GRAPHTEC

midi LOGGER GL840-M/GL840-WV

Isolated/Universal Input, Standalone Multi-Channel Datalogger



GL840-M (60Vp-p)

Thermocouple/Voltage Logger Withstands voltage of 350 Vp-p (1 min.)



GL840-WV (300Vp-p)

High Voltage Logger Withstands voltage of 2300 Vp-p (1 min.)



- Wireless LAN capability | remote monitoring & datalogging
- ▼ Flexible input system for wide array of applications | RTD, T/C
- ▼ Ability to access additional (GL100) sensors & adapters
- Extended memory capacity using SD memory card
- ✓ Max sampling interval up to 10ms
- Smartphone access Smartphone





GL100 Sensors: Temp/Humidity, Luxe/UV, CO2, AC, Thermistor, Acceleration/Temp



GL840 expands to two models for application specific use

Multi-Input Model midi LOGGER GL840-M



Suitable for temperature measurement with multiple channels.

High Voltage Withstand Model midi LOGGER GL840-WV



Suitable for stacked high voltage battery application, or high-precision temperature measurement.

Multi-input type Withstand-voltage Withstand voltage & Accuracy (B-564) type (B-565) 20 mV to 100 V 20 mV to 100 V Input voltage range 60 Vp-p 300 Vp-p Thermocouple R, S, B, K, E, T, J, N, W (WRe5-26) RTD (Resistance Temp. Detector) Pt100 (IEC751), JPt100 (JIS), Pt1000 (IEC751) $\pm (0.05\% \text{ of FS} + 10\mu\text{V})$ Voltage + 0.1% of E.S. Accuracy Temperature* + 1.55 °C + 1 1 °C

* Accuracy rating for K-type thermocouple at 100°C includes reference junction compensation. Accuracy varies by the temperature levels and thermocouple types.

enable measurement of various signals

Expandable up to 200 channels

Standard configuration has 20 analog input channels. It is expandable to 200 channels by adding the optional 20 channel extension terminal base unit (B-566) and input terminal units (B-564 or B-565).

The following shows how a standard configuration is expanded to a 40 channel

1. Terminal unit is removed from the main 2. Extension terminal base unit (B-566) body of the GL840.



terminal base unit (B-566).



Input terminal unit (B-564/565)

connects to the GL840 using the external cable (B-567).



3. Terminal unit snaps onto the extension 4. The combined extension terminal base set (B-566) and additional input terminals (B-564 or -565) are daisy chained together.



Configuration for additional channels

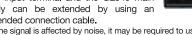
Number of channels	20 channels	40 channels	100 channels	200 channels
GL840 unit (GL840-M or GL840-WV)	1 set	1 set	1 set	1 set
Connection cable (B-567-05 or -20)	N/A	1 pc	1 pc	1 pc
Terminal base (B-566)	N/A	2 sets	5 sets	10 sets
Input terminal (B-564 or B-565)	N/A	1 set	4 sets	9 sets

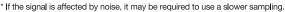
^{*} Input terminal blocks for the B-564 and B-565 can be mixed together for combined configurations. However, the maximum voltage and accuracy rating for the setup will be limited to the rating of the B-564.

Offers longer cable for the input terminals

Input terminal blocks can be connected directly (in daisy chain), or using the B-565 cable(s). This allows the input terminals to be placed in separate locations according to the need of the application.

The input terminal and the GL840 main body can be extended by using an extended connection cable





Along with the basic analog Analog signal input port signal, Logic/Pulse, and digital

Three types of input systems

sensors can be all connected to monitor a variety of measure-



Support digital sensors

Digital sensors and input terminal/adapters for the GL100 connects to the GL840 directly.



- * Supports up to two AC current sensors.
- ** Allows only one extension cable per port.

Dual port adapter connects up to two sensors for simultaneous interface



- Temp/Humidity & Illuminance/UV
- Temp/Humidity & Carbon Dioxide
- Illuminance/UV & Carbon Dioxide

Dual port adapter

High performance software with useful functions for the PC (GL100_240_840-APS)

GL840 series

GL240





PC (Software)

■ Supports GL840, GL240, GL100

Up to 10 units of GL840, GL240 and GL100 can be connected to 1 PC simultaneously. Up to 1000 channels are supported.

■ Controls settings for GL840, GL240, GL100

Various measurement screen

Displays data in Y-T waveform, digital monitoring, statistical calculation result.

The direct-Excel function enables captured data to be written directly to an Excel file.



■ File operation

Data captured in multiple files can be merged into a single file. Using the combine function, data can be imported as a new channel overlaying on top of each other. The bind function connects the data in a time axis. When using the relay capture mode, the bind feature will append multiple files together into one large, continuous file.

Useful functions

Scheduling function

Create a schedule for your monitoring to start and stop at selected time, and set an automatic measurement schedule.

Group function

Multiple units can be managed, such as controlling start or stop simultaneously. Data captured by each unit is saved in a single file.



Schedule table is able to

Saves to a single file Multiple units

Data format conversion

Converts the GBD (Graphtec Binary Data) format to CSV format. The file size is reduced using the compression function saving a value at particular time point of a specified interval. Or, it will save the average, maximum, or minimum values from the specified time interval as the highlighted values.

GI 840 Mair	n unit specificat	ions			
Item	r anne opcomoae	Description			
Model number	,	GL840-M	GL840-WV		
	alog input channels	20 channels in standard configuration, E			
	alog input terminals	Up to 10 terminals (20 channels / terminals			
	input terminal	Multi-input type, Withstand-voltage type			
Port for digital		1 port for the sensor/input terminal/adap			
External input/		Trigger or Sampling (1 channel), Logic/Pr			
output *1	Output *3	Alarm (4 channels)			
Sampling inter		10 ms to 1 hour (10ms to 50ms: voltage or	nh/) *4 External signal		
	waveform display	1 sec. to 24 hour /division	niy) , External signal		
Trigger,	Trigger action	Start or stop capturing data by the trigge	N		
Alarm function		Off, On (auto rearmed)	51		
Alaimiunction	Trigger source	Start: Off, Measured signal, Alarm, Exter	nal Clask Wask or Time		
	mgger source	Stop: Off, Measured signal, Alarm, Exter			
	Candition Catting	Combination: OR or AND	nai, Clock, week or Time		
	Condition Setting	Analog signal: Rising (High), Falling (Low	A Window in Window out		
		Logic signal: Pattern (combination of each			
	A1	Pulse (number of count): Rising (High), F			
Dollar I	Alarm output	Outputs a signal when alarm condition o			
Pulse input	Rotation count	Counts the number of pulses per sampli			
function	(RPM) mode	(rotations per minute), Number of pulses			
		50, 500, 5000, 50k, 500k, 5M, 50M, 500l			
	Accumulating	Accumulates the number of pulses from			
	count mode	50, 500, 5000, 50k, 500k, 5M, 50M, 500M C/F.S. (Counts/Full Scale)			
	Instant count	Counts the number of pulses per sampling interval			
	mode	50, 500, 5000, 50k, 500k, 5M, 50M, 500M C/F.S. (Counts/Full Scale)			
Calculation	Between channels	Addition, Subtraction, Multiplication, and			
function	Statistical Statistical	Select two calculations from Average, Pe			
Search function	on	Search for analog signal levels, values of logic or pulse or alarm point			
		in captured data			
Interface to PO		Ethernet (10 BASE-T/100 BASE-TX), USE			
Storage	Media	SD memory card (Support SDHC, up to			
device	Saved contents	Captured data, Setting conditions, Screen copy			
Capturing mod	de	Mode: Normal, Ring, Relay			
			capturing data: 1000 to 2000000 points) *7		
			losing data until dada capturing is stopped		
Replay data		Replays captured data that was saved in the GL840 (in GBD or CSV format)			
Scaling (Engine	eering unit) function	Measured value can be converted to specified engineering unit			
		Analog voltage: Converts using four ref			
		Temperature: Converts using two references.			
		Pulse count: Converts using two refere			
Action during	data capture	Displaying past data (using dual display	y mode (Current + Past data))		
		Hot-swapping the SD memory card			
		Saving data in between cursors			
Disp l ay	Size	7-inch TFT color LCD (WVGA: 800 x 480			
	Language	English, French, German, Chinese, Korean, Russian, Spanish, Japanese			
	Information *8	Waveform in Y-T with digital values, Waveform only, Digital value, Digital values			
		and statistics values			
Operating env	ironment	0 to 45 °C, 5 to 85 % RH (non condensed)			
		(When operating with battery pack 0 to 40 °C, charging battery 15 to 35 °C)			
Power source	AC adapter	100 to 240 V AC, 50/60 Hz (1 pc of adap	ter is attached as standard accessory)		
	DC power	8.5 to 24 V DC (DC drive cable (option B	-514) is required)		
	Battery pack	Mountable two battery packs (battery pa	ack (option B-569): 7.2V DC, 2900mAh)		
Power consun	nption *9	Max. 38 VA			
External dimer	nsions (W x D x H	Approx. 240 x 158 x 52.5	Approx. 240 x 166 x 52.5		
in mm, Exclud	ling projections)				
in mm, Exclud Weight *10	ling projections)	Approx. 1010 g	Approx. 1035 g		

Software sp	ecifications fo	r PC		
Item		Description		
Model name		GL100_240_840-APS		
Supported OS		Windows 8.1, 8, 7, Vista (32/64-bit edition)		
Supported dev	rice	GL840 (USB, Ethernet, WLAN), GL240 (USB, WLAN), GL100 (USB, WLAN)		
Functions		Control the GL series, Real-time data capture, Replay data, and Data format conversion		
Supported uni	ts & channels	Up to 1000 channels total, Up to 4 groups (number of units is limited by model)		
Settings control		Input condition, Capturing condition, Trigger/Alarm condition, Report, etc.		
Capturing data Saved to PC		Saves captured data in real time (in GBD binary or CSV format)		
	Saved to GL unit	Saves to the SD memory card (in GBD binary or CSV format)		
Displayed info	rmation	Y-T waveform, Digital values, Report, X-Y graph (specified period of data, data		
		reply only), Two displays for the current and past data, and Statistical calculation		
File operation		Converting data format to CSV from GBD binary, merge multiple data files		
		in the time axis or as an additional channel		
Warning function		Send e-mail to the specified address when the alarms occur		
Statistical calculation		Maximum, Minimum, and Avarage during data capturing		
Report function		Creates the daily or monthly report automatically		

Software specifications for Smart device						
Item	Description					
Model name	GL-Connect					
Supported OS	Android 4.1 to 4.4, iOS 7/8					
Supported device	GL840 (WLAN), GL240 (WLAN), GL100 (WLAN)					
Functions	Control the GL series, Display measured data in waveform or digital value					
Supported units	Up to 10 units					
Settings control	Start/Stop, Sampling interval					
Capturing data	Saves captured data in the GL main body (data cannot be saved in the smart device)					
Displayed information	Data captured in real time by digital value, Replay the data stored in the GL body by the waveform					

Wireless LAN unit (option)	specifications
Item	Description
Model number	B-568
Supported device	GL840, GL240
Communication method	Wireless communication (using radio waves in the 2.4GHz band)
Supported WLAN system	IEEE802.11b/g/n
	WPS: Push button or PIN method
	Security protocols: WEP64, WEP128, WPA-PSK/WPA2-PSK, AKIP/AES
	Communication distance: Approx. 40m (depending on the conditions of radio
	communication)
Installed location	Attached to the SD CARD slot number 2 on the GL840/GL240
	* When the wireless LAN unit is installed, the SD memory card cannot be used
	in slot number 2
Function	Access Point mode: Communicate with the GL100-WL as a remote sensor
	(captured data in the GL100-WL is transferred to GL840/GL240)
	Station mode: Communicate with PC or Smart device (control GL840/GL240 and
	transfer the data from GL840/GL240)
Connected number of GL100-WL	GL840: Up to 5 units of the GL100-WL
	GL240: 1 unit of the GL100-WL

mber thod put te		Description GL840-M, Input terminal B-564				
thod						
put te			GL840-WV, Input terminal B-565			
		All channels isolated balanced input *11, Scans channels for sampling Screw terminal (M3 screw)				
nent						
Measurement Voltage range Thermocouple		20, 50, 100, 200, 500 mV, 1, 2, 5, 10, 20, 50, 100 V, and 1-5V F.S. (Full Scale)				
	Thermocouple	Type: K, J, E, T, R, S, B, N, W (WRe5-	26)			
	DTD -	Range: 100, 500, 2000 °C *12	2774			
	RTD (Resistance	Type: Pt100, JPt100 (JIS), Pt1000 (IEC	3/51)			
-						
	Humidity	0 /				
		Off, 2, 5, 10, 20, 40 (moving average i	n selected number)			
	accuracy *13					
			± (0.05% of F.S. + 10μV)			
ype		Measurement accuracy	Measurement accuracy			
	(TS: Temp Sense)					
}	0 ≤ TS ≤ 100 °C	± 5.2 °C	± 4.5 °C			
	100 < TS ≤ 300 °C		± 3.0 °C			
			± 2.2 °C			
3	0 ≤ TS ≤ 100 °C	± 5.2 °C	± 4.5 °C			
l	100 < TS ≤ 300 °C	± 3.0 °C	± 3.0 °C			
	300 < TS ≤ 1760 °C		± 2.2 °C			
3	400 ≤ TS ≤ 600 °C	± 3.5 °C	± 3.5 °C			
	600 < TS ≤ 1820 °C	± (0.05% of rdg. + 2.0 °C)	± 2.5 °C			
(-200 ≤ TS ≤ -100 °C	± (0.05% of rdg. + 2.0 °C)	± 1.5 °C			
	-100 < TS ≤ 1370 °C	± (0.05% of rdg. + 1.0 °C)	± 0.8 °C			
:	-200 ≤ TS ≤ -100 °C	± (0.05% of rdg. + 2.0 °C)	± 1.0 °C			
	-100 < TS ≤ 800 °C	± (0.05% of rdg. + 1.0 °C)	± 0.8 °C			
-	-200 ≤ TS ≤ -100 °C	± (0.1% of rdg. + 1.5 °C)	± 1.5 °C			
			± 0.6 °C			
	-200 ≤ TS ≤ -100 °C	± 2.7 °C	± 1.0 °C			
	-100 < TS ≤ 100 °C	± 1.7 °C	± 0.8 °C			
	100 < TS ≤ 1100 °C	± (0.05% of rdg. + 1.0 °C)	± 0.6 °C			
1	-200 ≤ TS < 0 °C	± (0.1% of rdg. + 2.0 °C)	± 2.2 °C			
			± 1.0 °C			
٧			± 1.8 °C			
R.J.C.		± 0.5 °C	± 0.3 °C			
	ure (RTD) *15		L			
		Accuracy	Accuracy			
	(TS: Temp Sense)		,			
t100	(/ /	± 1.0 °C	± 0.6 °C			
			± 0.8 °C			
1			± 1.0 °C			
Pt100		+ 0.8 °C	± 0.6 °C			
. 1100			± 0.8 °C			
H1000		+08°C	± 0.6 °C			
11000		1 0.0 0	± 0.8 °C			
ortor	100 < 10 ≥ 500 ℃	Sigma Dalta type 16 bits (offsetive ver				
	Datusan		oracion. 1/40000 of the measuring full fall			
	age peratifype R R W V R R R J Peratifype Pertoo	Perature (Thermocouple) Speak Measurement range	Humidity			

60 Vp-p

Between channels 350 Vp-p (1 minute)
Channel / GND 350 Vp-p (1 minute)

20 mV to 2 V range: 60 Vp-p, 5 V to 100 V range: 110 Vp-p

input voltage

Max. voltage

600 Vp**-**p

300 Vp**-**p

600 Vp-p

2300 Vrms AC (1 minute)

(+) / (-) terminal Channels ((-) / (-)) 60 Vp-p

Channel / GND

Options and Accessories		
Item	Model number	Description
Input terminal (Multi-inputs)	B-564	20ch input terminal, multi-input type
Input terminal (Withstand voltage)	B-565	20ch input terminal, withstand-high-voltage type
Base unit for input terminal	B-566	Base unit for input terminal (B-564 or 566)
Connection cable	B-567-05	Cable to connect GL840 and B-566, 50 cm long
for extension terminal	B-567-20	Cable to connect GL840 and B-566, 2 m long
Wireless LAN unit	B-568	WLAN adapter, IEEE802.11b/g/n
Battery pack	B-569	Rechargeable Lithium-ion battery (7.2 V, 2900mAh)
Bracket for DIN rale (GL840 main body)	B-570	Bracket for DIN rail (GL840 main body), Build-to-order
Bracket for DIN rail (extension terminal)	B-540	Bracket for DIN rail (Input terminal), Build-to-order
Input/Output cable for GL series	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)
Humidity sensor	B-530	With 3 m long signal cable (with power plug)
Shunt resistor	B-551-10	250 ohms (it converts the signal to the "1-5V" from the "4-20mA".)
AC power adapter	ACADP-20	Input: 100 to 240 V AC, Output: 24 V DC
Temp & Humidity sensor	GS-TH	Temperature and humidity measurement
IIIuminance & UV sensor	GS-LXUV	Illuminance and UV intensity measurement, cable 20cm long
Carbon Dioxide (CO2) sensor	GS-CO2	CO2 measurement, cable 20cm long
Acceleration & Temp sensor	GS-3AT	Acceleration and temperature measurement, cable 20cm long
Thermistor input terminal	GS-4TSR	Temp measurement (using a Thermistor), cable 20cm long
Thermistor sensor (Normal type)	GS-103AT-4P	Temperature sensor (-40 to 105 °C), 3m long, 4pcs/set
Thermistor sensor (Ultrathin type)	GS-103JT-4P	Temperature sensor (-40 to 120 °C), 3m long, 4pcs/set
AC current sensor adapter	GS-DPA-AC	Current measurement (using a CT), cable 20cm long
AC current sensor (50A)	GS-AC50A	Current sensor (CT) 50A, cable 20cm long
AC current sensor (100A)	GS-AC100A	Current sensor (CT) 100A, cable 20cm long
AC current sensor (200A)	GS-AC200A	Current sensor (CT) 200A, cable 20cm long
Voltage & Temp input terminal	GS-4VT	Voltage or Temperature (using a thermocouple), cable 20cm long
Module extension cable	GS-EXC	Extension cable for the sensor/terminal/adapter module, 1.5m long
Dual port adapter	GS-DPA	Connect up to 2 sensor modules

Wireless Measurement Using WLAN (option)

Wireless LAN option enables the wireless communication with other devices. Connects to the GL100-WL wireless unit remotely when set as an access point. When set as a station, PC and smart devices will be able to access the WLAN unit directly.

■ Combining GL100-WL and GL240/GL840

GL100-WL can now be connected to the GL840 or GL240 as a remote sensor using the WLAN feature. You can expand your measurement variety by adding the sensors available on the GL100-WL unit. The measured value will then appear in a single file along with the measurement values from the GL840/GL240 main inputs. GL840/GL240 will now take in direct information from the GL100-WL units.

Communication with the PC or Smart device

GL840 and GL240 units can be connected to a LAN (Local Area Network) via an WLAN access point. Measured data can be monitored and controlled via a PC or a smart device using the application software. Configuration can be set via the network.



High quality performance and measurement software with useful functions for the PC & smart device environment

Smart device (Tablet or Smart phone) WLAN access point / Router Wireless LAN unit (B-568) GL840 series

For PC (GL100 240 840-APS)

Software for the PC is included as a standard accessory.

- Monitor and save captured data remotely
- Control the GL840/GL240
- Additional functionsScheduling functionGr
 - 0 1 1 /01 0 1

Group function

• Data format conversion • File operation And more!

For Smart device (GL-Connect)

Apps for the smart devices are available on the Android OS and iOS platforms. Download them free from the individual stores.

■ Monitoring captured data

Real time captured data can be displayed as digital values in real time on the smart device apps. The saved data on the GL840/GL240 main body can also be displayed in waveform display format.

*Captured data will not be saved on the smart device.





* Please type "graphtec" to search for the app.

Set and control simple functions

Dedicated control features allow remote start and stop, setting the sampling interval, and setting the alarm conditions.

Control the settings remotely

Web server function of the GL840/GL240 allows remote control and monitoring using this application.



Accommodates a wide variety of measurements

Multifunction analog input ports

Contains a highly isolated input mechanism which ensures that signals are not corrupted by noise from other channels. The GL840 inputs are suitable for combined measurements from voltage, temperature, humidity, logic, and pulse signals.

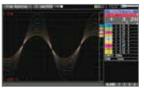
■ 4 channels of Logic/Pulse inputs

Supports 4-channel logic or pulse signal inputs. Pulse mode allows cumulative, instant, or rotational values for industrial measurement capability with speed and



Large easy-to-read 7-inch wide color **LCD**

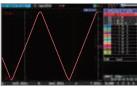
Carries a clear 7-inch wide TFT color LCD screen (WVGA: 800 x 480 dots) for the GL840, and 4.3-inch wide LCD screen Monitoring data are displayed in waveform or digital form option. Parameter settings can be displayed on the screen.



Waveform display (Analog + Digital)



Digital display



Dual display (Current + Past)



Waveform display (Analog only)

Useful functions

■ Alarm output function

Based on set conditions for each channels, alarm signals can be placed using the four channel alarm output ports.*

Input/output cable (B-513 option) is required to connect the alarm output ports to external buzzer/light mechanism

USB drive mode

USB drive mode function enables data to be transferred to the PC from GL840 by drag & drop feature.

Navigation function

Simple to use navigation screen allows setting operation for measurement and wireless LAN adapter.

Maximum sampling interval of up to **10ms**

Provides faster sampling rates for voltage measurements. You are able to achieve up to 10ms sampling speed when limiting the number of channels

	Model	Samplir	ng interval	10ms	20ms	50ms	100ms	200ms	500ms	1s	2s
	Model	Number of channel		1	2	5	10	20	50	100	200
	GL840	Measuring	Voltage	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
G	GL040		Temperature	N/A	N/A	N/A	Yes	Yes	Yes	Yes	Yes
		Measuring	1/-14	\/	Yes	Yes	Yes	Yes(10ch)	Yes(10ch)	Yes(10ch)	Yes(10ch)
			Temperature	N/A	N/A	N/A	Yes	Yes(10ch)	Yes(10ch)	Yes(10ch)	Yes(10ch)

^{*} This chart is applicable when the captured data is saved in the GBD binary file format. Limited sampling speed is available when digital sensors and GL100-WL are used as a remote monitoring device.

Supports large-size SD memory card for reliable long term measurement

New GL series carries two SD memory card slots for storage device. The SDHC type SD memory card is supported up to 32GB. 4GB SD memory card comes as a standard accessory installed in the first slot.

Capturing time* (When all 20 or 10 analog channels are being used with Logic/Pulse inputs turned off.)

Model	Sampling	10ms	50ms	100ms	200ms	500ms	1s	10s
GL840	GBD format	31 days	77 days	95 days	108 days	270 days	over 365	over 365
(20ch)	CSV format	3 days	11 days	16 days	21 days	54 days	109 days	over 365
GL240	GBD format	41 days	88 days	103 days	207 days	over 365	over 365	over 365
(10ch)	CSV format	3 days	11 days	16 days	36 days	91 days	182 days	365 days

Figures are approximate. File size of captured data is 2GB in GBD or CSV file format on this chart. Sampling interval is limited by the number of channels in use. (10ms: 1ch, 50ms: 5ch, 100ms: 10ch) Limited sampling speed is available when digital sensors and GL100-WL are used as a remote monitoring device.

Ring capture function

The most recent data is saved when the memory is configured in ring memory mode. (Number of capturing data is 1000 to 2000000 points)

Relay capture function

Data is continuously saved to multiple files up to 2GB without losing any data until capturing is stopped when the memory is configured in the relay mode.

Hot-swapping the SD memory card

SD card can be replaced during data capturing when the sampling interval is 100ms or slower.

■ 3 Types of Power Source

Choose from AC power supply, DC supply* or the rechargeable battery pack.* * DC power drive cable (B-514) and battery pack (B-569) are optional accessories.

Networking features

Web & FTP server function

GL840 can be controlled externally via a network on the WEB browser, which also supports monitoring and transfer of signals and captured data.

FTP client function

Captured data is periodically transferred to the FTP server for backup. NTP client function

The clock on the GL840 is periodically synchronized with the NTP server.

The GL840 needs to be connected to a LAN environment using the available Ethernet/WLAN ports.

- Due to the possibility of equipment or PC failure, the data files on the instrument will not be guaranteed to be held on the memory. Please make a backup of data whenever possible to avoid data coss. Brand names and product names listed in this brochure are the trademarks or registered trademarks of their respective owners
- Specifications are subject to change without notice. For more information about product, please check the web site or contact your local representative.



GRAPHTEC AMERICA, INC.

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Before using it, please read the user manual and then please use it properly in accordance with the description. •To avoid malfunction or an electric shock by current leakage or voltage, please ensure a ground connection and use according to the specification

