

GRAPHTEC

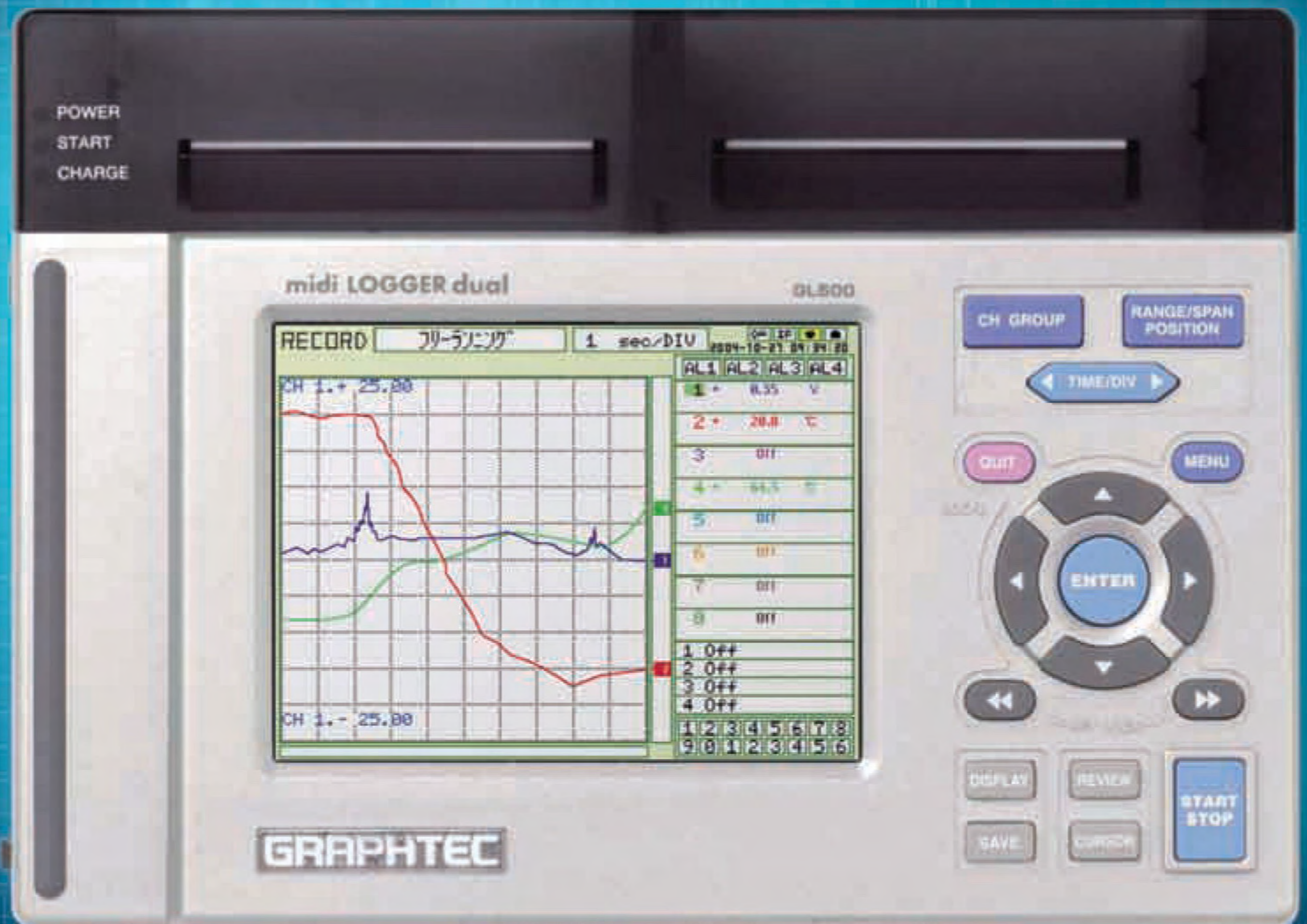
Powerful Things Come In Small Packages

midi LOGGER

Simultaneous Data Collection
at Both Low and High Speeds

midi LOGGER dual

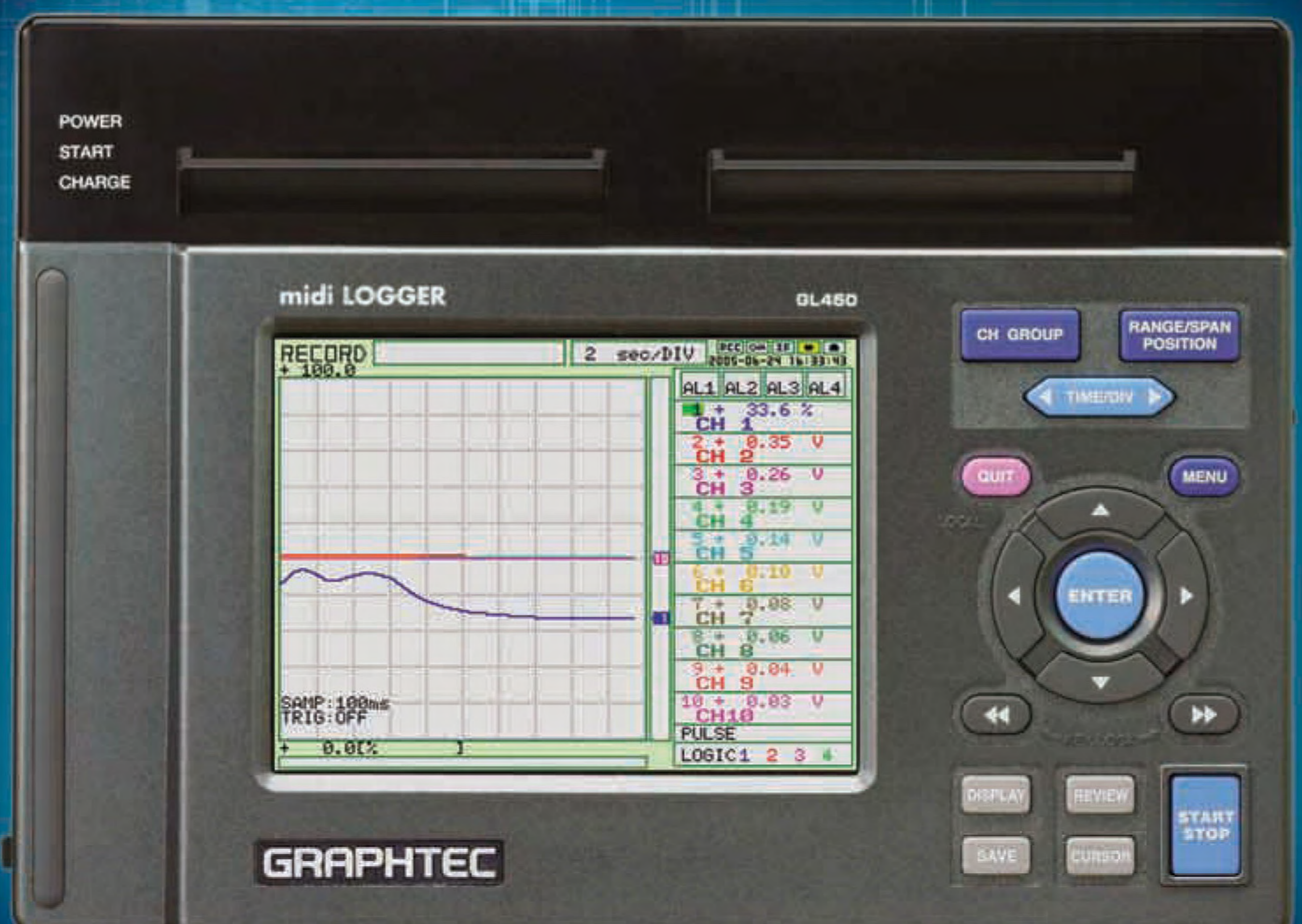
GL500A



Up to 100 channels of
Temperature/Voltage/Humidity

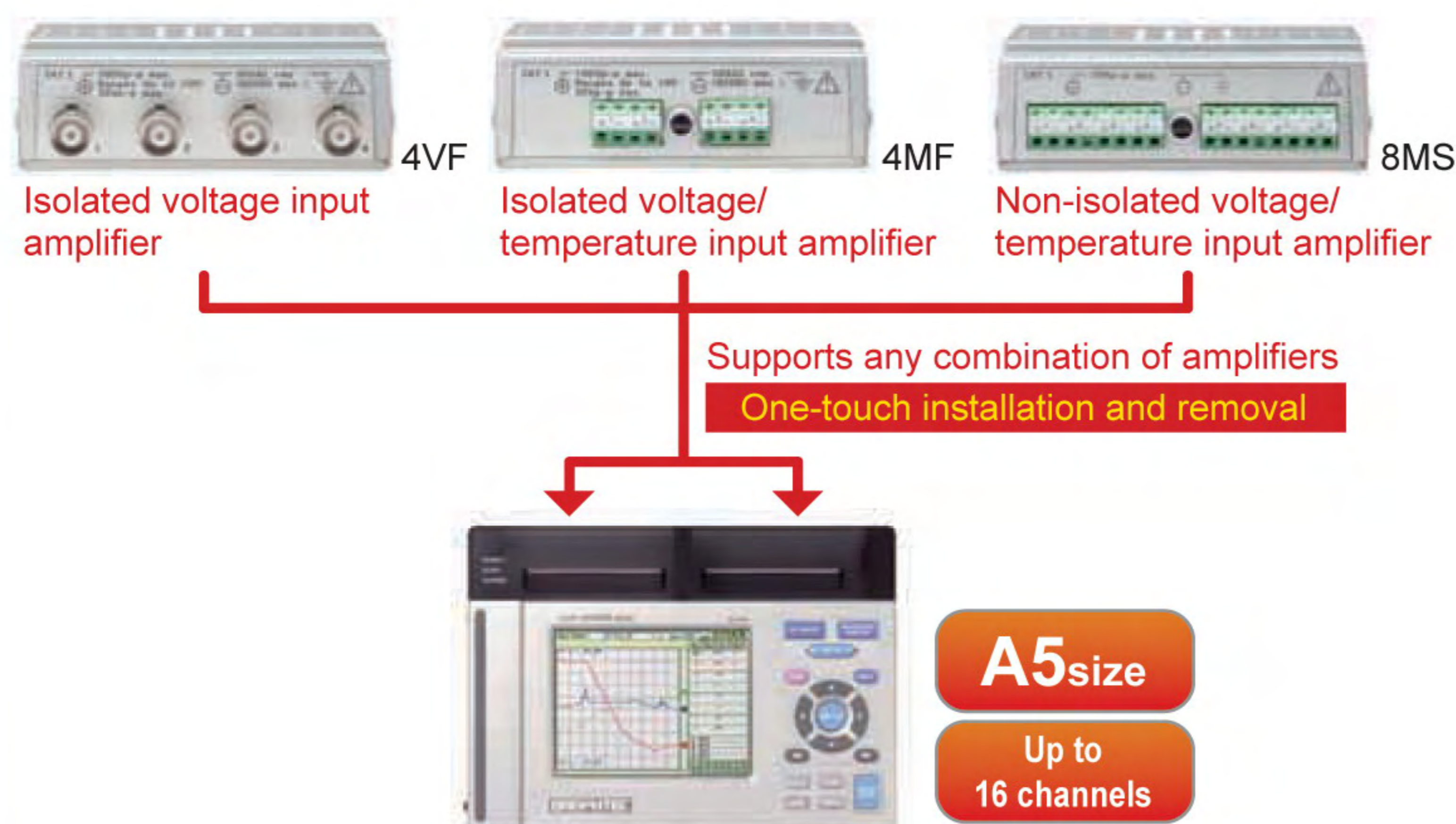
midi LOGGER

GL450



A5 size with multifunction input capability, supporting both isolated and non-isolated inputs

The GL500A is a compact recorder, with an A5 footprint, providing excellent portability. Three types of amplifiers: isolated voltage, isolated voltage/temperature and non-isolated voltage/temperature are supported and any combination of these can be selected to fit user's application. Input terminal units can be easily installed and removed by one-touch operation, and can be combined to increase the number of channels up to 16. GL500A can handle both logic and pulse signals. Alarm output terminals are also provided.



4 pulse/logic inputs are standard

Four pulse inputs are interchangeable with logic inputs and support Count, Inst. and RPM modes (requires optional B-513 input cable).



Event data can be displayed

When an event occurs during measurement, it is displayed along the time axis of current data as a bar chart. Each captured event is represented in its corresponding memory block of a different color.

After measurement, event data can be viewed alongside with current data. Current data is displayed in the upper, and event data in the lower section.

High and Low Speed Dual Sampling mini LOGGER dual GL500A

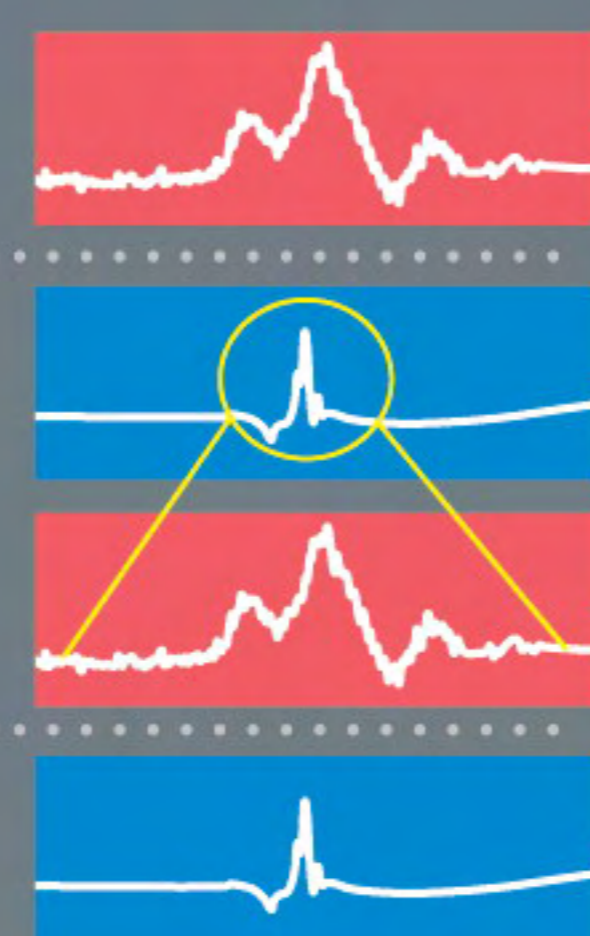
NEW

The GL500A provides the ability to precisely measure abnormal events that occur during low-speed sampling (max. 1ms) triggering high-speed sampling mode (max. 2 μ s). It incorporates 4MB of memory for data from low-speed sampling, and 32MB of built-in memory for data from high-speed sampling. In addition, it has a PCMCIA-card slot, enabling storage of large amounts of data to various PCMCIA media.

Catch a high-speed phenomenon with 500KS/s

Catch an abnormal phenomenon with a high-speed sampling during a low-speed sampling measurement

Measure the voltage with 1ms sampling for a long time



Low-speed data sampling

High-speed data sampling

Stored in 4MB memory or PCMCIA media.

Stored in 32MB memory

■ Capture time: low-speed sampling with 8ch (approx. values)

	1ms	100ms	10s
4MB memory	3 minutes	5 hours	23 days
256MB PCMCIA card	4 hours	17 days	1725 days

■ Capture time: high-speed sampling (approx. values)

	2 μ s	5 μ s	10 μ s	20 μ s	1ms
1 channel used.	6.4 sec	16 sec	32 sec	1 min.	53 min.
2 channels used.		13 sec	26 sec	53 sec	44 min.
4 channels used.			20 sec	40 sec	33 min.
8 channels used.				26 sec	22 min.

Simultaneous low and high speed sampling ses Capability of accurately capturing burst events that occur during measurement



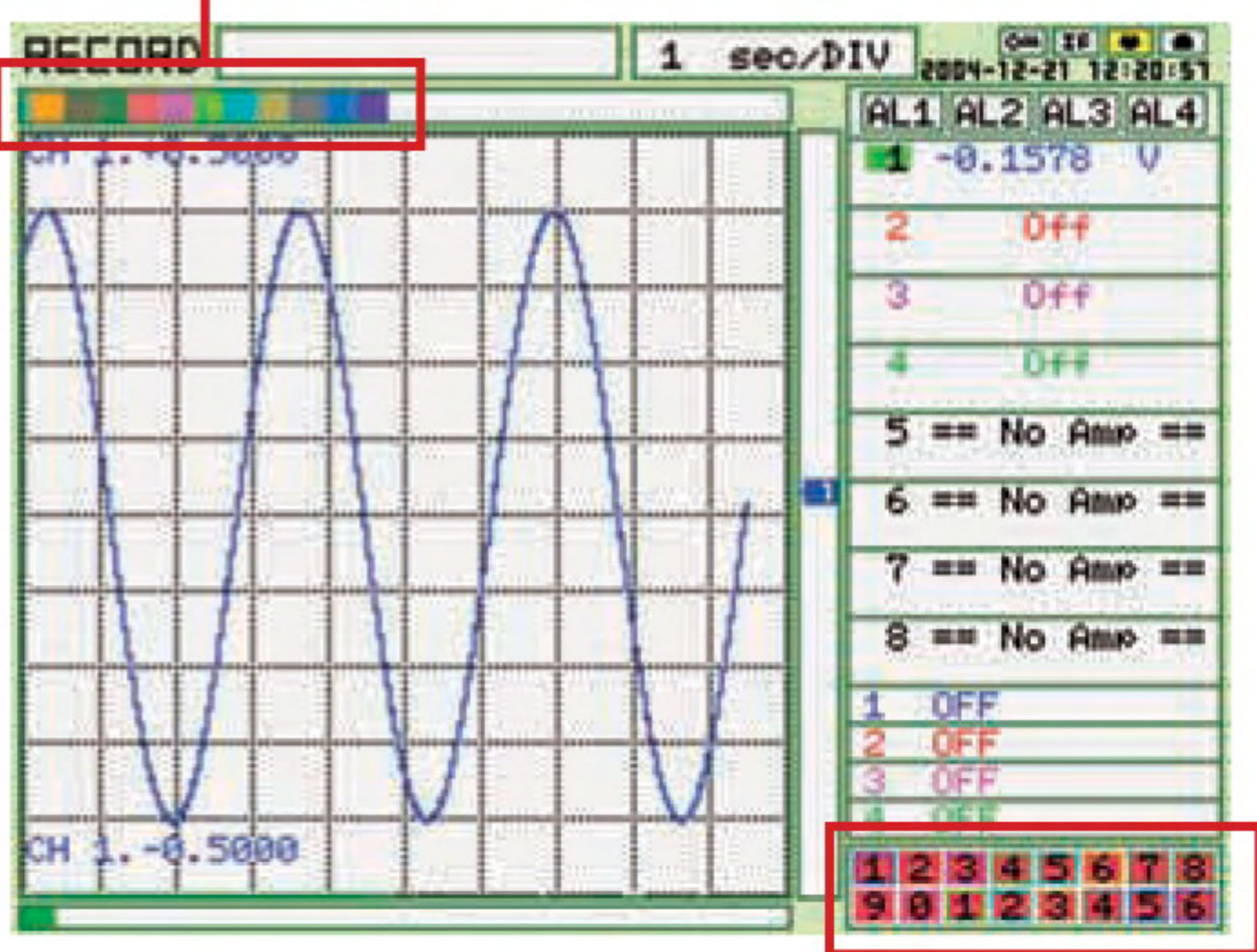
4-channel isolated voltage terminal unit
4VF



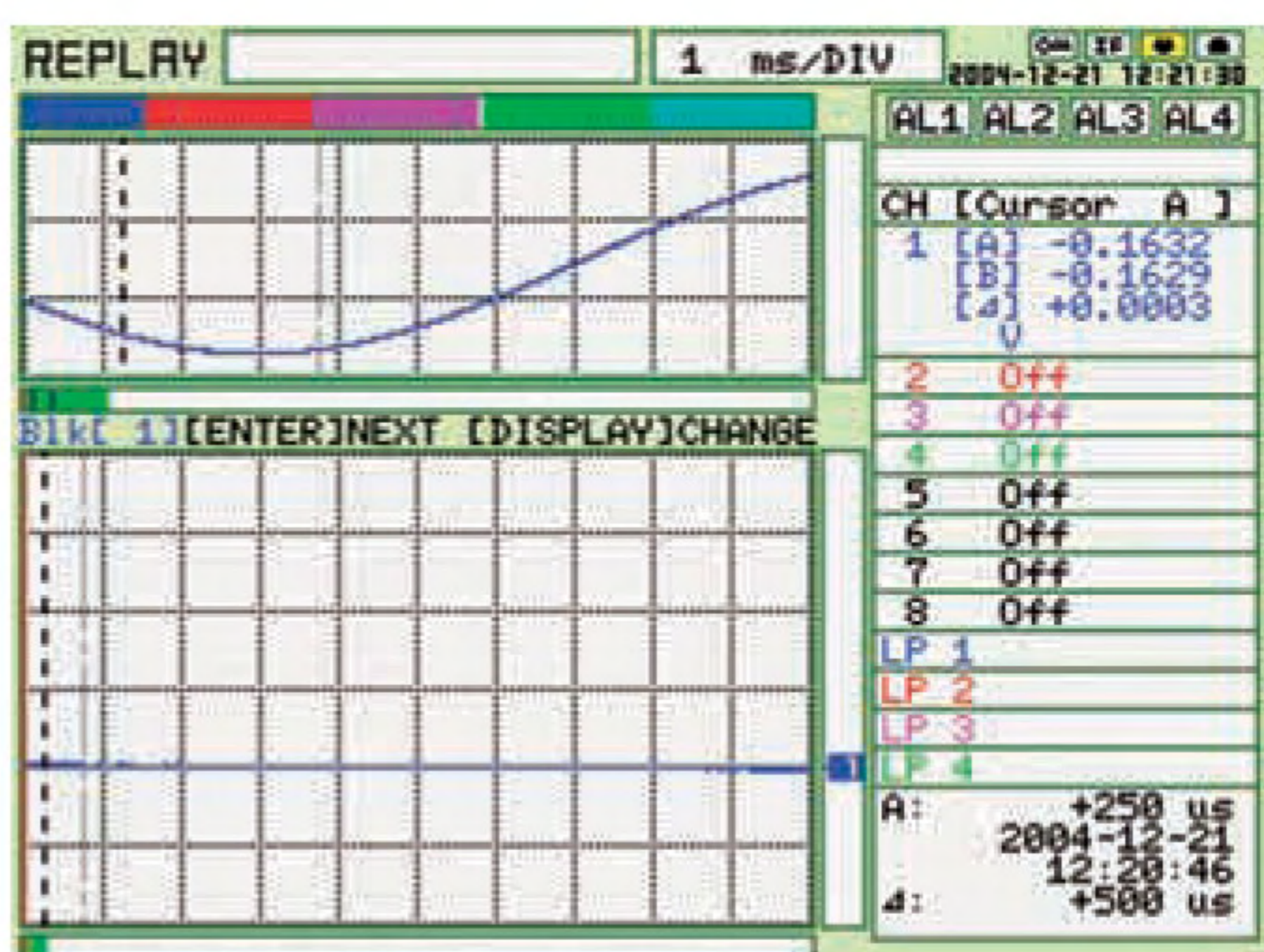
4-channel isolated voltage/temperature terminal unit
4MF

ed with current data

Bar chart showing event data



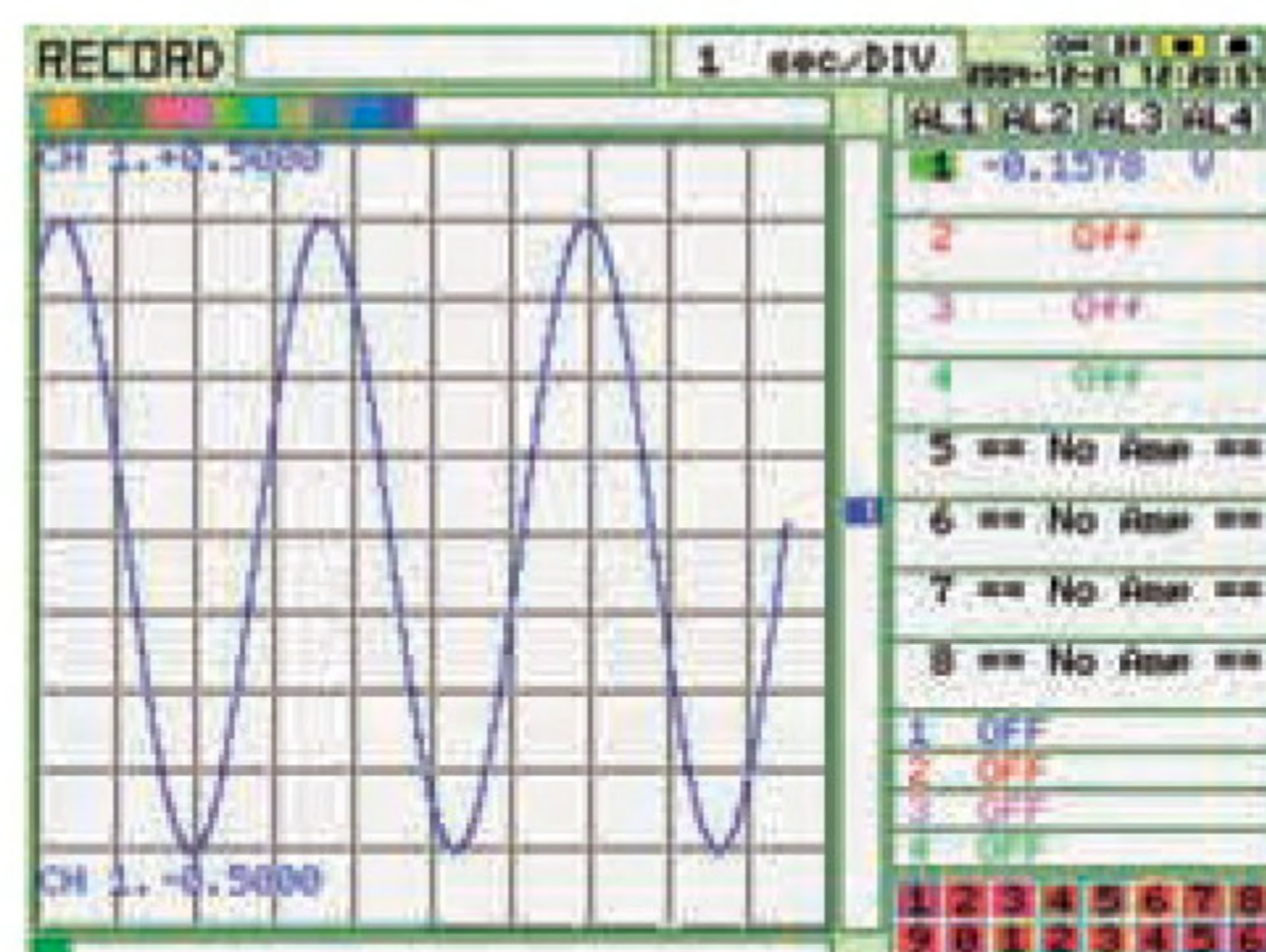
Memory blocks indicating each captured event (blocks displayed in different colors for easy identification)



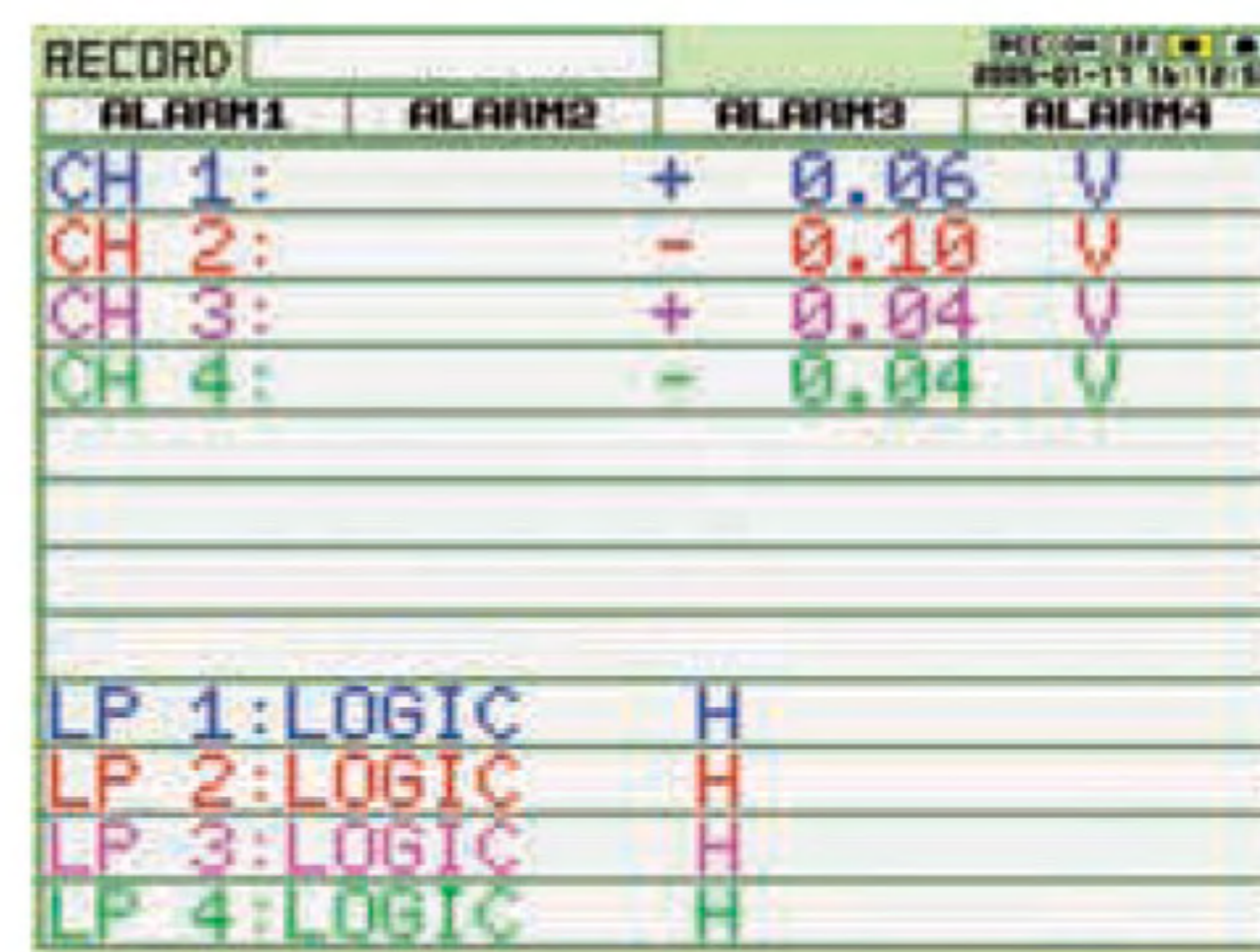
※ Event data: data captured using high-speed sampling mode when an abnormal event, e.g. voltage transient, occurs.
Current data: data captured using normal, low-speed sampling mode

Pursuing the ultimate ease-of-use

Control panel has a very user-friendly layout utilizing navigation keys resembling a mobile phone. Even first-time users can easily perform setups and display measurement data using intuitive step-by-step menu. Captured events can be viewed after the measurement. Captured data can be monitored in both waveform and digital forms during measurement.



Digital + Analog screen
Both analog waveforms and digital values are visible.



Digital screen
Measurement values can be viewed in digital format.



Easy navigation using arrow keys

Excellent operability similar to that of a mobile phone
Easy, user-friendly operation at fingertips

As easy as cell phone

Worry-free battery charging during operation

Battery charging is available even during measurement.*
Backup battery will protect your data from possible data loss due to power outage.

* Only possible when using the AC adapter or in 24V DC operation. Battery charging may not be available depending on the operating conditions of the main unit.

- Search function
- Unit conversion/calculation
- Auto backup function
- Review function

Standalone models

GL500AVF

4-channel isolated voltage measurement

GL500AMF

4-channel isolated voltage/temperature measurement

GL500AMS

8-channel voltage/temperature measurement

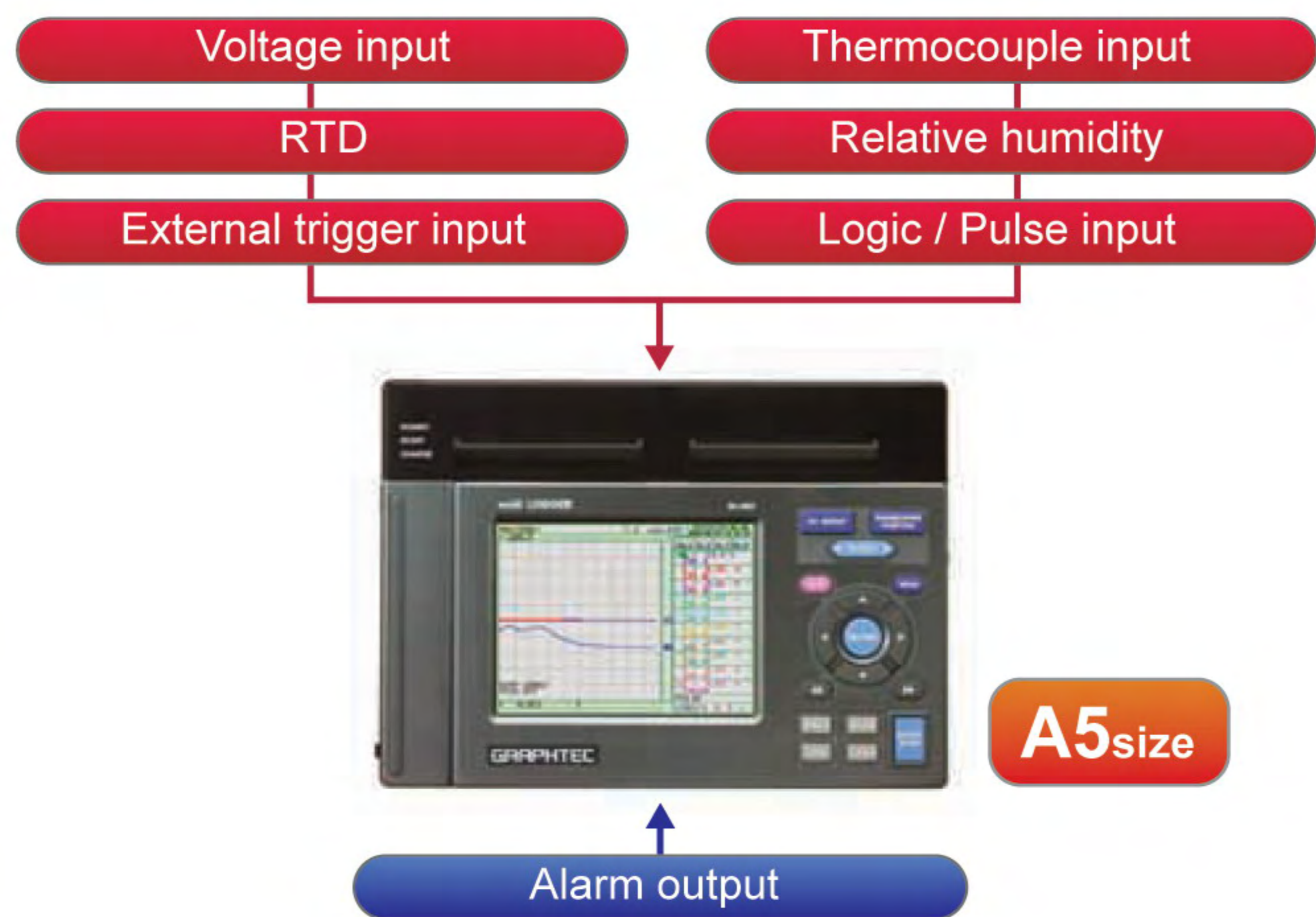


8-channel voltage/
temperature terminal unit
8MS

NEW

A5 size model with all multifunctional and isolated input channels

The GL450 is a compact data logger, with an A5 footprint, providing excellent portability. All channels are isolated channel-to-channel and channel-to-ground. It has the ability to perform simultaneous measurement of voltage , temperature and humidity. It also supports such inputs as pulse (e.g. power, rpm and flow) and logic, in addition to voltage and temperature.

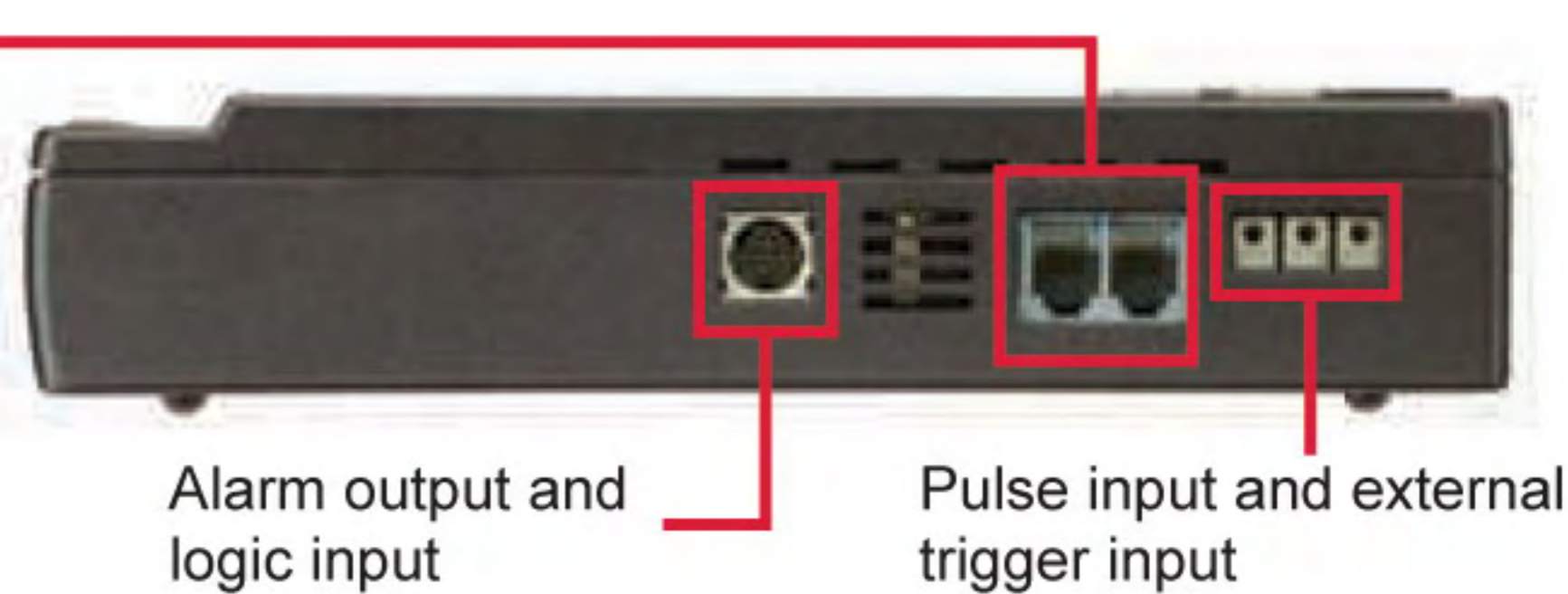


Channels can be easily added

Four types of input terminal units are available, each supporting 10, 20, and 50 channels. By combining appropriate terminal units, up to 100 channels are available. New M3 terminal unit allows connecting transducers with eye or fork termination. This means that the cost per channel significantly decreases, allowing you to purchase multiple terminal units to meet the needs. Low-cost terminal units can be left attached to the objects for measurement, eliminating time and effort to make cable connections every time you change the location.

Synchronizing multiple main units

Multiple GL450 units can be synchronized, thus allowing to achieve up to 100 channel without sacrificing a sampling rate. (An optional cable is required for synchronizing multiple main units. The synchronization feature is supported in PC-controlled configuration only.)



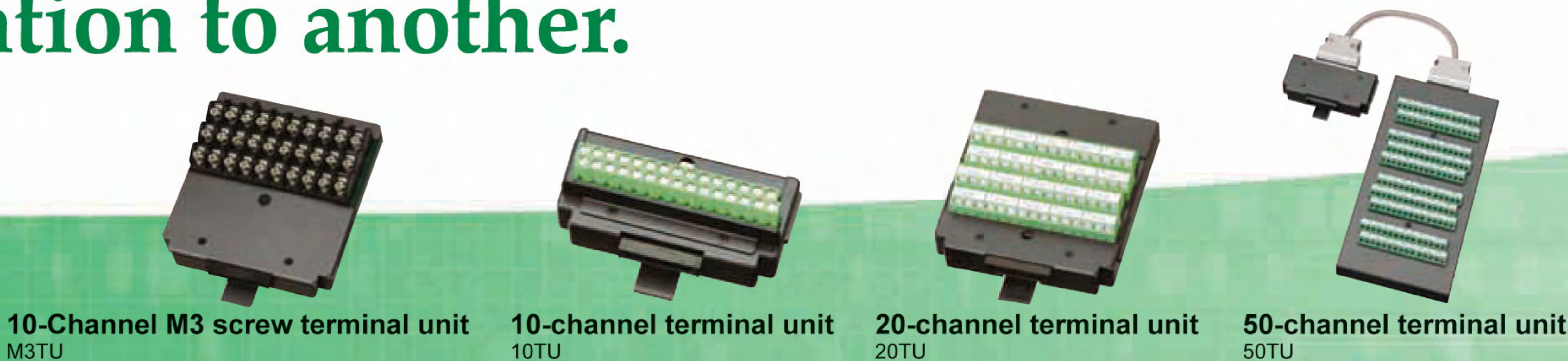
Long time data logging with low-speed sampling mini LOGGER GL450 NEW

GL450 can capture data in low-speed sampling mode using up to 100 channels. It has built-in 4MB memory for internal data storage. GL450 has a PCMCIA card slot that accepts various media, capable of storing large amounts of data.

Memory capacity	Number of channels	100ms	200ms	500ms	1s	10s
4MB built-in memory	10	4 hours	8.9 hours	22.4 hours	1.8 days	18 days
	20	-	5 hours	12.6 hours	1 day	10 days
	50	-	-	5.2 hours	10.5 hours	4 days
256MB PCMCIA card	10	14 days	28 days	70 days	141 days	1412 days
	20	-	14 days	36 days	73 days	739 days
	50	-	-	15 days	30 days	304 days

The table above indicates the data when analog channels are used. The maximum sampling rates are: 500ms for 30 and 40 channels and 1s for 60 and 70 channels.

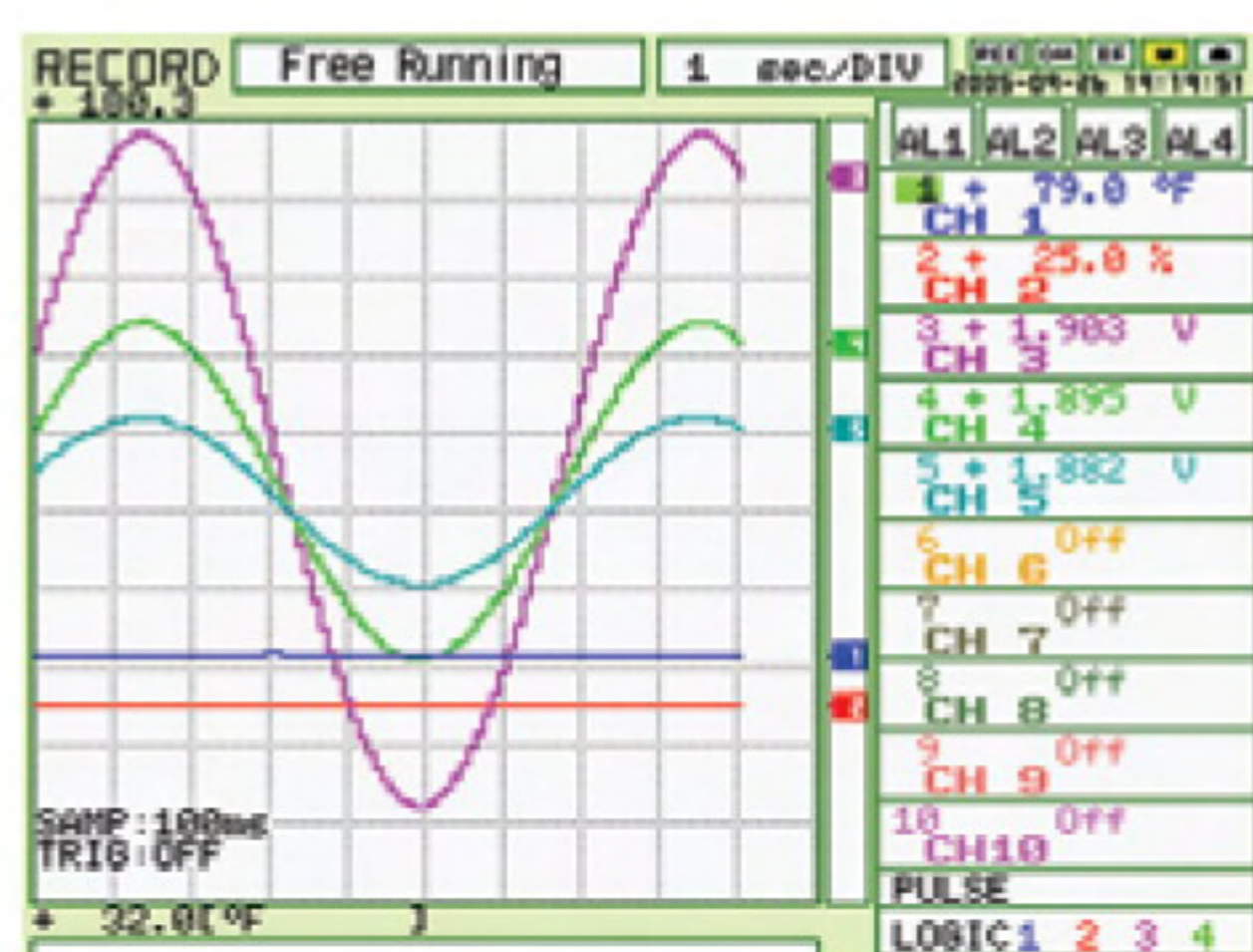
Supports low-speed,
long-time measurement on multiple channels.
Small form factor allows easily move from one
test location to another.



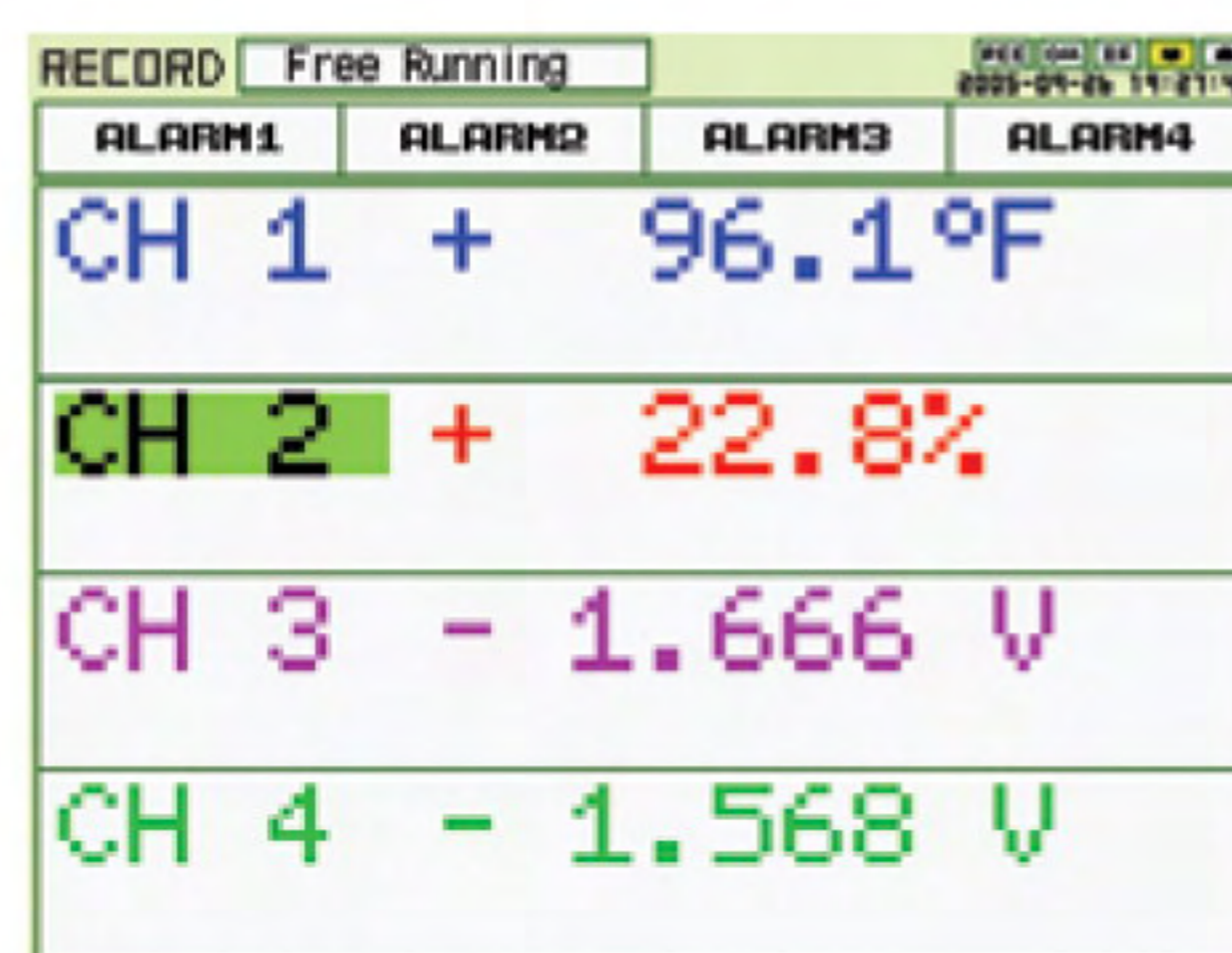


Pursuing the ultimate ease-of-use

Control panel has a very user-friendly layout utilizing navigation keys resembling a mobile phone. Since menus are designed to follow actual workflow, even first-time users can easily perform setups and display measurement data. Data analysis and report creation are just as easy. The screens on the main unit are similar in design to those of application software, providing almost the same operational procedures in both standalone and PC-controlled modes. Depending on measurement needs, an appropriate screen can be selected: Analog + Digital, Analog, Digital + Calculation, and Digital.



Digital + Analog screen
Both analog waveforms and digital values are visible.



Digital screen
Data on a certain channel can be closely examined.

Easy navigation using arrow keys.

Excellent operability similar to a mobile phone
Easy, user-friendly operation at fingertips

**As easy as
cell phone**

Data backup feature (battery operation)

An optional battery allows you to use the device in an environment where a stable power source does not exist. When battery is installed, the system automatically switches to battery power when AC power fails. When the battery capacity declines to a certain level, the system automatically stores the captured data in the PCMCIA card.

- Search function
- Auto backup function
- Unit conversion/calculation
- Alarm output



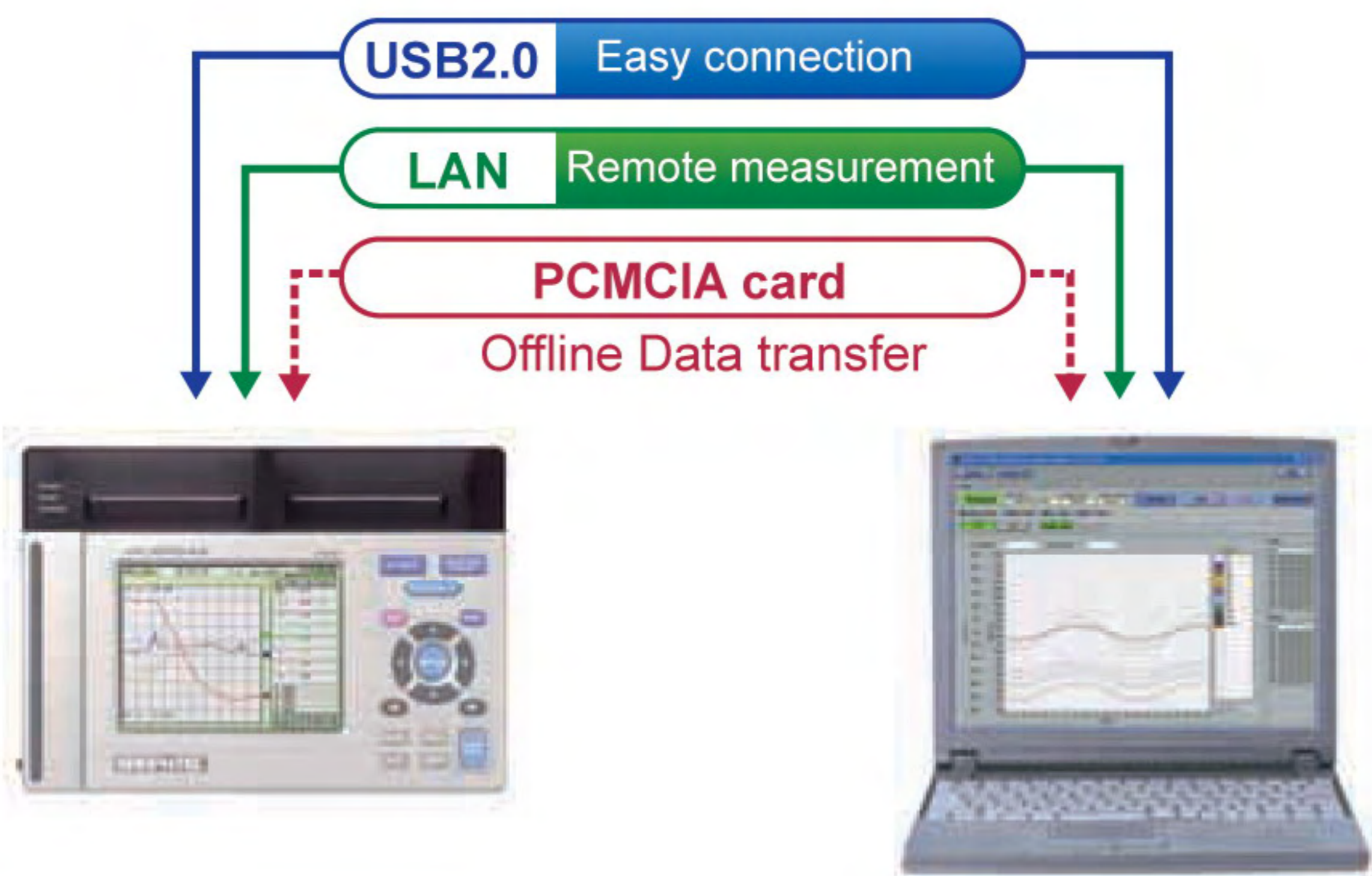
Standalone measurement model

GL450 (10-channel terminal unit included)

NEW

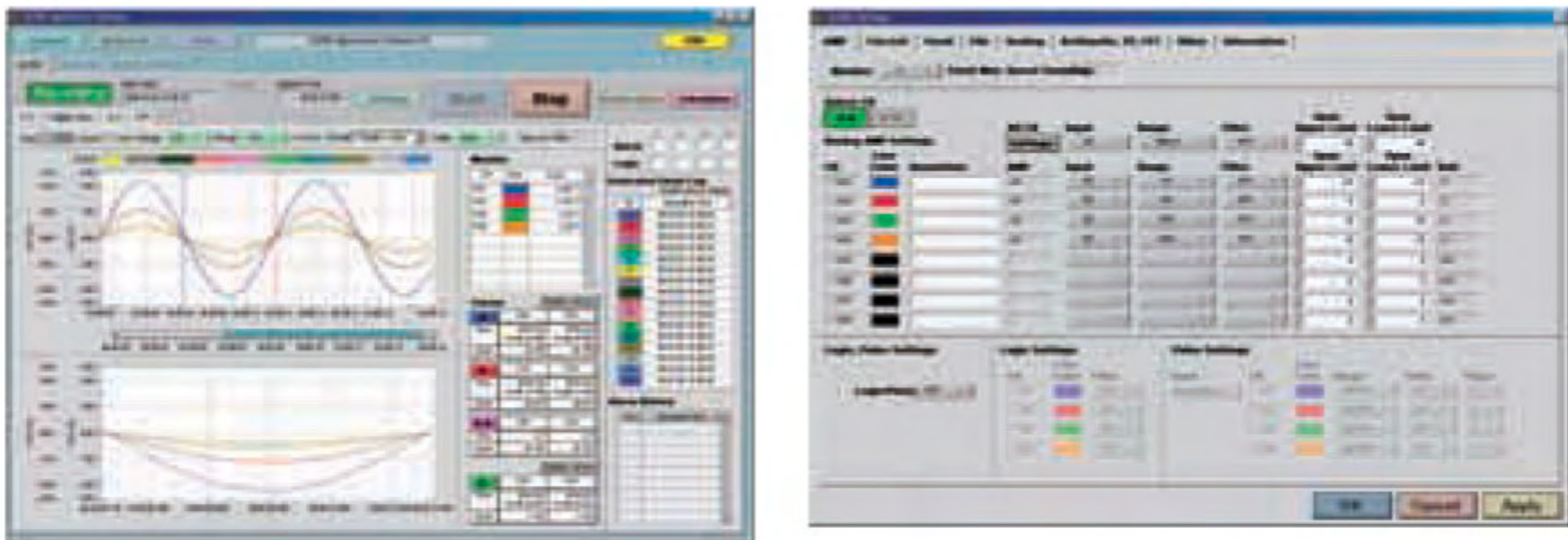
Easy connection to PC

The GL500A/450 support USB2.0, allowing for easy connection to PC. Data will be transferred at a high speed of 1ms. The GL500A/450 also support remote measurement sessions via LAN, and data transfer using a PCMCIA card. The configuration of the GL500A/450 can be easily done from a PC, and data is clearly displayed on the monitor. Current data is displayed in real time on PC monitor at maximum sampling rate of 1 ms. A portion of current data can be expanded for examination by specifying the start and end points with a cursor. Moreover the GL450/500A can act as USB Memory Storage device, and transfer recorded data to a PC using Windows Explorer.



PC software (standard)

- Configuring/controlling the main unit, and storing data in real time
- Importing data from a main unit into PC
- Notifying errors/malfunctions via email when alarms occur



Measurement screen

The menu can be defined depending on the measurement steps. Even first-time users can easily use the device.

Various accessories are available to meet specific configuration needs.

Main unit

GL500AVF	one 4VF terminal unit included
GL500AMF	one 4MF terminal unit included
GL500AMS	one 8MS terminal unit included
GL450	one 10TU terminal unit included



GL450
(one 10TU terminal unit included)



GL500AVF
(one 4VF terminal unit included)
GL500AMF
(one 4MF terminal unit included)
GL500AMS
(one 8MS terminal unit included)

Terminal units and a battery pack

Type	Model name	For	
		GL500A	GL450
4-channel isolated voltage terminal unit	4VF	<input type="radio"/>	
4-channel isolated voltage/temperature terminal unit	4MF	<input type="radio"/>	
8-channel voltage/temperature terminal unit	8MS	<input type="radio"/>	
10-channel terminal unit	10TU		<input type="radio"/>
20-channel terminal unit	20TU		<input type="radio"/>
50-channel terminal unit	50TU		<input type="radio"/>
10-channel M3 screw terminal unit	M3TU		<input type="radio"/>
Humidity sensor (3m)	B-530		<input type="radio"/>
Battery pack	B-517	<input type="radio"/>	<input type="radio"/>

Probe and cables

Type	Model name	For							
		GL500A	GL450	4VF	4MF	8MS	10TU	20TU	50TU
RIC-141 Safe probe (1:1, 42PF)	RIC-141			<input type="radio"/>					
BNC-BNC cable (1.5m)	RIC-112			<input type="radio"/>					
BNC-Banana cable (1.5m)	RIC-113			<input type="radio"/>					
BNC-Alligator Clip cable (1.5m)	RIC-114			<input type="radio"/>					
Logic alarm cable (2m)	B-513	<input type="radio"/>	<input type="radio"/>						
DC power cable (2m)	B-514	<input type="radio"/>	<input type="radio"/>						
Synchronization cable (1m)	B-515		<input type="radio"/>						

GL500A Application Software

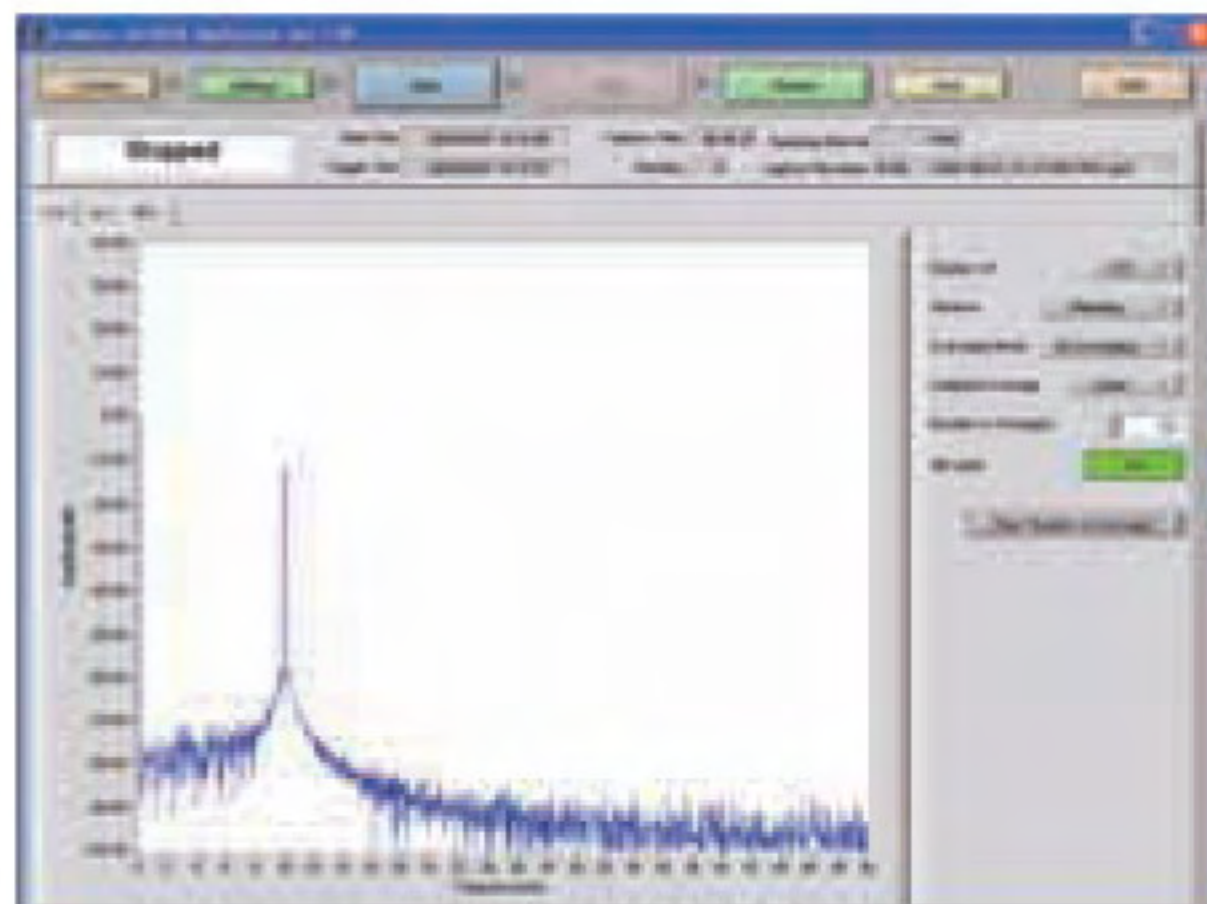
Connection settings

Allows you to configure USB/TCP-IP connections



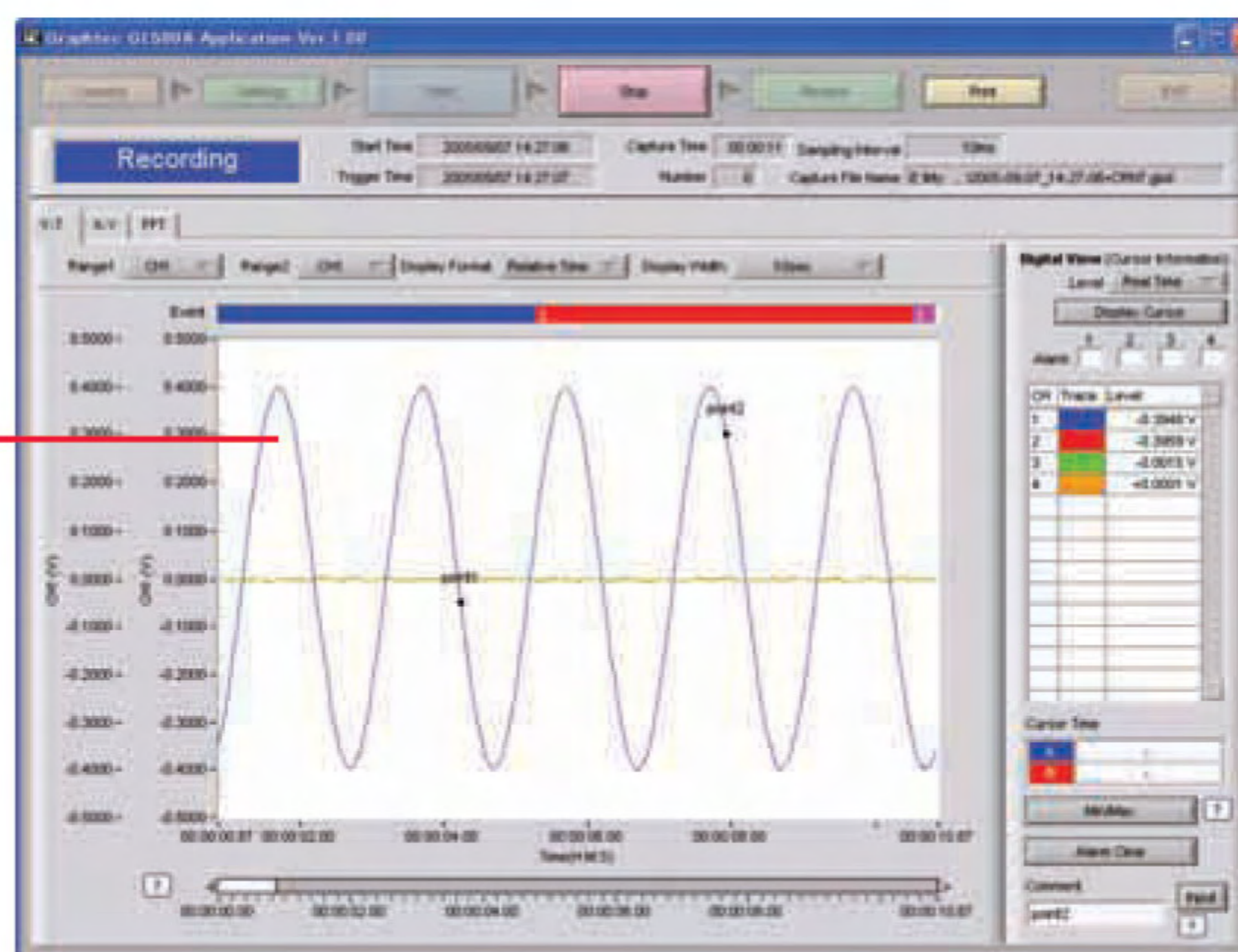
Measurement modes

Available measurement modes are: Y-T, X-Y, and FFT.



Main screen

This area displays current data.



Review screen

This screen allows for loading captured data. After data has been loaded, it can be saved to a CSV file, or printed.

Screens for settings

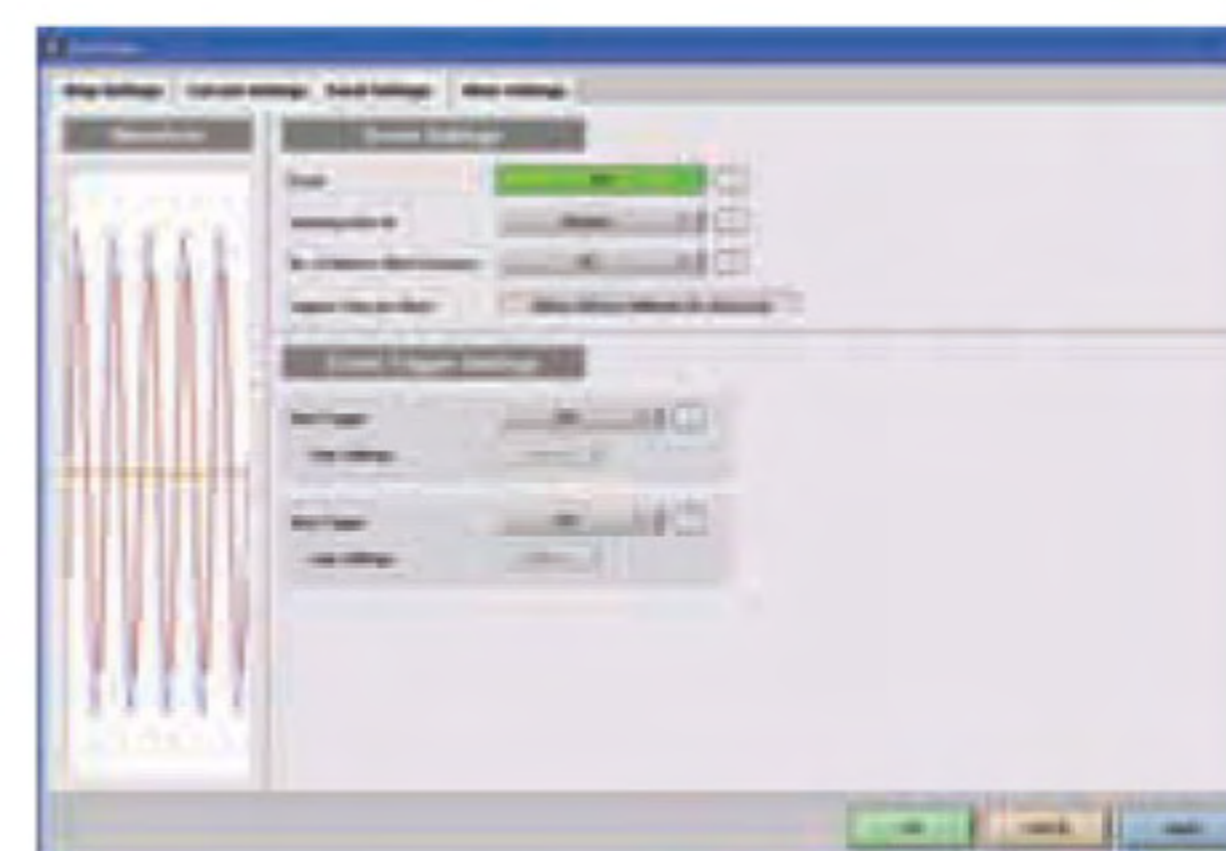
Separate screens are available for each of the settings.



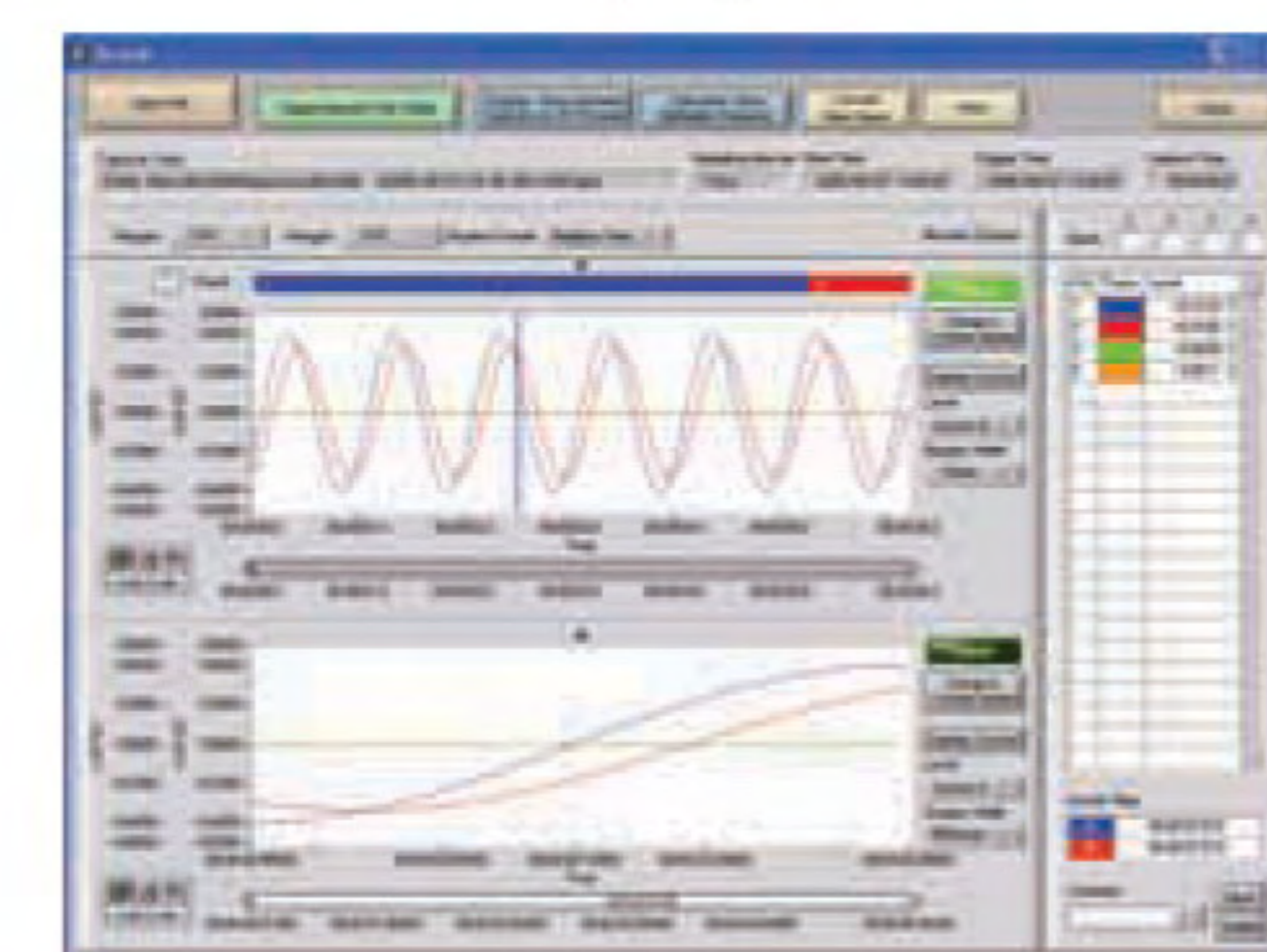
Amplifier setting screen



Current setting screen



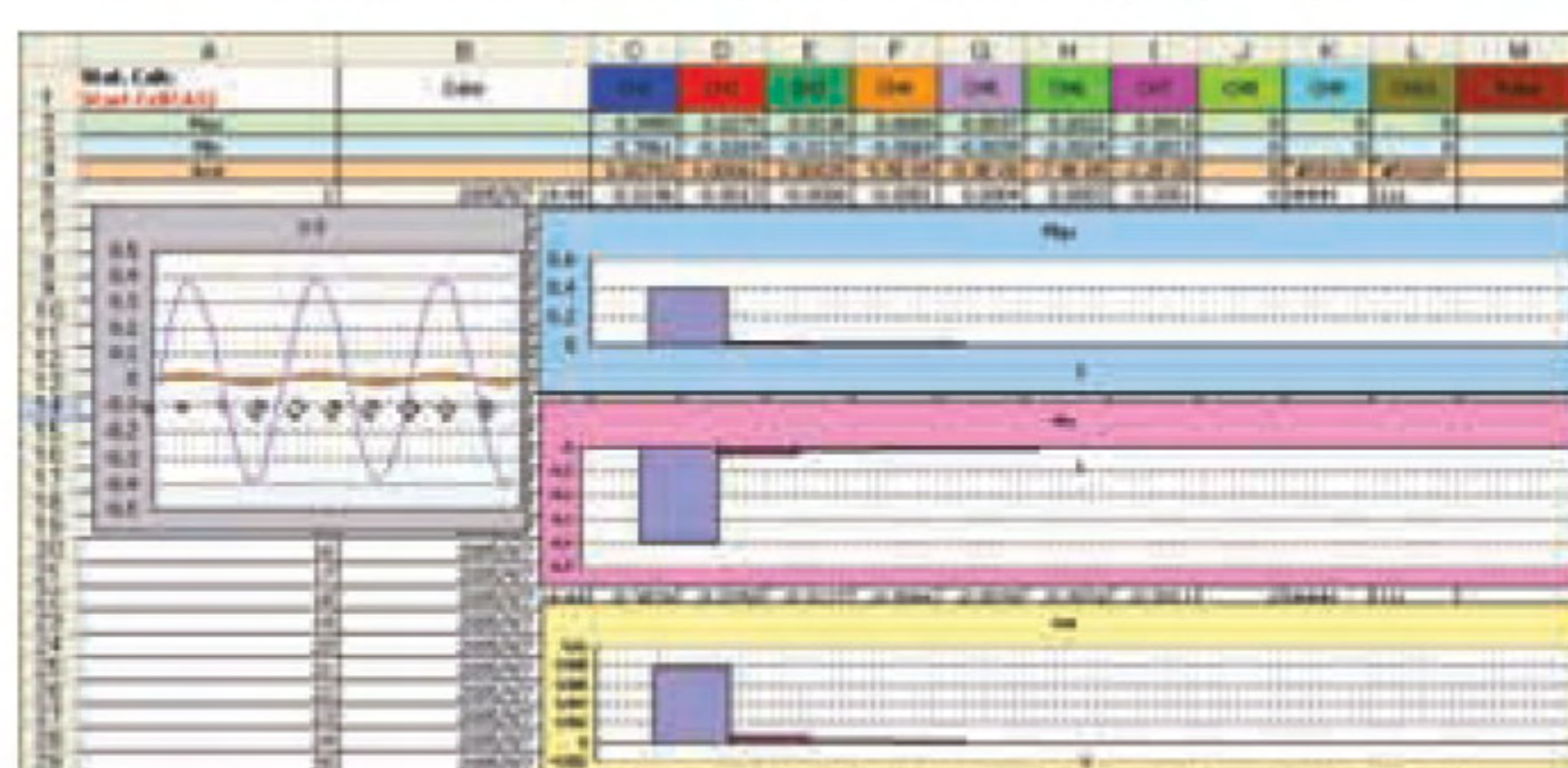
Event setting screen



For both GL500A and GL450

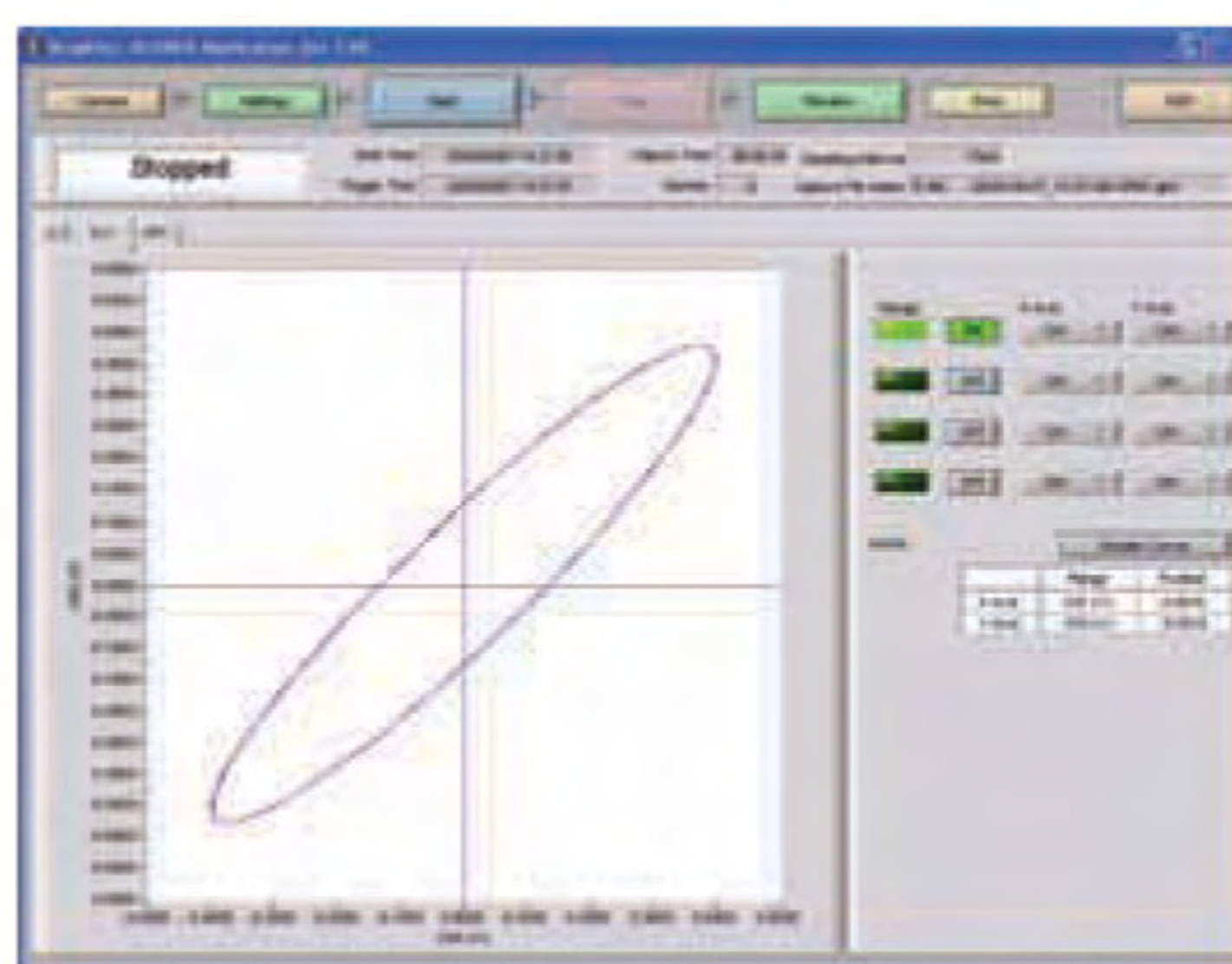
Direct Excel transfer

Direct Excel transfer can be enabled as a report function

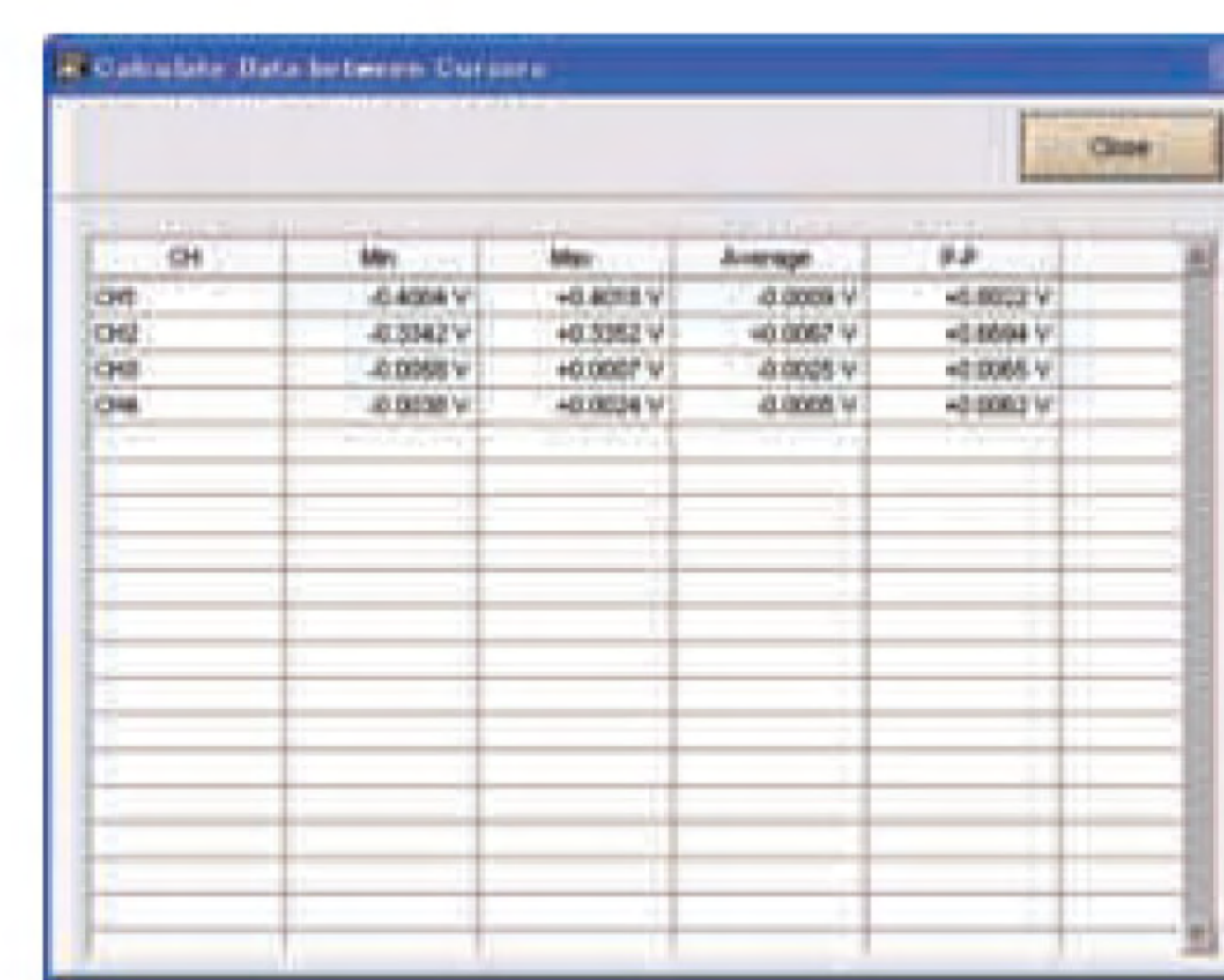


Transfer the measurement data directly to Excel. Not only transferring data to Excel, but also preparing the convenient reference template. Therefore, you can measure it soon.

X-Y view mode



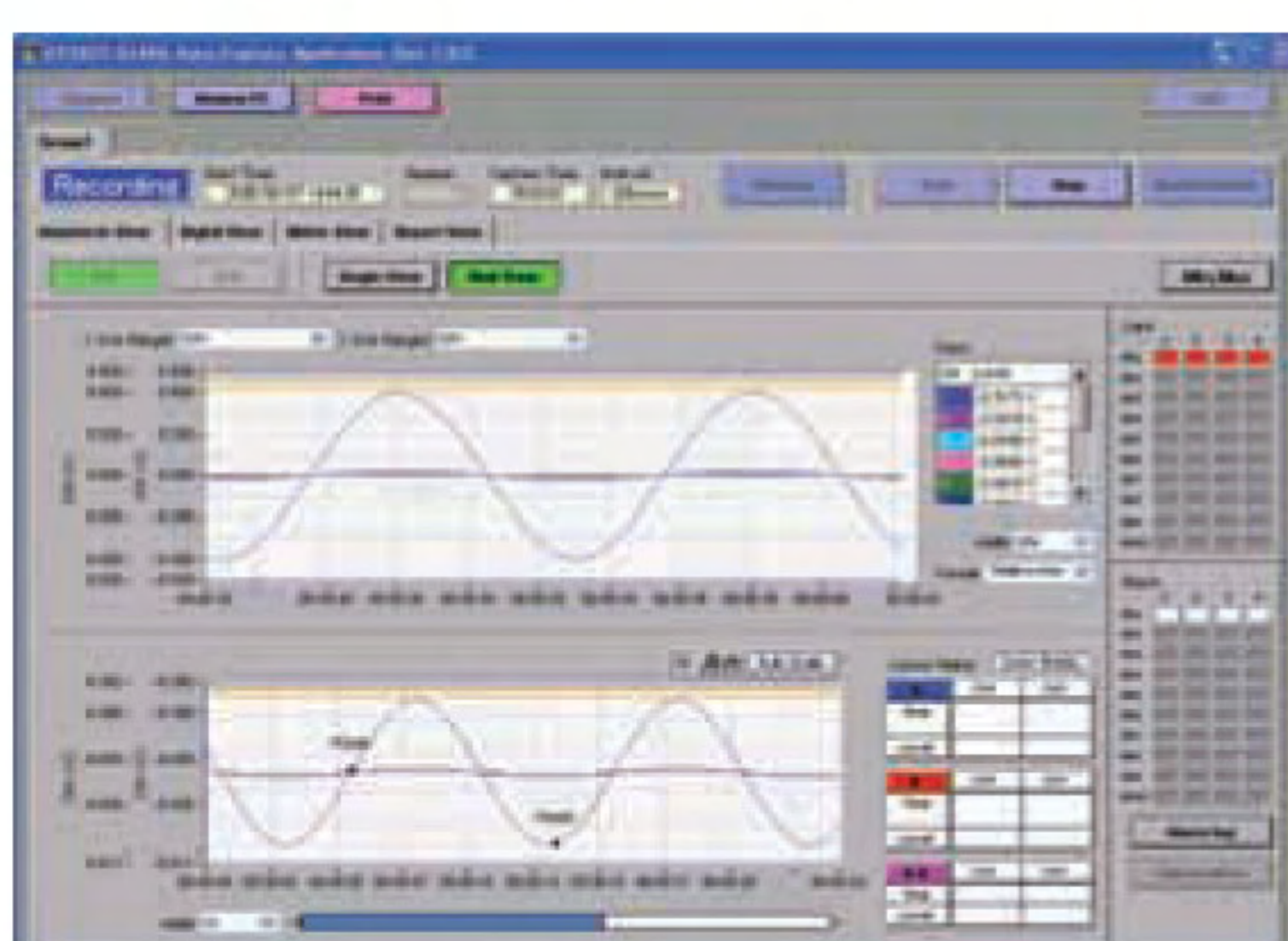
Max-Min View mode



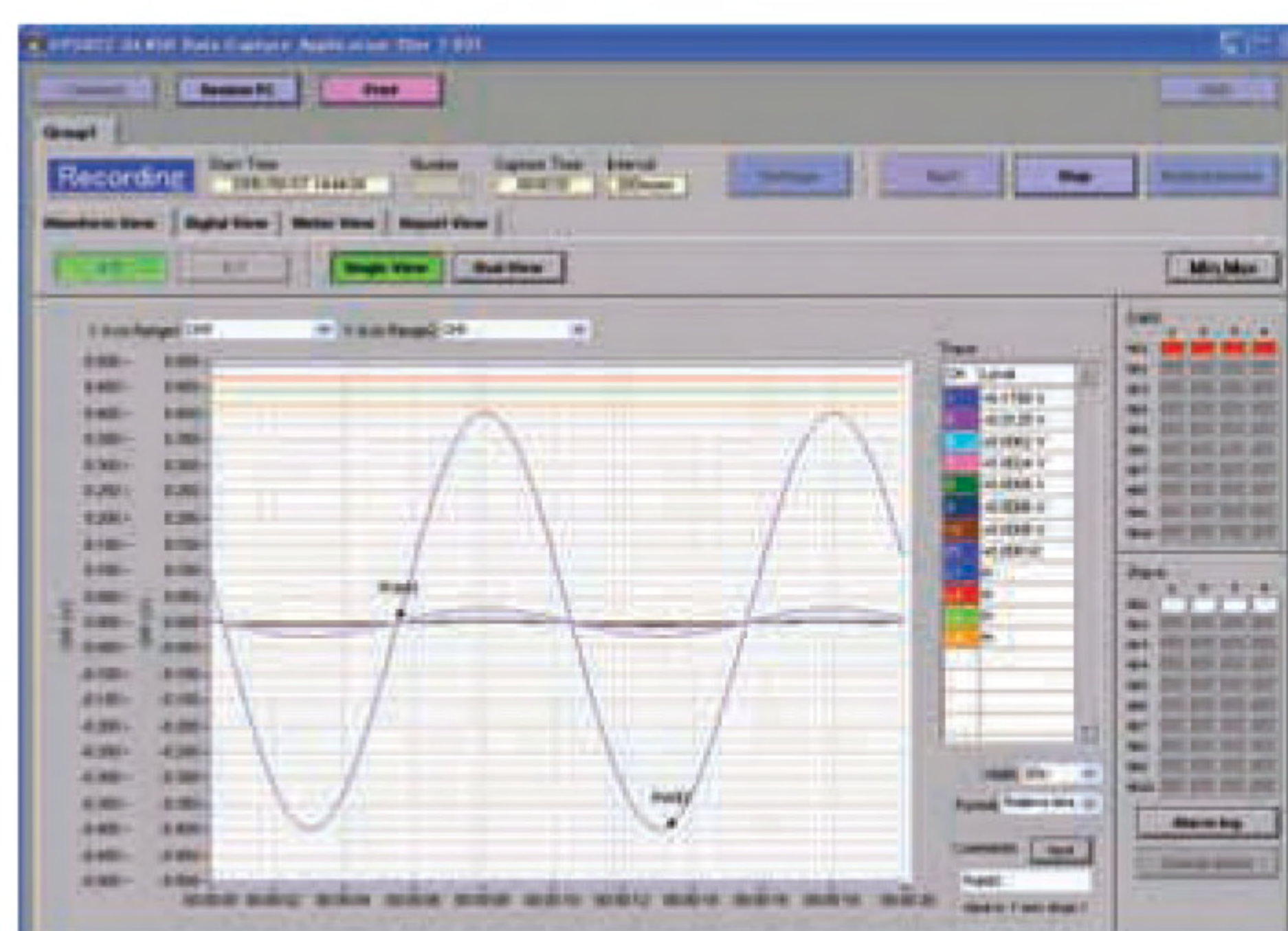
GL450 Application Software (OPS022)

Display settings

Display type can be easily selected as needed.



Waveform display (upper section: current, lower section: past)
One-screen or two-screen display are available.
In two-screen display, current waveform and past waveform are provided in each screen.



Easy configuration

The menu intuitively follows common measurement steps. Even first-time users will have no problems using the device.



System Requirements

OS : Windows 2000, XP
CPU : Pentium 4, 1.7GHz or higher
Memory : 256MB or more

HDD (GL500A) : 100 MB (1 GB recommended) additional space required for installing the application software
HDD (GL450) : 10MB for installing software, additional space required for data storage
Other : TCP-IP port, USB port, CD-ROM drive (for installing from CD)
USB 2.0 required for high-speed applications

GL500A Main Unit Specifications

Basic Specifications		GL500A
Number of analog input terminal units		2
Sampling interval*1	Current	1 ms - 1 h
	Event	2μs (per channel) - 1 s
Trigger	Current	Type: Start (Data capture starts when a trigger is generated) Stop (Data capture stops when a trigger is generated) Condition: Start: Level, Scheduled Time, External, Off Stop: Level, Scheduled Time, External, Elapsed Time, Event Full (two channels can be specified), Off
	Event	Type: Start (Data capture starts when a trigger is generated) Stop (Data capture stops when a trigger is generated) Condition: Start: Level, External, Off Stop:Level, External, Off
Alarm	Type	Analog, Logic, Pulse (AND and OR operations available)
	Condition	Analog: H, L, Window In, Window Out Logic: 4-ch pattern Pulse: H, L, Window In, Window Out
Pulse/Logic input		Either Pulse or Logic can be selected. Number of channels: 4
Pulse input range	Count mode	5 c, 50 c, 500 c, 5 kc, 50 kc/f.s. (max. 50 k/sampling interval)
	Inst. mode	5 c, 50 c, 500 c, 5 kc, 50 kc/f.s. (max. 50 k/sampling interval)
	RPM mode	5 rpm, 50 rpm, 500 rpm, 5 krpm, 50 krpm/f.s. (max. 50k/sec)
Alarm output	Number of channels	4 ch
	Output format	Open collector output (100 kΩ pull-up resistance)
	Output conditions	Level judgment, Window judgment, Logic Pattern judgment, Pulse judgment
External trigger input*2		1 ch
Interface to PC		Ethernet (10BASE-T/100BASE-TX), USB2.0
Internal memory		Current: 4 MByte (2M words)
		Event: 32 MByte (16M words)
PCMCIA slot		Type 2 compatible
Display	Size	4.7-inch STN color LCD
	Displayed items	Waveforms + digital values, waveforms only, digital values only
	Functions	Expanded/compressed waveform displays, scaling, statistical calculations, four arithmetic operations, search
Operating environment		Temperature: 0 - 40°C, Humidity 30 - 80% RH
Withstand voltage		1 minute at 500 Vp-p (between each input channel and main unit chassis)
Power supply		AC adapter (100 to 240 VAC, 50/60Hz)
		DC power (8.5 to 24 VDC) *3, battery pack *3
Power consumption		26 VA or lower (AC power)
External dimensions (W x D x H, approx.)		212 x 162 x 45 mm
Weight (approx.)		800g *4

*1 Sampling speed depends on available number of channels
*2 Maximum input voltage: + 24 V, input threshold voltage: approx. +2.5V, hysteresis: approx. 1V (+2 to +3V)
*3 Optional
*4 GL500AVF: excluding the battery and AC adapter"

GL500A Terminal Unit Specifications

Item		4VF	4MF	8MS
Number of input channels		4	4	8
Type of input terminal		BNC	Screw type terminal	Screw type terminal
Method		Scan All channels isolated Non-balanced input	Scan All channels isolated Non-balanced input	Scan Channels not isolated Balanced input
Measurement ranges	Voltage	±100,500 mV ±1.5,10,50,100 V	±100,500 mV ±1.5,10,50,100 V	±100,500 mV ±1.5,10 V
	Temperature		K, J, E, T, R, S, B, N, W	K, J, E, T, R, S, B, N, W
Type of input filter	Type	Line (1.5 Hz), 5 Hz, 50 Hz, 500 Hz		
Frequency response		DC - 20 kHz (+1/-3 dB Typ)		DC-20 kHz (+1/-4.5 dB Typ)
Measurement precision* (23℃±3℃) 30 min after power-on Line filter: ON Data stored in current memory	Voltage	±0.3 % of F.S.		
	Temperature	<TC-K, J, E> -200≤Ts≤0:±(1% of rdg +3.5℃) 0<Ts≤MAX:±(0.2% of rdg +3.5℃) <MAX> 1370(K), 1100(J), 800(E) <TC-T> -200≤Ts≤0:±(0.8% of rdg +3℃) 0<Ts≤400:±(0.2% of rdg +3℃) <TC-R, S> 0≤Ts≤200:±9.5℃ 200<Ts≤800:±6.5℃ 800<Ts≤MAX:±(0.2% of rdg +4.5℃) <MAX> 1600(R), 1760(S) <TC-B> 600≤Ts≤700:±9.5℃ 700<Ts≤1820:±(0.2% of rdg +5.5℃) <TC-N> 0≤Ts≤1300:±(0.2% of rdg +3.5℃) <TC-W> 0≤Ts≤2315:±(0.2% of rdg +4℃) (including the reference junction compensation accuracy)		
A/D converter		14 bit		
Maximum input voltage	Between +/-	100 mV - 10 V range: 30 V 50 V - 100 V range: 100 V		100 mV -10 V range: 10 V
	Between input terminal/chassis	AC33 Vr.m.s (60 VDC)		Non-isolated
Withstand voltage		Between input terminal and GND 1 minute at 500 VAC		Non-isolated

GL450 Main Unit Specifications

Basic Specifications		GL450
Number of analog input terminal units		2
Sampling interval *1		100 ms (10 ch) - 1 h
Trigger	Type	Start (Data capture starts when a trigger is generated) Stop (Data capture stops when a trigger is generated)
	Condition	Start: Level, Alarm, External, Off Stop: Level, Alarm, External, Time, Off
Alarm	Type	Analog, Logic, Pulse (AND and OR operations available)
	Condition	Analog: H, L, Window In, Window Out Logic: 4-ch pattern Pulse: H, L, Window In, Window Out
Number of channels for logic input		4 ch
Number of channels for pulse input		1 ch
Pulse input range	Count mode	50 kc, 500 kc, 5 Mc, 50 Mc, 500 Mc/f.s. (max. 50 k/sampling interval)
	Inst. mode	50 kc, 500 kc, 5 Mc, 50 Mc/f.s. (max. 50 k/sampling interval)
	RPM mode	500 rpm, 5 krpm, 50 krpm, 500 krpm/f.s. (max. 50 k/sec)
Alarm output	Number of channels	4 ch
	Output format	Open collector output (100 kΩ pull-up resistance)
	Output conditions	Level judgment, Window judgment, Logic Pattern judgment, Pulse judgment
External trigger input*2		1 ch
Interface to PC		Ethernet (10BASE-T/100BASE-TX), USB2.0
Internal memory		4 MByte
PCMCIA slot		Type 2 compatible
Monitor	Size	4.7-inch STN color LCD
	Displayed items	Waveforms + digital values, waveforms only, digital values only
	Functions	Expanded/compressed waveform displays, scaling, statistical calculations, search
Operating environment		Temperature: 0 - 40°C, Humidity 30 - 80% RH
Power supply		AC adapter (100 to 240 VAC, 50/60Hz), DC power (8.5 to 24 VDC) *3, battery pack *3
Power consumption		15 VA or lower (AC drive)
		7.2 VA or lower (DC drive)
External dimensions (W x D x H, approx.)		212 x 152 x 45mm
Weight (approx.)		770g *4

*1 Sampling speed depends on number of available channels.
*2 Maximum input voltage: + 24 V, input threshold voltage: approx. +2.5V, hysteresis: approx. 1V (+2 to +3V)
*3 Optional
*4 Excluding the battery and AC adapter"

GL450 Terminal Unit Specifications

Item		10TU	20TU	50TU	M3TU
Number of input channels		10	20	50	10
Type of input terminal		Screw type terminal block			with M3 screw
Method		Scan All channels isolated, Non-balanced input			
Measurement ranges	Voltage	±20, 50, 100, 200, 500 mV ±1, 2, 5, 10, 20, 50, 1-5 V			
	Temperature	Thermocouple: K, J, E, T, R, S, B, N, W Resistance Temperature Detector: Pt100, JPt100			
	Humidity	0 to 100% RH (Voltage 0V to 1V scaling conversion)			
Type of input filter	Type	On/Off			
Measurement precision	Voltage	±0.1 % of F.S.			
	Temperature *1	If the reference junction compensation is internal, add ±0.5 °C to each of the following values. <Thermocouple: R, S > 0℃≤TS≤100 °C: ±5.2 °C 100 °C<TS≤300 °C: ±3.0 °C R: 300 °C<TS≤1600 °C: ± (0.05 % of rdg + 2 °C) S: 300 °C<TS≤1760 °C: ± (0.05 % of rdg + 2 °C) <Thermocouple: B> 400 °C≤TS≤600 °C: ±3.5 °C 600 °C<TS≤1820 °C: ± (0.05 % of rdg + 2 °C) <Thermocouple: K, E> -200 °C≤TS≤-100 °C: ± (0.05 % of rdg + 2 °C) -100 °C<TS≤MAX: ± (0.05 % of rdg + 1 °C) (Max. K=1370, E=800) <Thermocouple: T> -200 °C≤TS≤-100 °C: ± (0.1 % of rdg + 1.5 °C) -100 °C<TS≤400 °C: ± (0.1 % of rdg + 0.5 °C) <Thermocouple: J> -200 °C≤TS≤-100 °C: ±2.7 °C -100 °C<TS≤100 °C: ±1.7 °C 100 °C<TS≤1100 °C: ± (0.05 % of rdg + 1 °C) <Thermocouple: N> 0 °C≤TS≤1300 °C: ± (0.1 % of rdg + 1 °C) <Thermocouple: W> 0 °C≤TS≤2315 °C: ± (0.1 % of rdg + 1.5 °C) Resistance Temperature Detector. Pt100: -200 °C - 850 °C: ±(0.05 % of F.S. + 0.5 °C) JPt100: -200 °C - 500 °C: Pt F.S.=1050 °C, JPt F.S.=700 °C			
A/D converter		16 bit			
Maximum input voltage	Between +/-	60 Vp-p			
	Between input terminal/chassis	60 Vp-p			
Withstand voltage		Between input terminal and GND 1 minute at 350 Vp-p			

*1 Operating temperature: 23℃ ± 3℃. Values are those 30 minutes after power-on. Assuming that the terminal unit is in factory shipped condition (terminal unit 10TU is used). The filter setting is ON. “rdg” means reading is Sampling.

When faster, higher performance measurements are required:

For fastest 40MS/s speed measurements:
DATA PLATFORM “DM3300”

Model with a high-speed isolated voltage amplifier and three plug-in amplifiers.
In addition to the industry-first 40MS/s HSV (high-speed voltage) amplifier, the M (voltage/temperature), DCB (distortion) and B-503 (logic) amplifiers are incorporated as standard
High capacity memory
2MW/ch memory and PCMCIA drive are built in as standard. Optionally, a 40GB HDD can be installed.

For isolated 1MS/s long time measurements:
DATA PLATFORM “DM3100V2”

Model with isolated plug-in amplifiers
The V (voltage), M (voltage/temperature), DCB (distortion), FV (frequency) and B-503 (logic) amplifiers are incorporated.
High capacity memory
2MW/ch memory and PCMCIA drive are built in as standard. Optionally, a 40GB HDD can be installed.



Please contact the manufacturer of your PC for warranty and maintenance/replacement parts. Graphtec does not warrant any damage or loss of data arising from the failures of the main unit or PC. Please make sure to backup your data regularly
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