.00 model. For information on the usage precautions and detailed operating procedures for the GL500, please refer to the separate GL500 User's Manual (GL500-UM-151).



GRAPHTEC

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You can now do these things

Control Panel Keys and Menus

Measurement

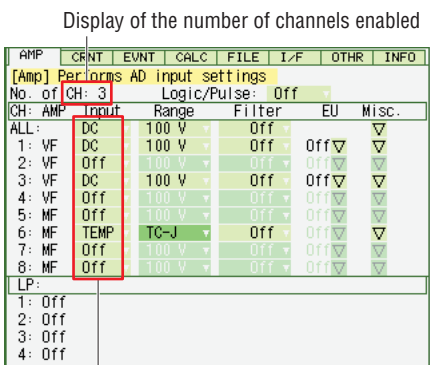
Pop-up Messages

You can now do these things

This section explains the functions that were added or changed when the GL500 was upgraded from V1.** to V2.**.

Note: The additional or changed functions only apply to the operation of the GL500 unit itself. They do not apply to the application software that is provided with the GL500.

1. Freely-selectable channel scanning method



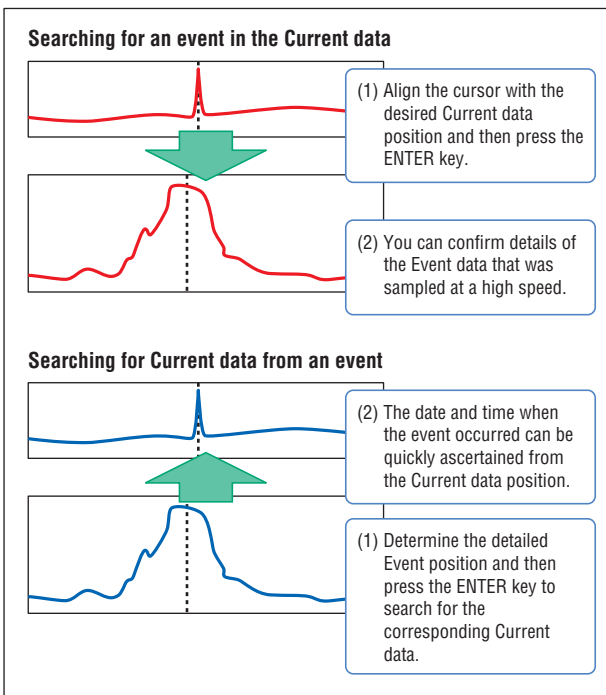
The channels can be set to On or Off as desired.

With V1.**, the channel scanning method was fixed, and only the 1, 2, 4, 8, 12, or 16 CH settings could be selected.

From V2.** onwards, the freely-selectable channel scanning method is used. Channels can be set to on or off as desired, and channels can be freely selected.

➔ Change made to "2. Menu key (1) AMP Settings" in Section 3.3, "Detailed Settings and Measurement" on page 3-11 of the GL500 User's Manual (GL500-UM-151).

2. Current ↔ Event Search Functions



With V1.**, there was no connection between the Current data and the Event data, but from V2.** onwards, a search for the Event data position from the Current data can be achieved simply by pressing one key. Moreover, a search for the Current data can also be made from the Event data.

[Current → Event]

When the ENTER key is pressed at the desired Current data position, the data for the event that occurred at that position is called up and moved to that position. For example, detailed data that could not be displayed as a Current data waveform due to the slow sampling interval used can be confirmed by looking at the Event data.

[Event → Current]

A search for the Current data can also be made from the Event data position to check when the event occurred (hour/min/sec) after the start of data capture.

➔ Change made to Section 3.4, "Data Replay" on page 3-32 of the GL500 User's Manual (GL500-UM-151).

3. Greatly improved operability

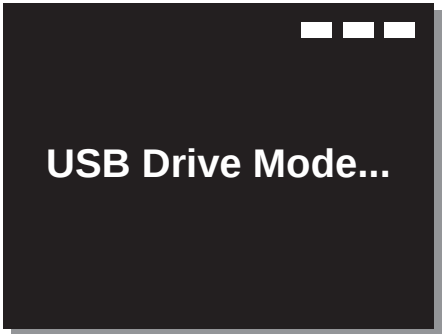
Operability has been improved to enable more intuitive operation.

- Display of the number of scanned channels, the Current data sampling interval, and the event data sampling interval on the waveform screen
- During a data replay operation, press the [REVIEW] key to switch from the 2-screen replay screen to a 1-screen replay screen.
- During a data replay operation, the TIME/DIV settings can be changed by expanding/compressing the data with the cursor position at the center.
- During a data replay operation, the channel waveforms can be switched between on/off, the span changed, and the position moved.
- During a data replay operation, the cursor is displayed in color. "A" and/or "B" is displayed on the scroll bar.
- The color of the setting menu screens was changed to improve legibility.
- Change to Auto Save Method

Current Data Capture Destination	
Internal memory	After data has been captured, press the [SAVE] key and then use the "Data Save" parameter to save data to a PC card as desired.
PC card	After data has been captured, Event data is saved automatically to the PC card.

➡ Change made to "2. Menu key (5) FILE Settings" in Section 3.3, "Detailed Settings and Measurement" on page 3-26 of the GL500 User's Manual (GL500-UM-151).

4. USB PC Card Drive Mode



Inserting a PC card in the GL500's card slot and then connecting the GL500 to your computer via USB enables the GL500 to be used as an external PC card drive.

- (1) Insert the PC card in the GL500's card slot.
- (2) Use the USB cable to connect the GL500 to your computer.
- (3) Turn on the GL500's power supply while holding down the [START] key.
- (4) A Removable Disk icon is displayed in your computer's "My Computer" window.

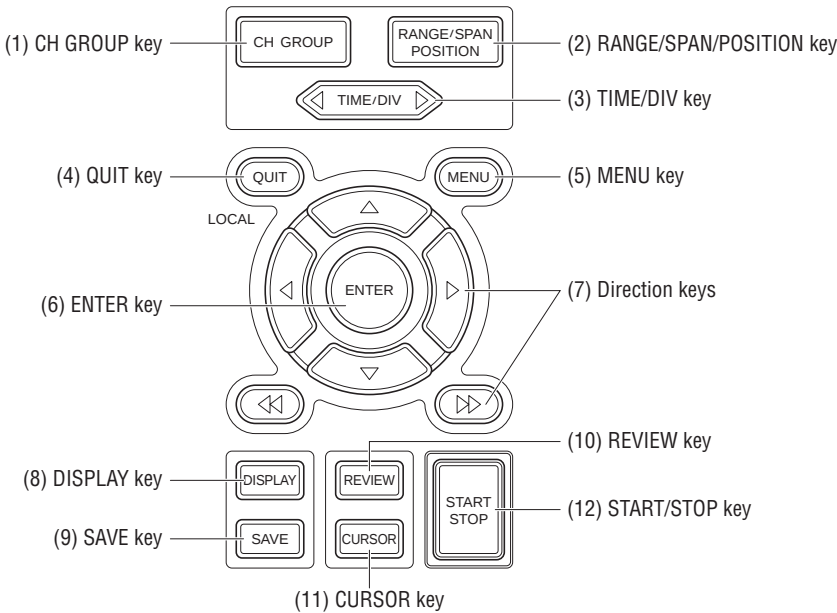
* This operation is recommended only for those computers running Windows 2000 or Windows XP.

* The PC card cannot be replaced when the GL500 is being used as a removable disk.

This section describes the control panel keys.

NEW indicates additional functions assigned to that key for V2.**

➡ Change made to Section 2.5, "Control Panel Key Names and Functions" on page 2-6 of the GL500 User's Manual (GL500-UM-151).



- (1) CH GROUP key

Switches among the channel group and calculation displays.
- (2) RANGE/SPAN/POSITION key

Function added

Switches among the INPUT, RANGE, SPAN, and POSITION settings on the monitor display. These settings can be specified for each channel.

NEW The INPUT setting parameter was added to enable each of the analog input channels on the Free Running display screen to be specified as On or Off. On the Data Replay screen, the Trace parameter was added to enable "Display/Do not display" selection of the replayed waveforms.
- (3) TIME/DIV key

Used to switch the time axes.
- (4) QUIT key

- Used to cancel the displayed setting parameter.
 - Used to close the Data Replay screen.
 - Used to cancel the REMOTE status.
- (5) MENU key

- Used to open the various setting menus.
 - If the MENU key is pressed when the Data Replay screen is displayed, the Readout Menu for performing search operations, etc. on the replayed waveform is displayed.

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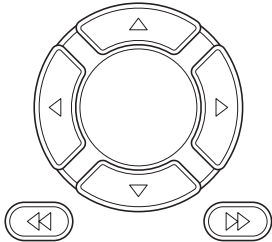
(6) ENTER key

Function added



- Enters the details set in the current setting window.
- NEW** • In the 2-screen replay screen, the "Move from the Current to the Event screen" and "Move from the Event to the Current Screen" waveform search functions have been added.

(7) Direction keys



- ($\triangleleft\triangle\triangleright\triangleright$): These keys move the cursor on the screen in the direction indicated.
- ($\triangleleft\triangleleft\triangleright\triangleright$): Use these keys to scroll the memory data waveforms and move the cursor. Hold down both keys together for at least three seconds to enable key lock status. To cancel key lock status, press them again for at least three seconds.

(8) DISPLAY key



Switches through the Waveform, Enlarged Waveform, and Digital Data screens. In the 2-screen replay screen, switches between the Current and Event data screens.

(9) SAVE key



Used to save data such as data captured to the GL500's internal memory, a copy of the displayed screen, and the data between cursors, to a PCMCIA card.

(10) REVIEW key

Function added



- Replays the captured data.
- NEW** • In the 2-screen replay screen, use "From 2-screen to 1-screen" and "From 1-screen to 2-screen" to switch between the waveform display screens.

(11) CURSOR key



- Used to switch between A and B.
- In the Readout Menu's "Replay Screen", On or Off can be selected for the Cursor Sync parameter. "A&B" can only be selected when On is selected for "Cursor Sync". If Off is selected for "Cursor Sync", switch between the "A" and "B" cursors.

(12) START/STOP key



Press this key to start measurement or to stop measurement when measurement is in progress.

You can now do these things

Control Panel Keys and Menus

Measurement

Pop-up Messages

This section describes only those changes made to the menus for V2.**.

➔ Changes made to "2. Menu key" in Section 3.3, "Detailed Settings and Measurement" on page 3-11 of the GL500 User's Manual (GL500-UM-151).

Menu structure

AMP

Used to make settings for the installed amps.

Description of Change

- There is now no need to set the number of data capture channels. Instead, the number of channels selected is displayed for confirmation.
- The analog input channels can now be specified as On or Off.

AMP	CRNT	EVNT	CALC	FILE	I/F	OTHR	INFO
[Amp] Performs AD input settings							
No. of CH: 1	Logic/Pulse: Off						
CH	AMP	Input	Range	Filter	EU	Misc.	
ALL:	DC	100 V	Off	Off	Off	Off	Off
1:	VF	DC	100 V	Off	Off	Off	Off
2:	VF	Off	100 V	Off	Off	Off	Off
3:	VF	Off	100 V	Off	Off	Off	Off
4:	VF	DC	100 V	Off	Off	Off	Off
5:	DC	Off	Off	Off	Off	Off	Off
7:	Off	Off	Off	Off	Off	Off	Off
8:	Off	Off	Off	Off	Off	Off	Off
LP:							
1:	Off						
2:	Off						
3:	Off						
4:	Off						

CRNT

- Sets the conditions for Current (low-speed) data capture.
- Specifies the data capture destination.
- Sets the alarm conditions (not set in this example).

Description of Change

A Hint comment has been added.

AMP	CRNT	EVNT	CALC	FILE	I/F	OTHR	INFO
[Current] Performs low-speed capture settings							
• Sampling Interval: 1ms							
• Capture Destination: Memory							
• Capture Time: 11m39.050s							
Hint: Common for Current and Event settings.							
<Trigger Settings>							
• Start Source: Off							
• Stop Source: Off							
• Repeat: Off							
<Alarm Settings>							
• Combination: OR							
• Amp Settings: Off							
• Alarm release: Off							

EVNT

Sets the conditions for Event (high-speed) data capture.

Description of Change

When Current data capture ends, Event data capture also ends.
Along with this change, a display showing the Current data capture time and the total Event data capture time has been added.

AMP	CRNT	EVNT	CALC	FILE	I/F	OTHR	INFO
[Event] Performs high-speed capture settings.							
• Function: On							
• Sampling Interval: 2us							
• No. of block divisions: 16							
• Max capture time/block: 0.41s							
• Max points/block: 209705 Points							
<Event Trigger>							
• Start Source Settings: Off							
• Trig Settings: On							
• Pre Trigger: Off							
• Stop Source Settings: Off							
• Trig Settings: On							
Max capture time/event: 6.71s							
Current Capture Time: 11m39.050s							
Hint: Event measurement is finished when Current measurement is finished.							

Continued on next page

You can now do these things

Control Panel Keys and Menus

Measurement

Pop-up Messages

Continued from previous page

CALC

Sets the Statistical and Arithmetic Calculation conditions.

Description of Change

No changes were made.

AMP	CRNT	EVNT	CALC	FILE	I/F	OTHR	INFO
[Calculation] Makes Stat./Arith. Calc settings							
<Statistical>							
No.:	Function	CH					
1:	Off	CH 1					
2:	Off	CH 1					
3:	Off	CH 1					
4:	Off	CH 1					
<Arithmetic> 1-3=Analog, 4=Pulse							
1:	Off	CH 1	+	CH 1			
2:	Off	CH 1	+	CH 1			
3:	Off	CH 1	+	CH 1			
4:	Off	LP 1	+	LP 1			
Hint.The CH GROUP key displays the calc. results.							

FILE

Sets the setting conditions for the PCMCIA card.
Reads and saves the GL500 settings.

Description of Changes

- The Auto Data Save setting parameter was removed from the menu.
Saving to a PCMCIA card is only performed when the Current data capture destination is "PC Card" *1, or by using a [SAVE] key operation.
**1: Current data and Event data are saved automatically at the end of the data capture operation.*
- The screen copy data save destination setting parameter was removed from the menu.
When the [SAVE] key is pressed, a "Save" message box is displayed. The screen copy destination is selected in this box and the screen copy data saved.

AMP	CRNT	EVNT	CALC	FILE	I/F	OTHR	INFO
[PC Card] Performs PC card operations							
• Save current settings:							
• Load settings:							
• File List:							
• File Copy:							
• File Rename:							
• File Delete:							
• Card Initialize:							
<PC Card Information>							
Available:						36.2 MBytes	
Total Size:						63.9 MBytes	

I/F

Sets the conditions for connection with a computer.

Description of Change

A Note on using the USB Drive Mode has been added.

AMP	CRNT	EVNT	CALC	FILE	I/F	OTHR	INFO
[Interface] USB, TCP-IP settings							
• New Line Code:							
• Echo Back:							
<USB Settings>							
• USB ID:							
<TCP/IP Settings>							
• IP Address:							
• Subnet Mask:							
• Port Number:							
• Gateway:							
Note: Restart to enable USB, TCP-IP settings.							
Note: In order to enter to USB drive mode, turn the power on while pressing the START key.							

Continued on next page

You can now do these things

Control Panel Keys and Menus

Measurement

Pop-up Messages

Continued from previous page

OTHER

Sets the utilities.

Description of Change

An Alarm Hold function has been added.

- * If the [MENU] key is pressed during data capture, the alarm can be cancelled.
- * When using the application software, be sure to select Off for this parameter.

AMP	CRNT	EVNT	CALC	FILE	I/F	OTHER	INFO
• Grid:	On						
• Alarm Hold:	Off						
• Scale View Mode:	Off						
• Confirm Start/Stop:	On						
• Power On Start:	Disable						
• Decimate waveform:	On						
• Room Temp Compensation:	Internal						
• Temp. Unit:	°C						
• Date/Time:	2005-05-10 17:05:10						
• Language:	English(US)						
• Return to default settings:	▶						

Recording Menu
Alarm release ▶
[QUIT] Close

INFO

Displays the system information for the GL500.

Description of Changes

- Ver.2** is displayed for the Main CPU Firmware version.
- Ver.3** is displayed for the FPGA version.

AMP	CRNT	EVNT	CALC	FILE	I/F	OTHER	INFO
[Firmware]							
Main CPU Firmware:	Ver. 2.00						
[FPGA]							
Memory Controller:	Ver. 3						
Network							
MAC Address :	00.03.76.00.00.00						

You can now do these things

Control Panel Keys and Menus

Measurement

Pop-up Messages

This section describes only those changes made to the Readout Menu screen for V2.**

➔ *Changes made to "Readout Menu" in Section 3.4, "Data Replay" on page 3-34 of the GL500 User's Manual (GL500-UM-151).*

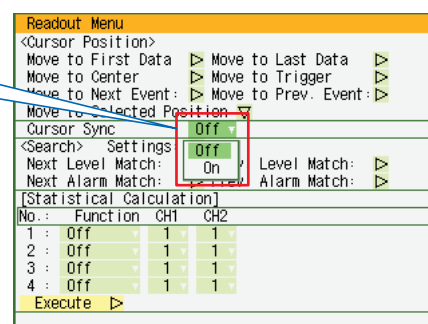
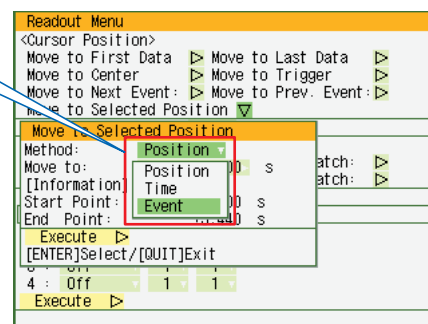
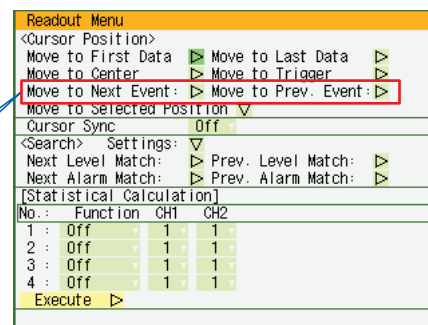
Changes made to the "Cursor Position" parameter

- The "Move to Next Event" and "Move to Prev. Event" parameters have been added.

- The Event parameter has been added to "Move to Selected Position".
The selected Event block is displayed.

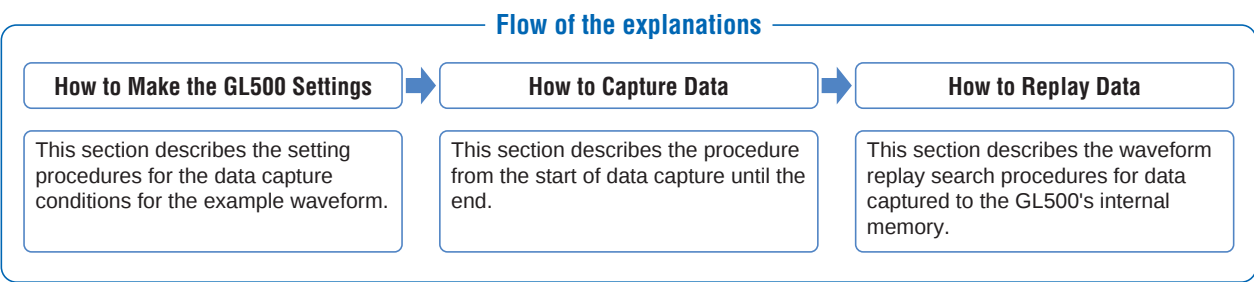
"Cursors Sync" parameter added

- Off: Switches between A and B when the [CURSOR] key is pressed.
- On: The cursor is fixed to A&B.



This section uses simple recorder application examples related to voltage waveform measurement to describe the procedure from data capture through to data replay.

Here we will explain the Current/Event waveform search functions that were added In V.2.**. Use this application as a reference for various other measurements.



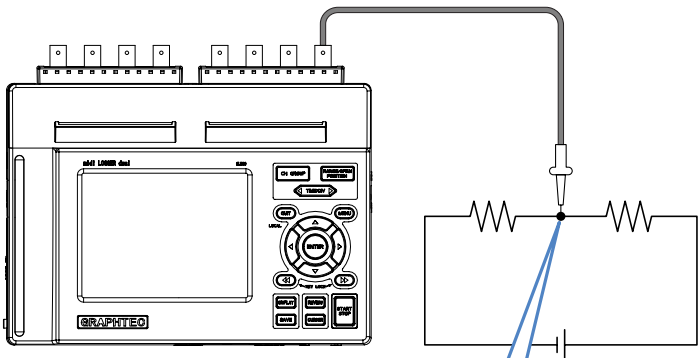
Now, this is the example waveform....

Example

When a waveform such as that shown in the figure is observed, or is expected to be observed, we should measure a detailed voltage waveform over a data capture period of 10 minutes.

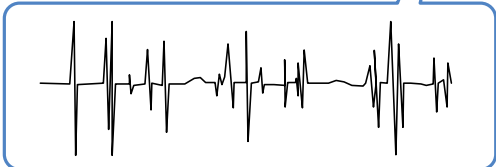
Key points

- Use only channel 1 for input (set all the other channels to Off).
Note: You can use any channel you like, but we have used channel 1 for the procedure described.
- Since we want to perform detailed waveform measurement, we will make Event settings here.
- Select the GL500's internal memory as the Data Save Destination.
Note: PC card can be specified instead of Internal memory, but we have used Internal memory for the procedure described.



Note: Before Performing Measurement... Perform measurement only after you have read through Chapter 2 "Checks and Preparation" in the GL500 User's Manual (GL500-UM-151).

Note: The circuit and voltage waveform shown in the figure are only examples used to illustrate the procedure, not actual representations.

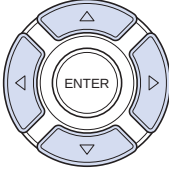
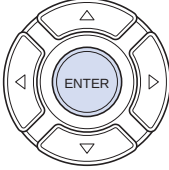


Application example

Proceed to "How to Make the GL500 Settings"

To display the menus related to setting the GL500 unit, press the [MENU] key when the Free Running screen is displayed. In the "How to Make the GL500 Settings" section, we will describe the setting procedures for the data capture conditions described in the example.

The keys used in "How to Make the GL500 Settings"

Action you want to perform	Press this key
• Display a Menu screen • Move the Menu tab cursor	
Move the cursor	
Set a parameter	
Switch from the "1 to 8CH" to the "9 to 16CH" analog channel display	
• Close the menu • Close the sub-menu or message box	

You can now do these things

Control Panel Keys and Menus

Measurement

Pop-up Messages

Setting Screens

The following four menus are used to make the data capture settings.
Each time the [MENU] key is pressed, the setting tab switches to the next tab.

Setting Menu Structure

AMP

Used to make settings for the installed amps.

Sets the AMP input channels.
Here we select Channel 1 for the input channel as described in the key points for the example: "Use only channel 1 for input".

AMP	CRNT	EVNT	CALC	FILE	I/F	OTHR	INFO
[Amp] Performs AD input settings							
No. of CH: 1 Logic/Pulse: Off							
CH	AMP	Input	Range	Filter	EU	Misc.	
ALL:	DC	1 V	Off	Off	Off	Off	Off
1:	VF	DC	1 V	Off	Off	Off	Off
2:	VF	Off	100 V	Off	Off	Off	Off
3:	VF	Off	100 V	Off	Off	Off	Off
4:	VF	Off	100 V	Off	Off	Off	Off
5:	Off	Off	Off	Off	Off	Off	Off
6:	Off	Off	Off	Off	Off	Off	Off
7:	Off	Off	Off	Off	Off	Off	Off
8:	Off	Off	Off	Off	Off	Off	Off
LP:							
1:	Off						
2:	Off						
3:	Off						
4:	Off						

CRNT

Sets the conditions for the capture of Current data (low-speed data).
Specifies the data capture destination.
Sets the alarm conditions (not set in this example).

Current data is the data used to display the entire input waveform.
Here we specify a capture time of at least "10 minutes" and "Memory" as described in the example.

AMP	CRNT	EVNT	CALC	FILE	I/F	OTHR	INFO
[Current] Performs low-speed capture settings							
• Sampling Interval: 1ms							
• Capture Destination: Memory							
Capture Time: 11m39.050s							
Hint. Common for Current and Event settings.							
<Trigger Settings>							
• Start Source Off							
• Stop Source Off							
• Repeat: Off							
<Alarm Settings>							
• Combination: OR							
• Amp Settings							
• Alarm release							

EVNT

Sets the conditions for the capture of Event data (high-speed data).

Event data is data that displays the details for one part of the Current data.
Here we make settings to enable "Detailed waveform measurement" as described in the example.

AMP	CRNT	EVNT	CALC	FILE	I/F	OTHR	INFO
[Event] Performs high-speed capture settings.							
• Function: On							
• Sampling Interval: 2us							
• No. of block divisions: 16							
Max capture time/block: 0.41s							
Max points/block: 209705 Points							
<Event Trigger>							
• Start Source Settings: Off							
• Trig Settings							
• Pre Trigger: 0.2							
• Stop Source Settings: Off							
• Trig Settings							
Max capture time/event: 6.71s							
Current Capture Time: 11m39.050s							
Hint. Event measurement is finished when Current measurement is finished.							

CALC

Sets the Statistical and Arithmetic Calculation conditions.

This menu is not used in our example, and so we set all the parameters to "Off".

AMP	CRNT	EVNT	CALC	FILE	I/F	OTHR	INFO
[Calculation] Makes Stat./Arith. Calc settings							
<Statistical>							
No.:	Function	CH					
1:	Off	CH 1					
2:	Off	CH 1					
3:	Off	CH 1					
4:	Off	CH 1					
<Arithmetic> 1-3=Analog, 4=Pulse							
1:	Off	CH 1	+	CH 1			
2:	Off	CH 1	+	CH 1			
3:	Off	CH 1	+	CH 1			
4:	Off	LP 1	+	LP 1			
Hint. The CH GROUP key displays the calc. results.							

You can now do these things

Control Panel Keys and Menus

Measurement

Pop-up Messages

Now, let's make the settings.

(1) Press the [MENU] key

The GL500 setting menu screen is displayed.



(2) Make the AMP settings

Select the AMP tab, and make the amp-related settings.

- Select "DC" for the input for CH1, and select "1V" for the range.

Note: As Event data sampling will be performed at 2μs intervals, set all the other channels to "Off".

Note: For the range setting value, select a value from the voltage waveform used to perform measurement. In this example, we set the range to 1V.

AMP	CRNT	EVNT	CALC	FILE	I/F	OTHR	INFO
[Amp] Performs AD input settings							
No. of CH: 1				Logic/Pulse: Off			
CH	AMP	Input	Range	Filter	EU	Misc.	
ALL:	DC	1 V	Off				
1: VF	DC	1 V	Off	Off	Off		
2: VF	Off	100 V	Off	Off	Off		
3: VF	Off	100 V	Off	Off	Off		
4: VF	Off	100 V	Off	Off	Off		
5:	Off			Off	Off		
6:	Off			Off	Off		
7:	Off			Off	Off		
8:	Off			Off	Off		
LP:							
1:	Off						
2:	Off						
3:	Off						
4:	Off						

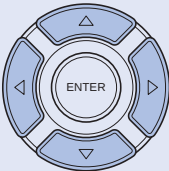
To display a menu

- (1) Press the [MENU] key.



The menu screen is displayed.

- (2) Use the () keys to select the parameters, and then press the [ENTER] key.



Example: When [CRNT] has been selected

AMP	CRNT	EVNT	CALC	FILE	I/F	OTHR	INFO
[Current] Performs low-speed capture settings							
Sampling Interval: 1ms				Capture Destination: Memory			
Capture Time: 11m39.050s				Hint: Common for Current and Event settings.			
<Trigger Settings>							
Start Source Off							
Stop Source Off							
Repeat: 0.01							
<Alarm Settings>							
Combination OR							
Alarm Settings							
Alarm release							

To close a menu

Press the [QUIT] key while a menu is being displayed.



Closes the displayed menu. Operations started by menu settings can be ended and settings cancelled at any time by pressing the [QUIT] key.

(3) Make the CRNT Settings

Select the CRNT tab, and make the settings related to the capture of current data (low-speed data).

- Set the sampling interval to enable data capture for at least 10 minutes. In this example we have used 1 ms for the setting.
- Select Memory for the capture destination.

Note: Here we have used "Memory" for the procedure described.

AMP	CRNT	EVNT	CALC	FILE	I/F	OTHR	INFO
[Current] Performs low-speed capture settings.							
• Sampling Interval:		1ms					
• Capture Destination:		Memory					
• Capture Time:		11m39.050s					
Hint: Common for Current and Event Settings.							
<Trigger Settings>							
• Start Source		Off					
• Stop Source		Off					
• Repeat:		Off					
<Alarm Settings>							
• Combination:		OR					
• Amp Settings		▽					
• Alarm release		▷					

(4) Make the EVNT Settings

Select the EVNT tab, and make the settings related to the capture of event data (high-speed data).

- Set Function to On.
- Set Sampling Interval to 2 μ s. (to perform the most detailed measurement)
- Set No. of block divisions to 16. (freely-selectable)
- Set Amp for Start Source Settings.
- Set Trig Setting to CH1, $\uparrow$, +0.1000V (judge the appropriate settings from the waveform)
- Set Pre Trigger to 10%. (freely-selectable)

Check the data capture time setting

AMP	CRNT	EVNT	CALC	FILE	I/F	OTHR	INFO
[Event] Performs high-speed capture settings.							
• Function:		On					
• Sampling Interval:		2us					
• No. of block divisions:		16					
• Max capture time/block:		0.41s					
• Max points/block:		209705 Points					
<Event Trigger>							
• Start Source Settings:		Amp					
• Trig Settings		▽					
• Pre Trigger:		10 %					
• Stop Source Settings:		Off					
• Trig Settings		▽					
• Max capture time/event:		6.71s					
• Current Capture Time:		11m39.050s					
Hint: Event measurement is finished when Current measurement is finished.							

AMP	CRNT	EVNT	CALC	FILE	I/F	OTHR	INFO
[Event] Performs high-speed capture settings.							
• Function:		On					
• Sampling Interval:		2us					
• No. of block divisions:		16					
• Max capture time/block:		0.41s					
• Max points/block:		209705 Points					
<Event Trigger>							
• Start Source Settings:		Amp					
• Trig Settings		▽					
<Trigger Settings (Edge Trigger)>							
• Combination:		OR					
• Tr		CH					
• Mode		Lower-Level-Upper					
• A:		1					
• B:		Off					
• Register		▷					
Hint: [ENTER]select/[QUIT]Exit							

About Current Data (Low-speed data)...

- Current data is data that is captured at a high-speed sampling interval (max. 1ms).
- Current data is displayed as a waveform. The entire input waveform is displayed.

About Event Data (High-speed data)...

- Event data is data that is captured at a high-speed sampling interval (max. 2 μ s).
- Event data is displayed a section of the Current data in detail so that you can check minute variations in the values that were difficult to check in the Current data.

About the Event triggers A and B...

- There are two Event triggers, A and B. If you want to use both triggers, you can specify a combination trigger (OR or AND).

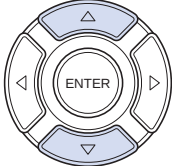
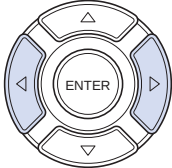
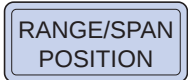
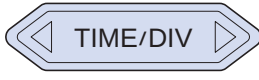
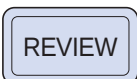
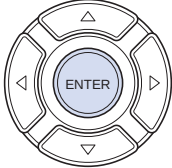
Settings completed



Proceed to "How to Capture Data"

To start data capture, press the [START/STOP] key when the Free Running screen is displayed. In the "How to Capture Data" section, we will describe the procedure from the start of data capture up until the end of data capture.

The keys used in "How to Capture Data"

Action you want to perform	Press this key	Action you want to perform	Press this key
- Start data capture - Stop data capture		Switch between the "1 to 8 CH" and "9 to 16CH" channel displays	
Select a display channel		- Return to the default screen - Cancel a setting	
Change the On/Off, SPAN, and/or POSITION settings for the displayed waveform (SPAN and POSITION only during data capture)	 	Change the time scale	
		Replay data during a data capture operation	
Enter a parameter setting		Switch among the Waveform, Enlarged Waveform, and Digital Display screens	

You can now do these things

Control Panel Keys and Menus

Measurement

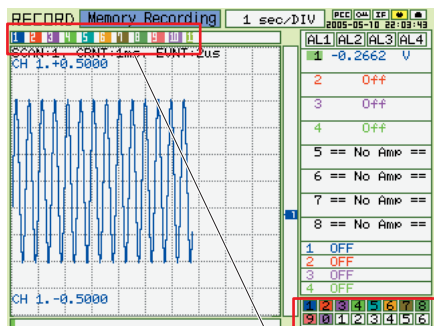
Pop-up Messages

Screens displayed during data capture

There are three types of Free Running screens that can be displayed during data capture, as shown below.

When the screen displayed is the Waveform screen, press the [DISPLAY] key to switch to the Enlarged Waveform screen. Press the [DISPLAY] key again to switch to the Digital Display screen.

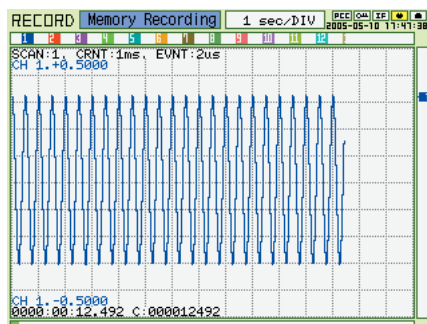
Waveform screen



Displays the Event data capture status.

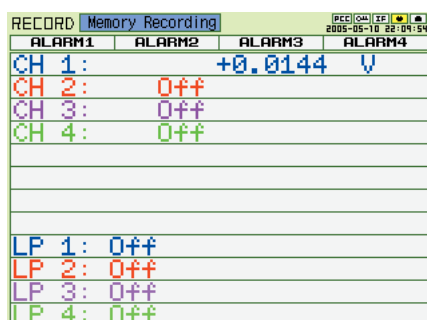
- This is the default screen that is displayed during data capture.
- The GL500 status is displayed in the simplified message display area.
Free Running status: "Free Running"
During data capture: Capture destination
When capturing data to the internal memory: "Memory Recording"
When capturing data to a PCMCIA card: "PC card"

Enlarged Waveform screen



- Displays only the waveform section across the entire screen.

Digital Data screen

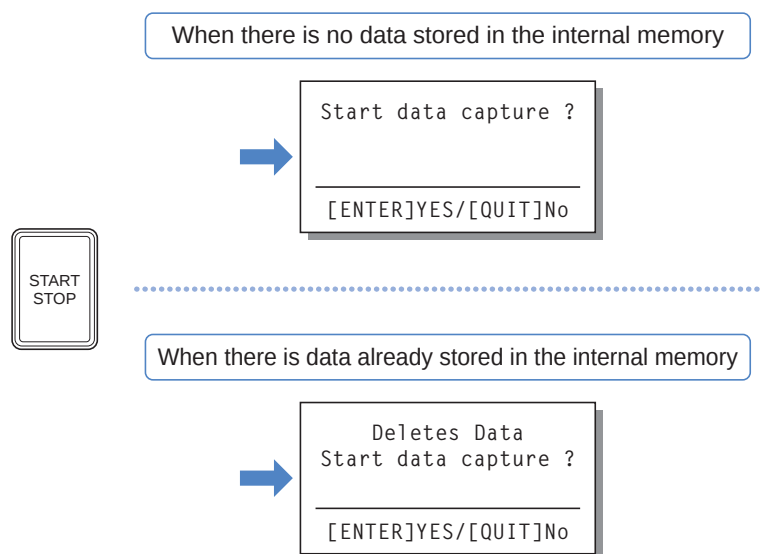


- Displays digital data.
- Use the [CH GROUP] key to switch between the "1 to 8 CH" and "9 to 16CH" analog channel displays.

Now, let's start capturing data.

(1) Press the [START/STOP] key

When the [START/STOP] key is pressed, you can tell whether there is any data stored in the GL500's internal memory from the message box that is displayed.

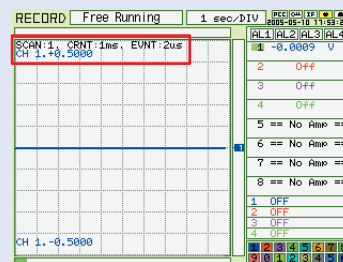


What to do if you don't want the confirmation message displayed when the [START/STOP] key is pressed

- Select the OTHR tab on the menu screen.
- Select Off for the Start/Stop confirmation message.

Easy confirmation of the settings

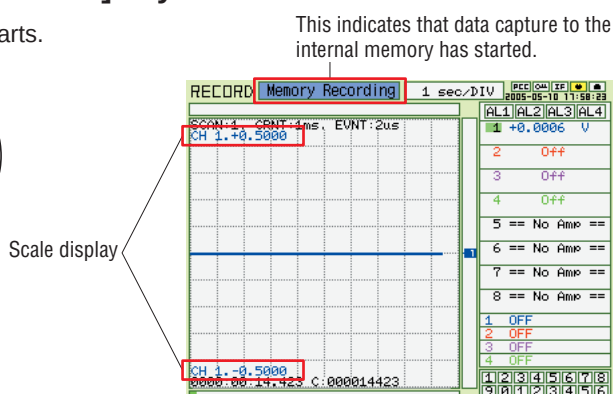
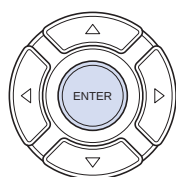
The number of scans, Current and Event sampling intervals and the scale settings can be confirmed at a glance.



If Off has been selected for the Start/Stop confirmation message, the operation described in Step (2) is not required. Data capture starts after the operation in Step (1) is performed.

(2) Press the [ENTER] key

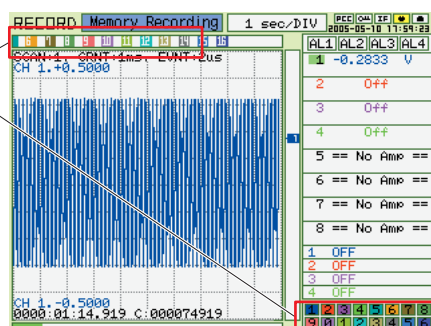
Data capture starts.



Scale display

This indicates that data capture to the internal memory has started.

When the blocks in the memory block capture display section and the event data display section are filled with color, this indicates that event data has been captured.



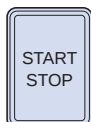
What to do if you don't want the Scale values displayed

- Select the OTHR tab on the menu screen.
- Select Off for the Scale display mode.

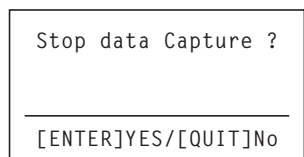
Note: This setting must be made before data capture starts.

To stop data capture

(3) Press the [START/STOP] key

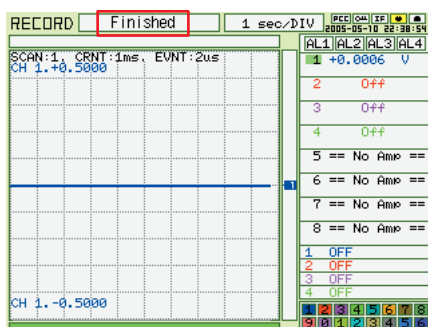


The "Stop data Capture?" confirmation message box is displayed.



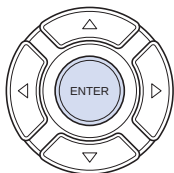
The "Finished" message displayed in the simplified message display area indicates that the capture of current data has ended. In this case, no further data capture will be performed,

Note: If the [START/STOP] key is pressed when the "Finished" message is not displayed, data up until that point is captured.



(4) Press the [ENTER] key

Data capture is stopped.



Data capture is completed

Proceed to "How to Replay Data"

Convenient
RANGE/SPAN/POSITION key

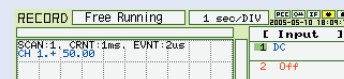
Press this key to switch among the [INPUT], [RANGE], [SPAN], and [POSITION] settings, and the alarm display section.



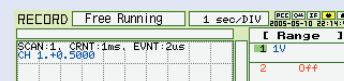
Use the up and down arrow keys to select the channel, and the left and right arrow keys to make the changes.

Note: Only the [SPAN] and [POSITION] settings can be changed during a data capture operation.

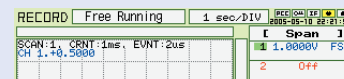
[Input]: Enables On or Off to be selected for each analog input channel.



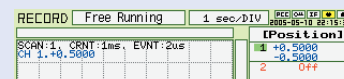
[Range]: Enables the waveform range to be changed.



[Span]: Enables the waveform span to be changed.



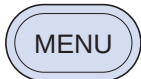
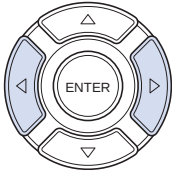
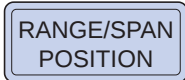
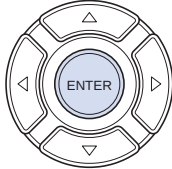
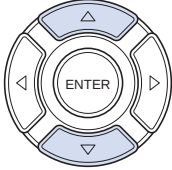
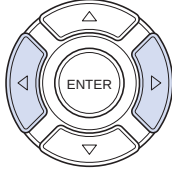
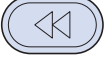
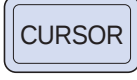
[Position]: Enables the waveform position to be changed.



If Off has been selected for the Start/Stop confirmation message, the operation described in Step (4) is not required. Data capture stops after the operation is Step (3) is performed.

To replay captured data, press the [REVIEW] key when the Free Running screen is displayed. In the "How to Replay Data" section, we will describe the procedure for replaying data captured to the GL500's internal memory.

The keys used in "How to Replay Data"

Action you want to perform	Press this key	Action you want to perform	Press this key
- Replay captured data - Switch between the 2-screen and 1-screen replay screens		Change the time scale	
Switch between the [1 to 8CH] and [9 to 16CH] channel displays		Move, search, or perform calculation on the displayed position of the replayed data	
Change the On/Off, SPAN and POSITION settings displayed for the replayed waveform	 	- Close the replayed data display - Close the displayed pop-up menu	
		Search the Current or Event waveform on the 2-screen display	
Select a display channel		Move the cursor	  
Switch between the Current and Event screens on the 2-screen display			
Switch between cursors A and B		Save waveform data and the displayed screen data to a PCMCIA card	

You can now do these things

Control Panel Keys and Menus

Measurement

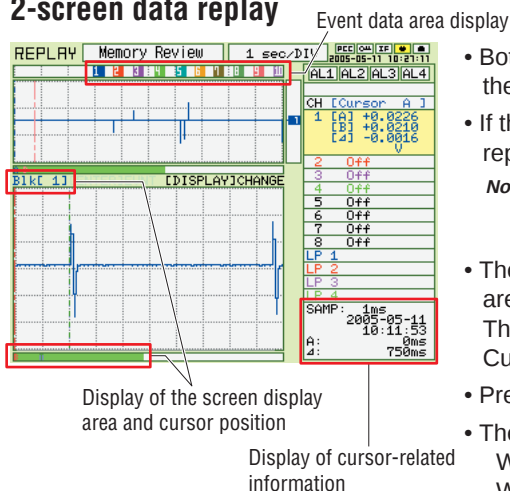
Pop-up Messages

Screens displayed during data capture

There are three types of data replay screens that can be displayed, as shown below.

The functions that are common to all three screens are the waveform "Display/Do not Display", "Change Span", "Change Position" "Waveform Search" and "Between-Cursor Calculation" functions.

2-screen data replay

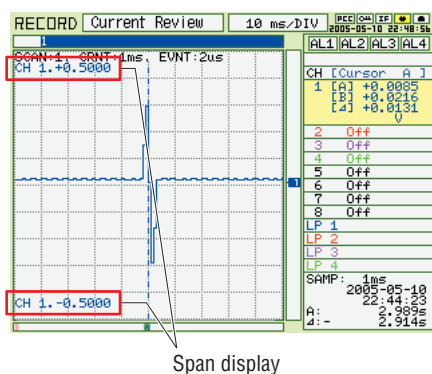


- Both the Current data and Event data screens are displayed. The upper screen is the Current data screen, and the lower screen is the Event data screen.
- If the capture destination is internal memory, the default screen is the 2-screen replay screen.

Note: The 1-screen replay screen will be the default screen if Off was selected for the Event function or if single replay was selected for the event file when replaying data captured to a PCMCIA card.

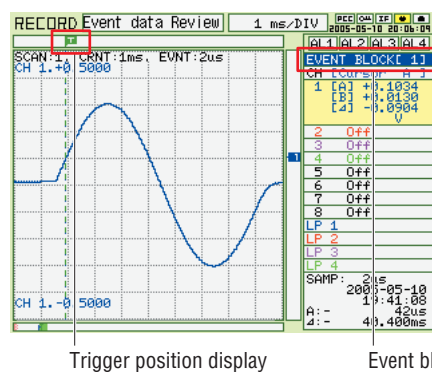
- The colored numbers displayed in the Event data display area indicate the Current area with respect to the Event data. The waveform search functions "From Current to Event" and "From Event to Current" can be easily performed on the waveform displayed in this area.
- Press the [REVIEW] key to switch to the 1-screen replay screen.
- The following messages are displayed in the simplified message area:
When internal memory data is replayed: "Memory Review"
When PC card data is replayed: "Replaying PC card data".

1-screen Current data replay



- The Current data waveform is displayed on a single screen.
- When displaying this screen from a 2-screen replay, press the [REVIEW] key to switch back to 2-screen replay.
- "Current Review" is displayed in the simplified message area.

1-screen Event data replay



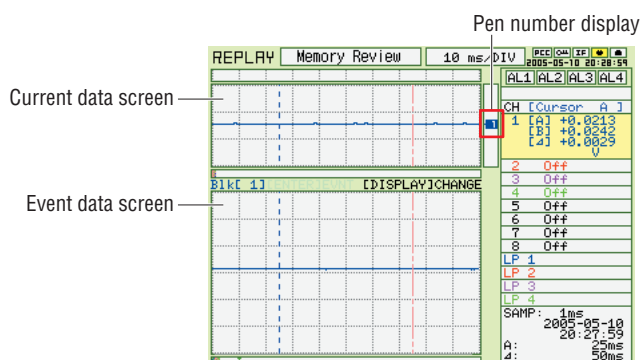
- The Event data waveform is displayed on a single screen.
- When displaying this screen from a 2-screen replay, press the [REVIEW] key to switch back to 2-screen replay.
- "Event data Review" is displayed in the simplified message area.
- The event block number that is currently being replayed is displayed at the right side of the screen.

Now, let's replay some data.

(1) Press the [REVIEW] key



- The data captured to the GL500's internal memory is replayed.
- When internal memory data is replayed, it is displayed in the default 2-screen format.
- The screen with the pen numbers displayed is the active screen.
- The figure below shows that the Current data screen is active.



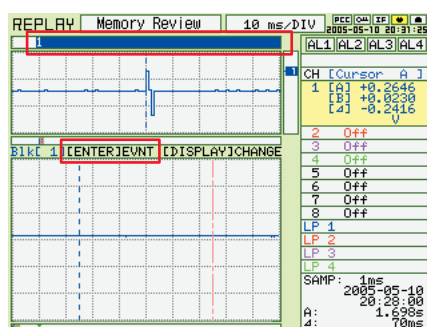
(2) Display the Current data waveform

- Align the cursor with the position on the waveform where you want to search for Event data.

Note: You can use either Cursor A or B for this operation.

- An Event data search can only be performed in the area displayed in color in the Event data display area.

Note: "[ENTER] EVNT" is displayed for the corresponding Event data in the center of the screen.



When you want to replay data from a PCMCIA card

Confirm that the PCMCIA card is inserted in the GL500's card slot and then press the [REVIEW] key. The following message box is displayed. Select "PC Card" for the "Data type" parameter, and then press the [ENTER] key.

```
Data Replay
Data type  Memory Data ▾
Execute ▷
[ENTER]YES/[QUIT]No
```

When you want to end the data replay operation

- Press the [QUIT] key to close the data replay screen and display the Free Running screen.



Note: If the GL500 is in Calculation, Trace, Span, or Position mode, press the QUIT key several times while the message box is displayed.

- If you perform data replay once again after data replay has been stopped, the screen that was displayed immediately before data replay was stopped is displayed in the 2-screen format. The waveform position is stored in memory for your peace of mind for times such as when you end the data replay operation by mistake.

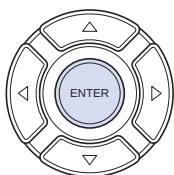
To switch between the active screens

- During a 2-screen data replay operation, press the [DISPLAY] key to switch between the Current and Event active display screens. The screen with the pen numbers displayed is the active display screen.



- Functions such as moving Cursors A and B, changing the SPAN and POSITION and the [TIME/DIV] key operations are made with respect to the active screen.

(3) Press the [ENTER] key



Search for the Event data waveform

- The Event data search results with respect to the Current data waveform are displayed.
- An Event data search can only be performed in the area displayed in color in the Event data display area.

Note: "[ENTER]EVNT" is displayed in the center of the screen.

Caution: Please note that the search accuracy is not absolute accuracy.

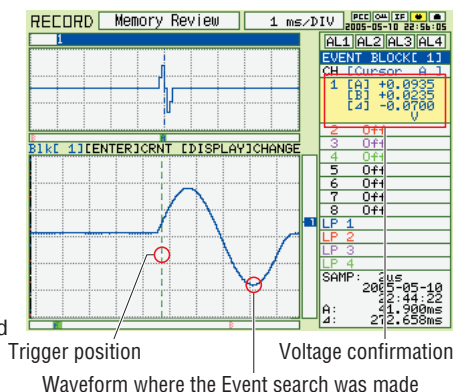
The search accuracy varies according to the sampling interval. In this example, since the Current data sampling interval is 1 ms, the event data search accuracy shifts in the range of ± 1 ms.

Detailed waveform search completed

Phenomena that were difficult to confirm on the Current data waveform can be easily confirmed on the Event data waveform.

Event trigger conditions

We can ascertain that data was captured using the following conditions:
+0.1000V, $\uparrow$, 10% pre-trigger

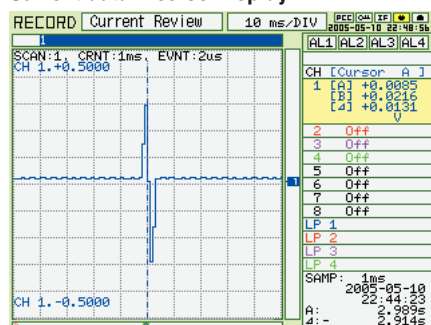


To expand the screen to an easy-to-read single-screen display

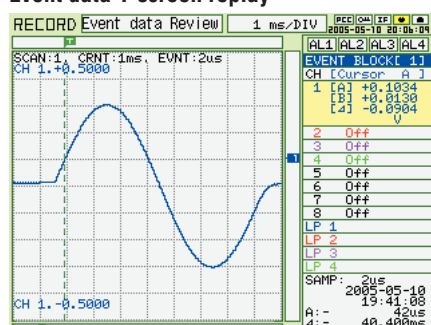


- With the display screen in the 2-screen replay status, press the [REVIEW] key to expand the active screen to a single-screen display.

Current data 1-screen replay



Event data 1-screen replay



Notes on the text displayed in the Current and Event screens

The meaning of each of the displayed text items is as follows.

- **Blk [*]:**
Indicates the event block number displayed in the Event screen.
- **[ENTER] EVNT:**
If the [ENTER] key is pressed when this text is displayed, a search is made for the Event waveform with respect to the Current data.
- **[ENTER] CRNT:**
If the [ENTER] key is pressed when this text is displayed, a search is made of the Current waveform with respect to the Event data.
- **[DISPLAY] CHANGE:**
Switches the active screen from the Current screen to the Event screen and vice versa.

To return the display to the 2-screen replay screen



- With the display screen in the 1-screen replay status, press the [REVIEW] key to switch to the 2-screen replay screen.

Note: This operation can only be performed if the 1-screen replay screen was enabled by pressing the REVIEW key when the 2-screen replay screen was displayed.

A further search function....

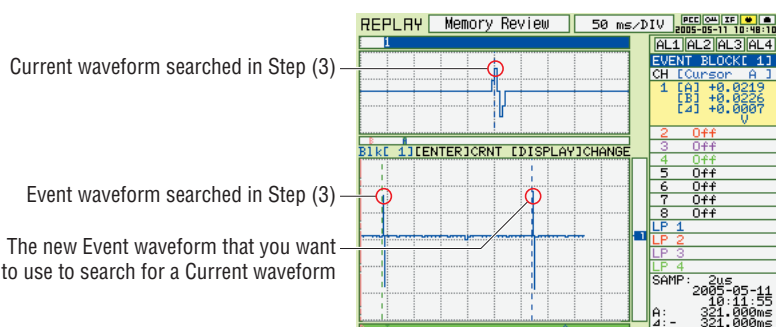
Now, let's search the Event waveform in order to display the Current waveform

(4) Search for the Current waveform on the Event waveform

- Align the cursor with the position on the Event waveform where you want to search for Current data.

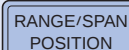
Note: You can use either Cursor A or B for this operation.

- If the display screen is a 1-screen replay screen, press the [REVIEW] key to display a 2-screen replay screen.



Convenient RANGE/SPAN/POSITION key

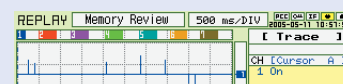
Press this key to switch among the [Trace], [Span], and [Position] settings, and the alarm display section.



Use the up and down arrow keys to select the channel, and the left and right arrow keys to make the changes.

Note: Only the [SPAN] and [POSITION] settings can be changed during a data capture operation.

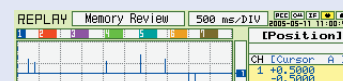
[Trace]: Enables the waveform "Display / Do not display" function.



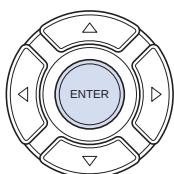
[Span]: Enables the waveform span to be changed.



[Position]: Enables the waveform position to be changed.



(5) Press the [ENTER] key



Search for the Current data waveform

- The Current data waveform with respect to the Event data waveform is displayed.

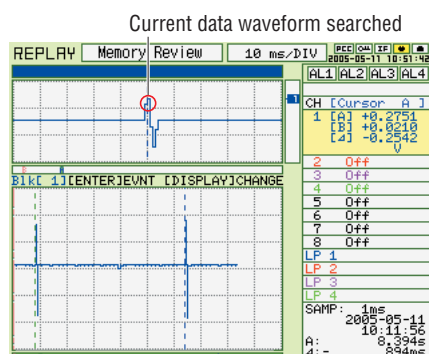
Caution: Please note that the search accuracy is not absolute accuracy.

The search accuracy varies according to the sampling interval. In this example, since the Current data sampling interval is 1 ms, the Event data search accuracy shifts in the range of ± 1 ms.

Waveform search completed

Use the Current data for an overall check

Here we can ascertain that the waveform we searched for was generated 8.394s after measurement was started.



(6) Press the [QUIT] key

- The data replay screen closes.
- The screen returns to the Free Running display screen.

How to save memory captured in the GL500's internal memory to a PCMCIA card


- Press the [SAVE] key.
- A menu box is displayed.
- Select the "Save" destination.
- Align the cursor with the "Execute" parameter and then press the [ENTER] key to start the saving of data to the PCMCIA card.

Save	
[Data Save]	
Path: A:\<AUTO.GBD>	▽
Execute ▷	
[BMP Copy]	
Path: A:\<AUTO.BMP>	▽
Execute ▷	
[Between Cursors]	
Save to Card	▽
[QUIT]Exit	

Saving data to a PCMCIA card

Three types of data can be saved to a PCMCIA card as follows.

- "Data Save":
Saves the data captured in the GL500's internal memory to a PCMCIA card.
- "BMP Copy":
Saves the currently displayed screen to a PCMCIA card. The data is saved in BMP format.
- "Between Cursors" (only when the data replay screen is a 1-screen replay screen):
Saves the data between the A and B cursors on the 1-screen replay screen to a PCMCIA card. The data is saved in either GBD or CSV format.

New pop-up messages were added for V2.**. Here, we will explain what they mean.

Displayed message

Event measurement time exceeds Current measurement time. Event measurement will be finished when Current measurement will be finished. Proceed?

[ENTER]YES/[QUIT]No

Meaning

This message may be displayed after the Current and Event sampling intervals were specified. The meaning is that the specified Event data capture time exceeds that of the Current data capture time. If "YES" is selected by pressing the [ENTER] key, the capture of Event data will end at the same time that the capture of Current data ends.

Explanation

In this example, 1 ms was selected as the sampling interval for Current data, and 500μs as the sampling interval for Event data. If the Event trigger is activated simultaneously with the start of data capture, Event data capture also stops when Current data capture stops after 11 minutes and 39.050 seconds have elapsed.

Note: Even if the total allowable Event data capture time period is within the allowable Current data capture time period, the trigger activation condition(s) specified for the Event trigger may cause data capture to be stopped partway through.

AMP

CRNT

EVT

CALC

FILE

I/F

OTHR

INFO

[Current]

Performs low-speed capture settings.

• Sampling Interval: 1ms

• Capture Destination: Memory

• Capture Time: 11m39.050s

Hint: Common for Current and Event settings.

<Trigger Settings>

• Start Source Off

• Stop Source Off

• Repeat Off

<Alarm Settings>

• Combination OR

• Alarm Settings

• Alarm release

AMP

CRNT

EVT

CALC

FILE

I/F

OTHR

INFO

[Event]

Performs high-speed capture settings.

• Function: On

• Sampling Interval: 500μs

• No. of block divisions: 1

• Max capture time/block: 27m57.72s

• Max points/block: 3355433 Points

<Event Trigger>

• Start Source Settings: Amp

• Trig Settings

• Pre Trigger: 10 %

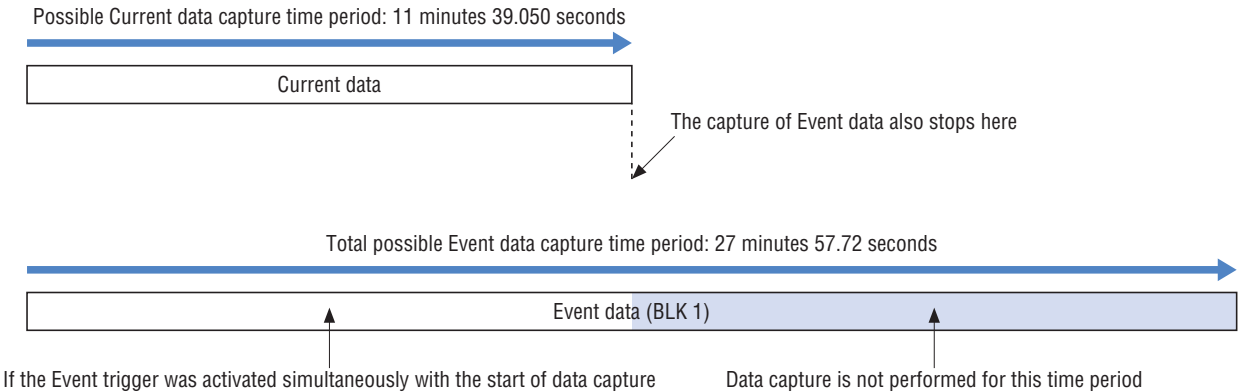
• Stop Source Settings: Off

• Trig Settings

Max capture time/event: 27m57.72s

Current Capture Time: 11m39.050s

Hint: Event measurement is finished when Current measurement is finished.



You can now do these things

Control Panel Keys and Menus

Measurement

Pop-up Messages

Displayed message

Auto event trigger reqd ?
Trigger for lowest channel
is set to Start trigger A.

[ENTER]YES/[QUIT]No

Meaning

This message may be displayed when you have made a Current trigger setting on the Menu screen. In the following instances, the Current trigger setting can be automatically used for the Event trigger setting:

- Start Source Settings: Off
- or
- Start Source Settings: Amp
- Trig Settings: Off (both A and B)

Explanation

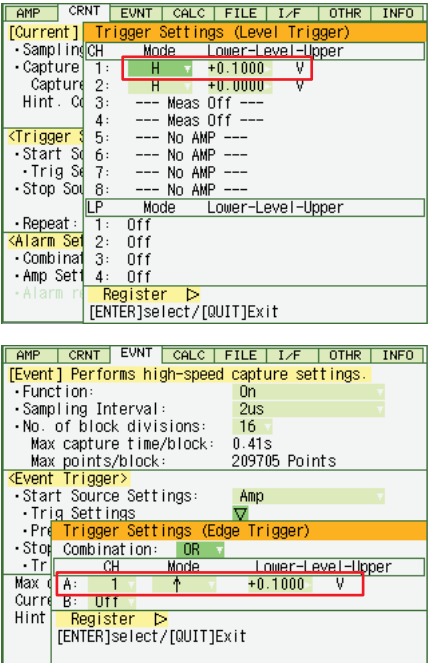
When the Current trigger has been set to the values shown in the figure:

- CH1 H +0.1000V
- CH2 H +0.0000V

If "YES" is selected when the pop-up message is displayed, the Event trigger can be automatically set to the setting specified for CH1.

This function eliminates the need to set the Event trigger.

Note: If "No" is selected by pressing the [QUIT] key, automatic setting is not performed. Moreover, if the Event trigger setting is performed before the Current trigger setting, automatic setting is not performed. The pop-up message is always displayed when automatic setting can be performed.



You can now do these things

Control Panel Keys and Menus

Measurement

Pop-up Messages