

GRAPHTEC

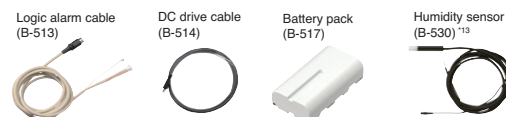
10-channel handy-type logger midi LOGGER GL220

GL220 main unit specifications	
Item	Description
Number of analog input channels	10 ch
External input/output	Input ⁹ : Trigger or Sampling input 1 ch, Logic or Pulse input 4 ch Output ⁹ : Alarm output 4 ch
Sampling interval	10 ms to 1 h (in 10ms to 50ms, voltage only and limited channel), External
Time scale	1 sec to 24 hour (division)
Trigger function	Action: Start or stop capturing data by the trigger
	Source: Start: Off, Input signal, Alarm, External ⁹ , Clock, Week or Time Stop: Off, Input signal, Alarm, External ⁹ , Clock, Week or Time
	Combination: OR or AND condition at the level of signal or edge of signal Condition: Analog: Rising, Falling, Window-in, Window-out Pulse: Rising, Falling, Window-in, Window-out Logic: Rising or Falling
Alarm function	Detecting method: Level or edge of signal
	Condition: Analog: Rising, Falling, Window-in, Window-out Pulse: Rising, Falling, Window-in, Window-out Logic: Rising, Falling
Pulse input function ⁹	Alarm output ⁹ : 4 channels, Output type: Open collector (pull-up resistor 10 kΩ)
	Accumulating count mode: Accumulating the number of pulses from the start of measurement Range: 50, 500, 5 k, 50 k, 500 k, 5 M, 50 M, 500 M counts/F.S.
	Instant count mode: Counting the number of pulses per sampling interval Range: 50, 500, 5 k, 50 k, 500 k, 5 M, 50 M, 500 M counts/F.S.
Calculation function	Rotation count (RPM) mode: Counting the number of pulses per second and then it is converted to RPM Range: 50 rpm, 500 rpm, 5 krpm, 50 krpm, 500 krpm, 5 Mrpm, 50 Mrpm, 500 Mrpm/F.S.
	Max. input pulse rate: 50 k pulses/sec or 50k counts per sampling interval (16 bits counter is used)
	Between channels: Addition, Subtraction, Multiplication and Division for analog input Statistical: Select two calculations from Average, Peak, Max., Min., RMS
Search function	Search for analog signal levels, values of logic or pulse or alarm point in captured data
Interface to PC	USB (Full speed)
Storage device	Built-in Flash memory (2 giga-bytes), USB memory device ¹⁰
Data saving function	Captured data: Direct saving of data into built-in Flash memory or USB memory device
	Others: Setting conditions, Screen copy
Ring capturing mode	Function: ON/OFF, Number of capturing point: 1000 to 2000000 (size of the capture data will be limited to 1/3 of available memory)
USB memory device emulation	USB Memory emulation mode (Transfer or delete the file in built-in memory)
Engineering scale function	Set based on the reference point of the scaled output and input signal for each channel (Voltage measurement: four points are necessary to scale the output, Temperature measurement: two points are necessary to scale the output).
Display	Size: 4.3 inch TFT color LCD (WQVGA: 480 x 272 dots)
	Formats: Waveform + Digital, Waveform only, Calculation + Digital, Expanded digital
Operating environment	0 to 45 °C, 5 to 85 %RH (When operating with battery pack 0 to 40 °C, charging battery 15 to 35 °C)
Power source	AC adapter (100 to 240 V, 50/60 Hz), DC power (8.5 to 24 V DC, max. 26.4 V) ¹¹ , Battery pack ¹¹
Power consumption	29 VA or lower (when operating with AC adapter, displaying LCD)
External dimensions (WxDxH)	approx. 194 x 117 x 42 mm
Weight	approx. 520 g (Excluding AC adapter and battery pack)

Software specifications	
Item	Description
Supported OS	Windows XP / Vista / 7 (32 bits and 64 bits edition)
Functions	Control GL220, Real-time data capture, Replay data, Data format conversion
GL220 settings control	Input settings, Memory settings, Alarm settings, Trigger settings
Captured data	Transfers data in real-time (in binary or CSV format), saved data in GL220 or the USB memory
Displayed information	Analog waveforms, Logic waveforms, Pulse waveforms, Digital values
Display modes	Y-T waveforms, Digital values, Report, X-Y graph (specified period of data, data replay only)
Warning functions	Sends E-mail to the specified address when the alarm occurred
File format conversions	Converts the specified period data or all data to the CSV format (thinning function is available)
Report functions	Creates a daily or monthly report automatically (can also export directly to Excel)
Displayed Max. Min.	Displays the maximum, minimum and current value in measurement

Standard accessories		
Item	Description	Quantity
AC adapter	100 to 240 V AC, 50 / 60 Hz (with specified type of power cord)	1 set
CD-ROM	User's manual (PDF format), Application software	1 piece
Quick Start Guide		1 copy

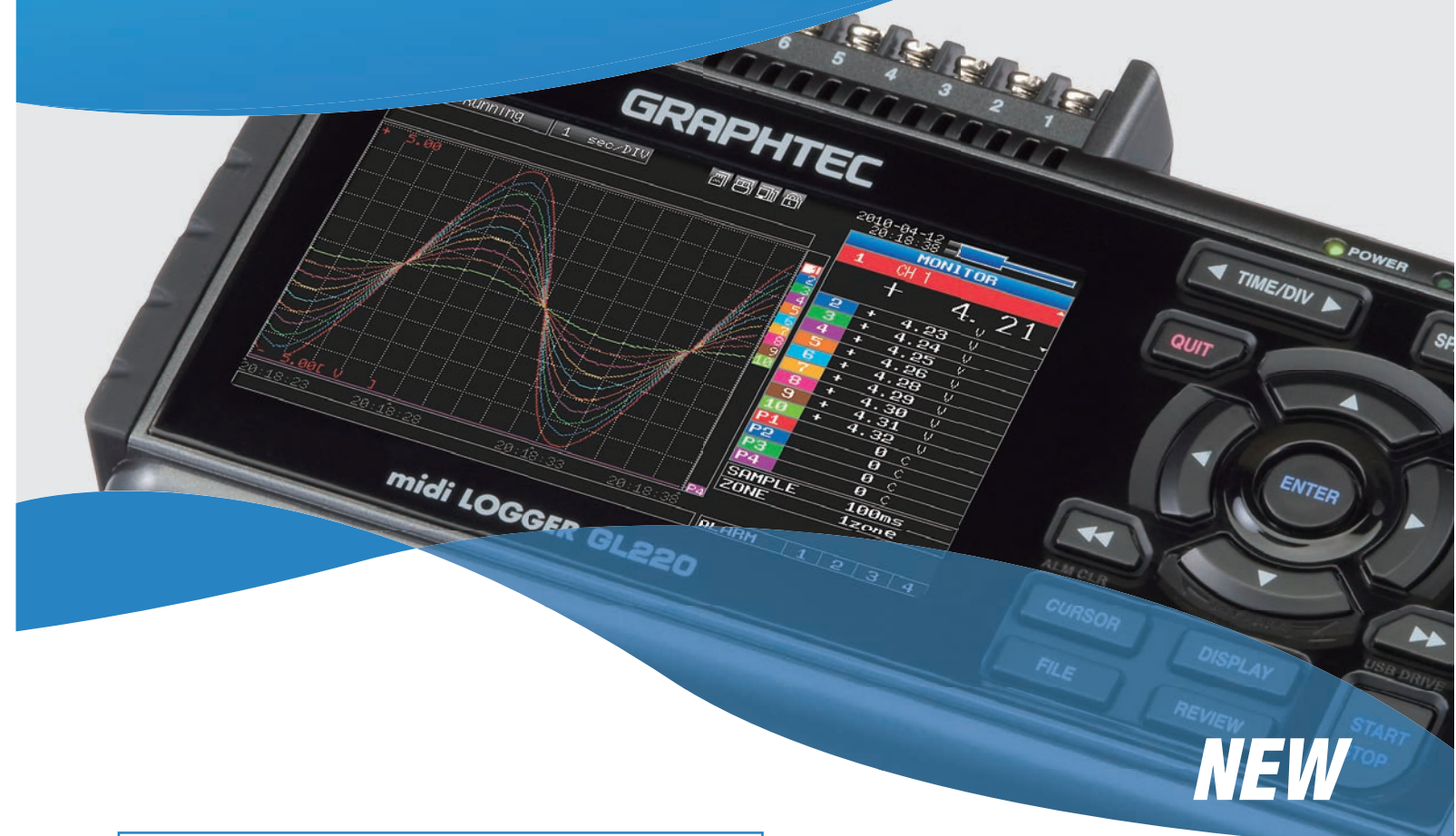
Options and accessories		
Item	Model number	Remarks
Logic alarm cable	B-513	2 m long (no clip on end of cable)
DC drive cable	B-514	2 m long (no clip on end of cable)
Battery pack	B-517	1 piece (7.4 V 2200 mAh, 17Wh)
Humidity sensor ¹³	B-530	3 m long (with power plug)



¹³: Operating environment: -25 to 80 °C

Analog input specifications				
Item	Description			
Type of input terminal	Screw terminal (M3 screw)			
Input method	Scans by the photo-MOS-relay, all channels isolated, balanced input			
Measurement range	Voltage	20, 50, 100, 200, 500 mV, 1, 2, 5, 10, 20, 50 V, and 1-5 V /F.S.		
	Temperature	Thermocouple: K, J, E, T, R, S, B, N, and W (WR5-26)		
	Humidity	0 to 100% (using humidity sensor (B-530 optional), power is supplied to only one sensor)		
Filter	Off, 2, 5, 10, 20, 40 (moving average in selected number)			
Measurement accuracy ¹²	Voltage	0.1 % of F.S.		
		Temperature	Thermocouple	Measurement range
	R/S			0 °C ≤ TS ≤ 100 °C 100 °C < TS ≤ 300 °C R: 300 °C < TS ≤ 1600 °C S: 300 °C < TS ≤ 1760 °C
	B		400 °C ≤ TS ≤ 600 °C 600 °C < TS ≤ 1820 °C	± 3.5 °C ± (0.05 % of reading + 2.0 °C)
	K		-200 °C ≤ TS ≤ -100 °C -100 °C < TS ≤ 1370 °C	± (0.05 % of reading + 2.0 °C) ± (0.05 % of reading + 1.0 °C)
	E		-200 °C ≤ TS ≤ -100 °C -100 °C < TS ≤ 800 °C	± (0.05 % of reading + 2.0 °C) ± (0.05 % of reading + 1.0 °C)
	T		-200 °C ≤ TS ≤ -100 °C -100 °C < TS ≤ 400 °C	± (0.1 % of reading + 1.5 °C) ± (0.1 % of reading + 0.5 °C)
	J		-200 °C ≤ TS ≤ -100 °C -100 °C < TS ≤ 100 °C 100 °C < TS ≤ 1100 °C	± 2.7 °C ± 1.7 °C ± (0.05 % of reading + 1.0 °C)
	N		0 °C ≤ TS ≤ 1300 °C	± (0.1 % of reading + 1.0 °C)
	W		0 °C ≤ TS ≤ 2000 °C	± (0.1 % of reading + 1.5 °C)
A/D Converter	ΣΔ type, 16 bits (effective resolution: 1/40000 of measuring full range)			
Maximum input voltage	Between + / - terminal	60 V p-p		
	Between channels	60 V p-p		
	Between channel / GND	60 V p-p		
Withstand voltage	Between channels	350 V p-p (1 minute)		
	Between channel(-) GND	350 V p-p (1 minute)		

⁹: Logic alarm cable (B-513) option is required.
Input signal of External sampling, Logic, Pulse; Maximum voltage: 24 V, Threshold: approx. 2.5 V, Hysteresis: approx. 0.5 V
¹⁰: Size of the USB memory device is unlimited. Maximum file size is limited to 2GB.
¹¹: DC drive cable (B-514) or battery pack (B-517) option is required.
¹²: Subject to the following conditions:
• Room Temperature is 23°C ± 5°C.
• When 30 minute or more have elapsed after power was turned on.
• Filter is set to 10.
• Sampling rate is set to 1s with 10 channels.
• GND terminal is connected to the ground.



Voltage | Temp. | Humidity | Pulse | Logic

- 10 isolated channels, each with multifunction input
- Maximum sampling rate of up to 10ms
- Large easy-to-read 4.3-inch wide TFT color LCD
- Built-in 2GB Flash memory
- Includes a ring memory function



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ER121008 Vol.2

http://www.instrumentation2000.com/graphtec-gl220-10-channel-handy-type-midi-logger.aspx

Handy-type Logger with huge 2GB Flash Memory



NEW

10 isolated channels, each with multifunction input

Its compact size contains an isolated input system which ensures that signals are not corrupted by inputs to other channels, thus eliminating wiring concerns. The GL220s multi-type inputs are suitable for voltage, temperature, humidity, pulse, and logic signals, enabling combined measurements of different phenomena like temperature/humidity and voltage.

- Voltage** ▶ Ranges from 20 mV to 50 V
- Temp.** ▶ Thermocouple types: K, J, E, T, R, S, B, N, W (WRe5-26)
- Humidity** ▶ 0 to 100%RH using the optional humidity sensor (B-530 option)
- Pulse** ▶ 4 channels¹, Accumulating, Instant or RPM
- Logic** ▶ 4 channels¹

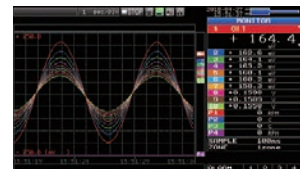


Screw type input terminals (M3 screws) are used

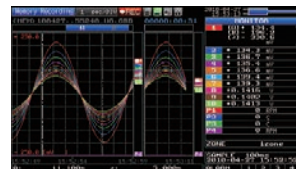
¹: Select either Pulse input or Logic input, and use the optional Logic/Alarm cable (B513 option)

4.3-inch WQVGA TFT colour LCD

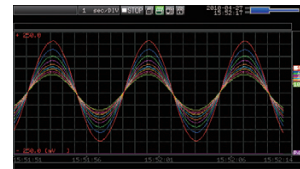
Utilises a bright clear 4.3-inch wide TFT color LCD monitor (WQVGA: 480 x 272 dots). Makes it easy to read data in waveform or digital form and to check your measurement parameter settings.



Waveform display (Analog + Digital)



Dual display (Current + Past)



Waveform display (Analog only)



Digital display

Easy operation and device setup

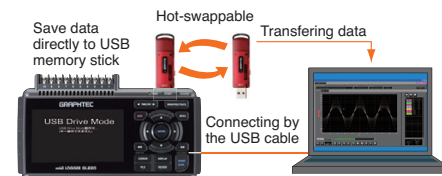
Ergonomically designed and easy to operate, just like a mobile device. The input/output terminals and keyboard layout are arranged so that it can be operated in hands-on mode even when recording data. Parameters in the AMP settings menu can be easily changed whilst viewing the waveform.



Parameters in AMP settings for 10 channels can be set at once using the ALL field.

Supports USB memory device Easy connection to PC

Captured data can be saved directly to USB memory sticks when these are chosen for external storage. In addition, the GL220 can be controlled by a PC if connected by USB cable, allowing transfer of data to a PC in real-time. If you need to move large data files to your PC then the GL220 can emulate an external USB drive for quick data transfer.



• Transferring data to the application software.
• Transferring data to PC in the USB Drive mode.

Useful functions

Alarm output function

Alarm signals can be output when alarm conditions occur.⁷ Four alarm output ports are fitted.

External sampling function

Captured data can be synchronized with external timing signals when the external sampling rate function is used.⁷

Can be used with 3 types of power source

Chose from AC supply, DC supply or the optional battery pack which enables 6 hours⁶ of continuous measurement. The power source is automatically switched to the battery pack when the AC power supply is interrupted. If the capacity of the battery pack goes low then measurement is automatically terminated and the captured data file is closed and protected.

⁶: DC power drive cable and battery pack are optional extras. Measuring time by using the battery pack varies on the conditions.

Maximum sampling rate of up to 10ms

Provides faster sampling rates for voltage measurements. Can achieve 10ms sampling interval when limiting the number of channels in use.

Sampling interval	10ms	20ms	50ms	100ms	1s
Number of channels	1	2	5	10	10
Measuring ²	Voltage	X	X	X	X
	Temp.	N/A	N/A	N/A	X

X: selection is available, N/A: selection is not available.
²: For humidity measurements, the 0-1V range and scaling function are used to display results directly in Relative Humidity. Sampling rate limitations are same as those for voltage measurement.

Built-in 2GB Flash Memory for reliable long term measurement

The 2GB Flash Memory enables secure long term data measurement without using an external storage device. Data is retained even when power is turned off because flash memory is used. Also supports popular USB memory sticks for external storage. The GL220 saves measured data directly to USB memory sticks. USB memory sticks can be replaced during measurement without data loss.

Capturing time³ (10 Analogue channels being used.)

Sampling interval	10ms ⁴	50ms ⁴	100ms	200ms	500ms	1s	10s
Built-in 2GB Flash Memory	38 days	83 days	97 days	194 days	485 days	971 days	9,714 days
512MB USB memory stick ⁵	9 days	21 days	24 days	49 days	124 days	248 days	2,481 days

³: The above figures are approximate. ⁴: The sampling rate is limited by the number of channels in use. (10ms: 1ch, 50ms: 5ch) ⁵: Standard USB memory devices without high-end functions such as fingerprint recognition are required.

Ring memory function

The most recent data is saved when internal memory or external memory is configured in ring memory mode. (Captured data size in ring memory mode is limited to 1/3 of available memory.)

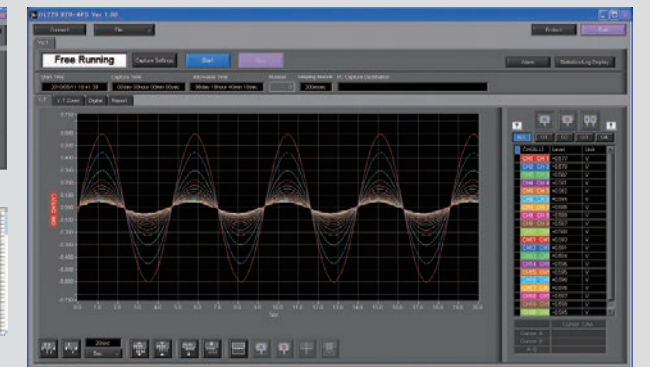
Easy application software

Various measurement screens

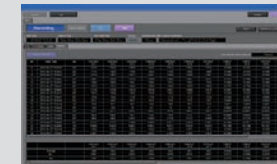
Select from 4 screens such as the Y-T (waveform + digital), Y-T (large waveform), digital view and report view to display measurements in real time. The direct-Excel function enables captured data to be written directly to an Excel file.



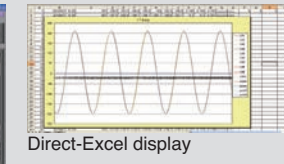
Digital display



Waveform (Y-T) display



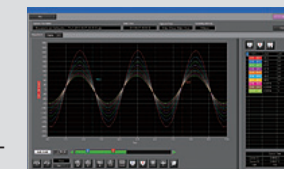
Report display



Direct-Excel display

Substantial data replay screens

Three screens such as the Y-T (waveform), digital and the X-Y graph for specified data are available to view measurements in replay mode. The maximum, minimum, average and peak-to-peak values between cursors are indicated in the digital display screen.



Waveform (Y-T) display

Simple configuration screens

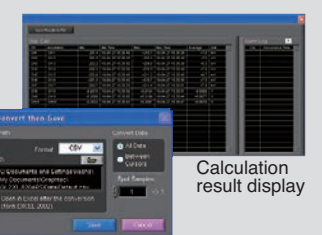
The number of configuration screens has been reduced to five. Parameters can be set easily while viewing measured waveforms.



AMP parameter setting screen

Useful functions

Post-process your captured data with useful functions for arithmetic calculation, statistical calculation, search and file format conversion.



Calculation result display

File format conversion screen

Up to 10 units can be controlled from one PC

Up to 10 units⁸ can be connected to 1 PC. Measurements can be performed simultaneously or independently.

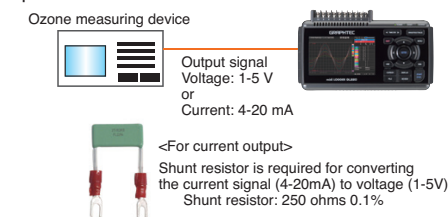
⁸: Display data and create data files from individual GL220s in either simultaneous measurement mode or individual measurement mode.



Typical applications for the GL220 midi LOGGER

Recording data from an analyser

Capture signals from an ozone measuring device to record changes in ozone concentration over long periods.



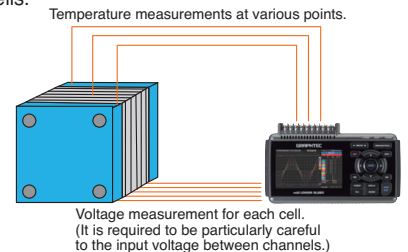
Measuring temperature in an environmental chamber

Recording temperature of electronic components in an environmental chamber during an evaluation test.



Evaluation tests for batteries

Measuring cell voltage and temperatures of fuel cells. (It is required to be particularly careful to the input voltage between channels.)



midi LOGGER series Voltage | Temp. | Humidity | Pulse | Logic

Suitable for multi-channel measurement

- Standard 20ch analog input, expandable up to 200ch
- All isolated channels, each with multifunction input
- Large easy-to-read 5.7-inch VGA TFT color LCD
- Built-in 2GB Flash memory
- Supports USB and LAN



midi LOGGER GL820



midi LOGGER GL900 series

Suitable for measuring high-speed phenomena

- 4 or 8 isolated channels, each with multifunction input
- High-speed simultaneous sampling up to 10μs, 16-bits resolution
- Large easy-to-read 5.7-inch TFT color LCD
- Includes X-Y graph display function in real-time
- Captured data can be saved to PC-friendly USB memory stick

⁷: The Logic/Alarm cable, (B-513 option), is needed to connect the alarm output ports.