



GRAPHTEC



GL980 MIDI LOGGER

Isolated simultaneous 8 channel data logger

- High speed 1 MS/s datalogger with voltage and temperature measurements
- Multifunction input on 8 isolated channels including true-RMS value measurement

Voltage	20 mV to 500 V DC, 1-5 V DC 10 mV to 250 V rms	Pulse	4 channels (*1) Accumulating,
Temp	Thermocouples: K, J, E, T, R, S, B, N, W (WRe5-26)		instant or RPM
Humidity	0 to 100% (the B-530 option is required)	Logic	4 channels (*1)

Safer input terminal

Isolated BNC and screw terminal for each channel.



Available input signal cable



Input/Output cable for GL series B-513 (*1)

Humidity sensor

TK-midi-6







- *1: Select either Pulse input or Logic input, and use the optional input/output
- *1: Select either Pulse input or Logic input, and use the optional input/output cable for GL (B-513 option).
 *2: Numbers are approximate and under the following conditions.

 Using 8 channels of analog input only and data is saved as a GBD file.
 External memory device is set to SD flash memory card or USB flash memory with 8 GB or more data capacity.
 File size of captured data is up to 4GB.

 *2: Head with MALBICERAL
- *3: Used with KA-BNC-BA4.



Additional memory function

Long term recording capability 4 M sample/ch built-in RAM and 4 GB built-in Flash memory. Continuous measurement supports up to 4 GB per file.

Memory type (*2)	1MS/s (1μs)	100kS/s (10µs)	1kS/s (1ms)	1S/s (1s)
Built-in RAM (4 M samples/ch)	4 seconds	40 seconds	66 minutes	46 days
Built-in Flash memory (3.9 GB)	N/A	N/A	3 days 19 hrs	Over 1 year
External memory (SD/USB Flash memory)	N/A	N/A	4 days 3 hrs	Over 1 year

• Large built-in RAM (4 million samples per channel)

Built-in RAM can divide into 1, 2, 4, or 8 blocks supporting continuous high-speed recording measurement with auto backup on the internal flash memory or USB.

Dual external recording available through USB and SD Card Flash memory

Both the USB Flash memory device and the SD Flash memory card can be used as external storage device for captured data.

High performance and easy to use software for PC

Standard software: GL 980_2000-APS

Functions

Configure GL unit

Real-time data display Replay saved data Data format conversion

Control GL unit

- Easy connection made possible with automatic search function for connected device.
- Multiple display format using Y-T graph, X-Y graph and digital values.
- Supports real time data transfer up to 1 ms sampling interval. Captured data from the built-in RAM can also be displayed.
- Captured data saved in binary format can convert to CSV format.





Main unit specification	0113	Description
Item Number of analog in	nut channels	Description 8 channels
External		
input/output	Input (*1)	Logic or Pulse (4 channels), Trigger or Sampling (1 channel)
	Output (*2)	Alarm (4 channels) or Trigger (1 channel) with Alarm (3 channels)
Trigger function	Trigger action	Start or stop capturing data by triggering
	Repeat action	Off, On (Re-armed automatically)
	Trigger source	Start: Off, Measured signal, Alarm, External, Scheduled time, Scheduled day, Elapsed time, Every hour
		Stop: Off, Measured signal, Alarm, External, Scheduled time,
		Scheduled day, Elapsed time
	Combination	Level OR, Level AND, Edge OR, Edge AND
	Threshold	
	Threshold	High or Low in level mode, Rising or Falling in edge mode, Window-in (*3), Window-out (*3)
Alarm function	Alarm action	
Alarm function	Combination	Outputs a signal when alarm is detected
	Threshold	OR (Source channel can be assigned with OR condition to output port)
	Threshold	Analog input: High or Rising, Low or Falling, Window-in, Window-out Logic input: H or L Pulse input: High or Rising, Low or Falling, Window-in, Window-out
Calculation	Between channels	Addition, subtraction, multiplication and division for two analog inputs
function		(only in GBD format)
	Statistical	Real-time or between cursors in replay captured data • Function: Average, Peak, Maximum, Minimum, RMS (only for replay)
Scaling (Engineering	unit) function	Measured value can be converted to the specified engineering unit
		Analog voltage: Converts using four reference points (gain, offset)
		Temperature: Converts using two reference points (offset)
		Plus count: Converts using two reference points (gain)
Storage device (*4)	Built-in RAM	Four million samples for each channel
-		(Memory partition: 4 M samples x 1 bank, 2 M sample x 2 banks,
		1 M samples x 4 banks, 512 k samples x 8 banks)
	Built-in Flash	4 GB (for capacity of data: approx. 3.9 GB)
	External USB	Support USB Flash memory device (*5) by USB2.0 Type A port,
		No memory capacity limit (File size of captured data: up to 4 GB)
	External SD	Support SDHC memory card (up to 32 GB) by SD Card slot,
	CARD	(File size of captured data: up to 4 GB)
Capturing mode	Mode	Off (Normal), Ring, Relay
	Off (Normal) mode	Save data between start to stop
	Ring mode	Save most recent data of specified number
		Destination: Built-in RAM, Built-in Flash, USB or SD
		Number of capturing data: 10000 to 10000000 points (*6)
		Maximum sampling: 1 MS/s (interval 1 µs) in built-in RAM, 1 kS/s (interval 1 ms) with GBD format in other device,
		100 S/s (interval 10 ms) with CSV format in other device,
	Relay mode	Save data to multiple files up to 4 GB until recording data is stopped
		Destination of data: Built-in Flash, USB or SD
		Maximum sampling speed: 1 kS/s (interval 1 ms) with GBD format,
		100 S/s (interval 10 ms) with CSV format
Action during	Backup	• Interval: Off, 1, 2, 6, 12, 24 hrs., specific time, or any time with key operatio
data capture		Data destination: Built-in Flash memory, USB Flash memory device,
		SD Flash memory card
	Hot-swapping	Hot-swapping USB Flash memory device or SD Flash memory
	external memory	with key operation
Display (LCD)	Size	7-inch TFT color LCD (WVGA: 800 x 480 dots)
	Language	English, French, German, Spanish, Russian, Chinese, Korean, Japanese
	Information	Waveform in Y-T with digital values, Enlarged waveforms,
		Digital values and statistics values, X-Y graph
Interface to PC	Туре	Ethernet (10 BASE-T/100 BASE-TX), USB
	Ethernet functions	Web server function, FTP server function, NTP client function,
		DHCP client function, Email send function
	USB function	USB mode (File transfer and deletion from internal GL980 memory)
Operating environment		0 to 40 °C when driven by AC adapter or battery,
Power consumption		5 to 85 % RH (non condensed)
		AC adapter: 100 to 240 V AC, 50/60 Hz
		DC power: 8.5 to 24 V DC
		Battery pack: Mountable two battery packs (*7)
		Maximum 24 W (using the AC adapter, with LCD display on,
		and battery packs being charged)
External dimensions [W×H×D]		Approx. 256 x 161 x 83 mm (with the rubber protector)
Weight		Approx. 1.4 kg (the protector is attached, AC adapter and
		battery are not included)
Vibration resistance		Compatible with JIS Vibration test method for automobile Type 1 Class A (Vibration durability test: 5 m/s²)

- *1: Select either Logic input (4 channels) or Pulse input (4 channels), select either external Trigger input
- or Sampling input. Required Input/Output cable for GL series (B-513) option for connecting signal.

 Select either Trigger output (1 channel) or Alarm output (1 channel). Available 3 channels Alarm output always.

 Required Input/Output cable for GL series (B-513) option for connecting signal.

- Not available with logic input.

 Saved contents in built-in RAM: Captured data

 Saved contents in built-in Flash, USB memory or SD memory card: Captured data, Setting conditions, Screen copy
- When using built-in RAM, 10000 to 4000000 points
- Standard USB memory devices are required. *6: *7:
- Required two batteries (B-569) packs when in battery mode
- Connections can be made individually to BNC terminal or M3.5 screw terminal. Required Input/Output cable for GL series (B-513) option for connecting signal.
- *10: Input signal specification for Trigger or Sampling;

 Voltage range: +5 to +30 V (common ground)

 Threshold: Approx. +1.9 V

 Hysteresis: Approx. 0.2 V (+1.9 to +2.1 V)
- *11: Graphtec does not support software/driver used with operating systems that have become obsolete and are no longer supported by the OS developed

In the Windows 7, edition of Ultimate, Enterprise, Professional and Home Premium are supported.

Analog input specific	nations		
Item	Jations	Description	
		Description	
Type of input terminal		Isolated BNC connector and Screw terminal (M3.5 screw) (*8)	
Input method		All channels isolated unbalanced input, Simultaneous sampling	
Sampling speed (interval)		1 M Samples/s to 1 Sample/min (1 µs to 1 min) and External (*9)	
Frequency response		DC to 200 kHz (within +1/-4 dB)	
Measurement range	Voltage	20, 50, 100, 200, 500 mV, 1, 2, 5, 10, 20, 50, 100, 200, 500 V, and 1-5V F.S.	
	DC-RMS	10, 25, 50, 100, 250, 500 mV rms, 1, 2.5, 5, 10, 25, 50, 100,	
	(DC coupling and	250 V rms F.S.	
	rms value meas.)	Crest Factor: up to 2	
	Temperature	Thermocouple: K, J, E, T, R, S, B, N, W (WRe5-26)	
	Humidity	0 to 100 % RH - using the humidity sensor (option B-530)	
Filter (Low pass)		Off, Line (1.5 Hz), 5, 50, 500 Hz, 5, 50 kHz (at -3dB, -6dB/oct)	
A/D converter		16-bit (effective resolution: 1/40000 of the measuring full range)	
Maximum input	Between	20 mv to 2 V range: ± 30 V,	
voltage	(+) - (-)terminal	5 V to 500 V range: ± 500 V	
	Between channels	60 Vp-p	
	((-) terminals)		
	Between	60 Vp-p	
	channel - GND		
Maximum voltage	Between	1000 Vp-p (1 minute)	
(withstand)	channels		
(Williotaria)	Between	1000 Vp-p (1 minute)	
	channel - GND	Tool of p (1 minute)	
External input/outpu	channel - GND	1000 Tp p (
External input/output	channel - GND	Description	
Item	channel - GND t specifications		
Item	channel - GND t specifications	Description	
Item	channel - GND t specifications	Description Voltage range: +5 to +30 V (common ground)	
Item	channel - GND t specifications ation for Logic or Pulse	Description Voltage range: +5 to +30 V (common ground) Threshold: Approx. +2.5 V	
Item Input signal specifica	channel - GND t specifications ation for Logic or Pulse	Description Voltage range: +5 to +30 V (common ground) Threshold: Approx. +2.5 V Hysteresis: Approx. 0.5 V (+2.5 to +3 V)	
Input signal specification Logic measurement	channel - GND It specifications ation for Logic or Pulse	Description Voltage range: +5 to +30 V (common ground) Threshold: Approx. 42.5 V Hysteresis: Approx. 0.5 V (+2.5 to +3 V) Measures the status (H or L) of the signal input to each channel	
Item Input signal specification Logic measurement Pulse	channel - GND t specifications ation for Logic or Pulse Measurement	Description Voltage range: +5 to +30 V (common ground) Threshold: Approx. +2.5 V Hysteresis: Approx0.5 V (+2.5 to +3 V) Measures the status (H or L) of the signal input to each channel Counts pulse signals input to each channel	
Item Input signal specification Logic measurement Pulse	channel - GND t specifications ation for Logic or Pulse Measurement Maximum	Description Voltage range: +5 to +30 V (common ground) Threshold: Approx. +2.5 V Hysteresis: Approx. 0.5 V (+2.5 to +3 V) Measures the status (H or L) of the signal input to each channel Counts pulse signals input to each channel Maximum input frequency: 100 kHz,	
Item Input signal specification Logic measurement Pulse	channel - GND t specifications ution for Logic or Pulse Measurement Maximum pulse input	Description Voltage range: +5 to +30 V (common ground) Threshold: Approx. 42.5 V Hysteresis: Approx. 0.5 V (+2.5 to +3 V) Measures the status (H or L) of the signal input to each channel Counts pulse signals input to each channel Maximum input frequency; 100 kHz, Maximum count number: 15 M count	
Item Input signal specification Logic measurement Pulse	channel - GND t specifications ation for Logic or Pulse Measurement Maximum pulse input Pulse count	Description Voltage range: +5 to +30 V (common ground) Threshold: Approx. 42.5 V Hysteresis: Approx. 0.5 V (+2.5 to +3 V) Measures the status (H or L) of the signal input to each channel Counts pulse signals input to each channel Maximum input frequency; 100 kHz, Maximum count number: 15 M count	
Item Input signal specification Logic measurement Pulse	channel - GND t specifications attion for Logic or Pulsa Measurement Maximum pulse input Pulse count detection cycle	Description Voltage range: +5 to +30 V (common ground) Threshold: Approx. +2.5 V Hysteresis: Approx. 0.5 V (+2.5 to +3 V) Measures the status (H or L) of the signal input to each channel Counts pulse signals input to each channel Maximum input frequency: 100 kHz, Maximum count number: 15 M count 10 µs to 1 hr. (Set separately from analog signal sampling interval)	
Item Input signal specification Logic measurement Pulse	channel - GND t specifications attion for Logic or Pulse tion for Logic or Pulse Measurement Maximum pulse input Pulse count detection cycle Measurement	Description Voltage range: +5 to +30 V (common ground) Threshold: Approx. 42.5 V Hysteresis: Approx. 0.5 V (+2.5 to +3 V) Measures the status (H or L) of the signal input to each channel Counts pulse signals input to each channel Maximum input frequency: 100 kHz, Maximum count number: 15 M count 10 µs to 1 hr. (Set separately from analog signal sampling interval) *Rotation count: 50 to 20 M rpm F.S. (in step of 1, 2, 5)	
Item Input signal specification Logic measurement Pulse	channel - GND t specifications ation for Logic or Pulse Measurement Maximum pulse input Pulse count detection cycle Measurement mode	Description Voltage range: +5 to +30 V (common ground) Threshold: Approx. +2.5 V Hysteresis: Approx. 0.5 V (+2.5 to +3 V) Measures the status (H or L) of the signal input to each channel Counts pulse signals input to each channel Maximum input frequency: 100 kHz, Maximum count number: 15 M count 10 µs to 1 hr. (Set separately from analog signal sampling interval) *Rotation count: 50 to 20 M rpm F.S. (in step of 1, 2, 5) *Accumulating count mode: 50 to 20 M count F.S. (in step of 1, 2, 5)	
Item Input signal specifics Logic measurement Pulse measurement	channel - GND t specifications attion for Logic or Pulse tion for Logic or Pulse Measurement Maximum pulse input Pulse count detection cycle Measurement mode t (*10)	Description Voltage range: +5 to +30 V (common ground) Threshold: Approx. +2.5 V Hysteresis: Approx. +2.5 V Hysteresis: Approx. +0.5 V (+2.5 to +3 V) Measures the status (H or L) of the signal input to each channel Counts pulse signals input to each channel Maximum input frequency: 100 kHz, Maximum count number: 15 M count 10 µs to 1 hr. (Set separately from analog signal sampling interval) *Rotation count: 50 to 20 M rpm F.S. (in step of 1, 2, 5) *Accumulating count mode: 50 to 20 M count F.S. (in step of 1, 2, 5) *Instant count mode: 50 to 20 M count F.S. (in step of 1, 2, 5)	
Item Input signal specifics Logic measurement Pulse measurement External trigger inpu	channel - GND t specifications attion for Logic or Pulse tion for Logic or Pulse Measurement Maximum pulse input Pulse count detection cycle Measurement mode t (*10)	Description Voltage range: +5 to +30 V (common ground) Threshold: Approx. 42.5 V (+2.5 to +3 V) Measures the status (H or L) of the signal input to each channel Counts pulse signals input to each channel Maximum input frequency: 100 kHz, Maximum count number: 15 M count 10 µs to 1 hr. (Set separately from analog signal sampling interval) • Rotation count: 50 to 20 M rpm F.S. (in step of 1, 2, 5) • Accumulating count mode: 50 to 20 M count F.S. (in step of 1, 2, 5) Instant count mode: 50 to 20 M count F.S. (in step of 1, 2, 5) Executes specified trigger action	
Item Input signal specifics Logic measurement Pulse measurement External trigger inpu	channel - GND t specifications ation for Logic or Pulse tation for Logic or Pulse Measurement Maximum pulse input Pulse count detection cycle Measurement mode t (*10) put (*10)	Description Voltage range: +5 to +30 V (common ground) Threshold: Approx2.5 V 42.5 to +3 V) Measures the status (H or L) of the signal input to each channel Counts pulse signals input to each channel Maximum input frequency: 100 kHz, Maximum count number: 15 M count 10 µs to 1 hr. (Set separately from analog signal sampling interval) *Rotation count: 50 to 20 M rpm F.S. (in step of 1, 2, 5) *Accumulating count mode: 50 to 20 M count F.S. (in step of 1, 2, 5) *Instant count mode: 50 to 20 M count F.S. (in step of 1, 2, 5) Executes specified trigger action Executes sampling of measurement signal with each external sampling signal	
Item Input signal specifics Logic measurement Pulse measurement External trigger input External sampling in	channel - GND t specifications attion for Logic or Pulse tion for Logic or Pulse Measurement Maximum pulse input Pulse count detection cycle Measurement mode t (*10)	Description Voltage range: +5 to +30 V (common ground) Threshold: Approx. +2.5 V Hysteresis: Approx. +0.5 V (+2.5 to +3 V) Measures the status (H or L) of the signal input to each channel Counts pulse signals input to each channel Maximum input frequency: 100 kHz, Maximum count number: 15 M count 10 µs to 1 hr. (Set separately from analog signal sampling interval) *Rotation count: 50 to 20 M rpm F.S. (in step of 1, 2, 5) *Accumulating count mode: 50 to 20 M count F.S. (in step of 1, 2, 5) *Instant count mode: 50 to 20 M count F.S. (in step of 1, 2, 5) Executes specified trigger action Executes sampling of measurement signal with each external sampling signal *Maximum input frequency: 100 kHz (Time error: 1 µs or less)	
Item Input signal specifics Logic measurement Pulse measurement External trigger input External sampling in	channel - GND t specifications ation for Logic or Pulse tation for Logic or Pulse Measurement Maximum pulse input Pulse count detection cycle Measurement mode t (*10) put (*10)	Description Voltage range: +5 to +30 V (common ground) Threshold: Approx. 42.5 V (+2.5 to +3 V) Measures the status (H or L) of the signal input to each channel Counts pulse signals input to each channel Maximum input frequency: 100 kHz, Maximum count number: 15 M count 10 µs to 1 hr. (Set separately from analog signal sampling interval) *Rotation count: 50 to 20 M rpm F.S. (in step of 1, 2, 5) *Accumulating count mode: 50 to 20 M count F.S. (in step of 1, 2, 5) Instant count mode: 50 to 20 M count F.S. (in step of 1, 2, 5) Executes sempling of measurement signal with each external sampling signal *Maximum input frequency: 100 kHz (Time error: 1 µs or less) Open collector (pull-up to 5 V with 10 kΩ resistor),	
Item Input signal specifics Logic measurement Pulse measurement External trigger input External sampling in	channel - GND t specifications attion for Logic or Pulse tion for Logic or Pulse Measurement Maximum pulse input Pulse count detection cycle Measurement mode t (*10) put (*10) Alarm output	Description Voltage range: +5 to +30 V (common ground) Threshold: Approx2.5 V Hysteresis: Approx0.5 V (+2.5 to +3 V) Measures the status (H or L) of the signal input to each channel Counts pulse signals input to each channel Maximum input frequency: 100 kHz, Maximum count number: 15 M count 10 μs to 1 hr. (Set separately from analog signal sampling interval) • Rotation count: 50 to 20 M rpm F.S. (in step of 1, 2, 5) • Accumulating count mode: 50 to 20 M count F.S. (in step of 1, 2, 5) !Instant count mode: 50 to 20 M count F.S. (in step of 1, 2, 5) Executes specified trigger action Executes sampling of measurement signal with each external sampling signal • Maximum input frequency: 100 kHz (Time error: 1 μs or less) Open collector (pull-up to 5 V with 10 kΩ restor), • Maximum load is the 24 V and 100 mA	

Software specific	ations		
Item		Description	
Model name		GL980 2000-APS	
Supported OS (*11)		Windows10, 8.1, 8, 7	
Functions		Control the GL series, Real-time data capture, Replay data,	
		and Data format conversion	
Supported device		1 unit of GL980 or GL2000	
Settings control		Input condition, Capturing condition, Trigger/Alarm condition, etc.	
Transfer of captured data from GL980	In memory capturing	Transfer the captured data to a PC while data is being saved in built-in RAM on GL980 • Sampling interval: 1 µs to 60 s	
	In real time capturing	Transfer the captured data to a PC while data is being saved in built-in flash memory, SD memory card or USB memory on GL980 In GBD and CSV format: sampling interval 1 ms to 60 s	
Displayed information		Analog waveform, Logic waveform, Pulse count waveform, Digital value	
Display mode		Y-T waveform, Digital values, X-Y graph	
File operation		Converting data format to CSV from GBD binary with data between cursors or all data	
Dual screen function		Two displays for the current and past data, available at sampling speed 1 kS/s to 1 S/min (1 ms to 60 s sampling interval)	
Statistical calculation		Maximum, Minimum, Average and Peak value during data capturing	

- AC adapter with power cable Quick Start Guide CD-ROM (PC application software, User manual)
- Rubber protector (attached to the main body)

Options and Accessories		
Item	Model number	Description
Battery pack	B-569	Rechargeable Lithium-ion battery (7.2 V, 2900mAh)
DC drive cable	B-514	2 m long (no clip on end of cable)
Input/Output cable for GL	B-513	2 m long (no clip on end of cable)
Humidity sensor	B-530	With 3 m long signal cable (with power plug)
Shunt resistor	B-551	250 ohms (Converts signal from "4-20mA" to "1-5V".)
Bracket for DIN rail	B-580	Bracket for DIN rail (GL980 main body), Build-to-order
Carrying case	B-581	Used with GL980, GL2000, GL240 and GL840
Input cable, Safe probe - BNC	RIC-141A	Insulated, 1:1 (42pf), 1.2 m long, 300 V DC, CAT II
Input cable, BNC - BNC	RIC-142	Insulated, 1.5 m long, 1000 V DC, CAT II
Input cable, Banana - BNC	RIC-143	Insulated, 1.6 m long, 600 V DC, CAT II
Clip, Alligator (small size)	RIC-144A	For RIC-143, Aperture 11 mm, 300 V DC, CAT II, Max. 15 A
Clip, Alligator (middle size)	RIC-145	For RIC-143, Aperture 20 mm, 1000 V DC, CAT II, Max. 32 A
Clip, Grabber	RIC-146	For RIC-143, Aperture 5 mm, 1000 V DC, CAT III, Max. 1 A
Input terminal adapter	SMA-102	Banana (receptacle) to BNC (plug), Insulated
AC Adapter	ACADP-90	Input: 100 - 240 V AC, Output: 24 V DC

- Due to the possibility of equipment or PC failure, the data files on the instrument are not guaranteed to hold memory. Please make a backup of data whenever possible to avoid data loss.
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 Specifications and details are subject to change without notice. For additional information, please check our web site or contact your local representative.

Use equipment correctly and safely!

- · Use only in accordance with product's user manual.
- •To avoid malfunction or an electric shock by current leakage or voltage, please ensure ground connection and use according to the specifications

Page 2/2

Other countries

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The information provided herein is to the best of our knowledge true and accurate, it is provided for guidance only. All specifications are subject to change without prior notification.

Sweden