



**VPO**  
Visual Persistence Oscilloscope

## GDS-2000E Series

### FEATURES

- 200/100/70MHz Bandwidth
- Sample Rate : Max. 1GSa/s (4ch Model)  
Per Channel 1GSa/s (2ch Model)
- Standard 10M Memory Depth Per Channel and VPO Waveform Display Technology
- Waveform Update Rate of 120,000 wfm/s
- 8 " 800 x 480 TFT LCD Display
- Max. 1M pts of FFT to Get Higher Resolution in Frequency Domain
- Digital Filter Function
- Segmented Memory and Waveform Search Functions
- I<sup>2</sup>C/SPI/UART/CAN/LIN Serial Bus Trigger and Decoding Function
- Datalog Function for Waveform Observation in Long Period of Time
- Network Storage Function



GDS-2000E Series Rear Panel

The GDS-2000E Series features bandwidth selections of 200MHz, 100MHz, and 70MHz. 4 channel models of the series provides 1GSa/s max. real-time sampling rate ; 2 channel models of the series provides 1GSa/s per channel real-time sampling rate . All series is equipped with waveform update rate of 120,000 wfm/s. The 8-inch 800 x 480 16 : 9 TFT LCD display and the minimum 1mV/div vertical range allow the GDS-2000E Series to clearly display complex and random waveforms.

With respect to the memory depth, the standard GDS-2000E Series digital oscilloscope provides 10M long memory for users to completely retrieve and analyze waveforms. Users, base upon the application requirements, can select 1K, 10K, 100K, 1M or 10M memory depth. Short memory depth allows users to observe fast-changing waveforms and, on the other hand, long memory depth aims for continuously changing waveforms. The GDS-2000E Series is equipped with waveform search and segmented memory functions to expand the flexible applications of 10M long memory. With the waveform search function, users can rapidly search waveforms according the required trigger conditions. The segmented memory can be divided the maximum into 29,000 sections for users to bypass any unimportant waveforms so as to swiftly search all required waveforms. Memory depth provides users with the optimized applications. The waveform update rate of 120,000 wfm/s, twice as fast as that of the same category oscilloscopes, allows users to easily observe random signals so as to completely measure and test signals.

With respect to test and measurement items, the GDS-2000E Series provides 36 items and the statistics function, which allows users to analyze the maximum, the minimum, mean value, and standard deviation of the test and measurement item. Users, via the data log function, can set time and interval for waveform observation to achieve the long record objective. The GDS-2000E Series also provides 1M max. FFT display. High resolution FFT display, high waveform update rate, Window Zoom and Peak Search allow users to obtain more accurate and efficient test and measurement results while conducting tests in the frequency domain.

In addition to waveform search and segmented memory functions, the GDS-2000E Series also provides bus decoding function and digital filter function. With bus decoding function, users can not only analyze I<sup>2</sup>C, SPI, and UART bus but also CAN, LIN bus, which are often used for automobile communications. Digital filter allows users to independently set high pass or low pass digital filter frequency for each channel. By so doing, the observation for the signals of the specific frequency bandwidth becomes easier, and magnetic noise can be filtered out from the magnetic component while conducting power supply test applications.

The GDS-2000E Series features automatic zero key for horizontal, vertical and trigger level. Users can rapidly zero all data by simply pressing the zero key. The communications interface provides USB Host port, Device port, Ethernet communications interface. Data storage and remote control requirements can be achieved by the communications interface.

### APPLICATIONS

- Educational Training and Laboratory
- QA Tests
- Serial Bus Design and Debugging
- Maintenance Services

## SPECIFICATIONS

		GDS-2072E	GDS-2074E	GDS-2102E	GDS-2104E	GDS-2202E	GDS-2204E
VERTICAL SENSITIVITY	Channels	2Ch+EXT	4Ch	2Ch+EXT	4Ch	2Ch+EXT	4Ch
	Bandwidth	DC~70MHz(-3dB)		DC~100MHz(-3dB)		DC~200MHz(-3dB)	
	Rise Time	5ns		3.5ns		1.75ns	
	Bandwidth Limit	20MHz		20MHz		20M/100MHz	
	Vertical Resolution	8 bits : 1mV ~ 10V/div					
	Input Coupling	AC, DC, GND					
	Input Impedance	1M $\Omega$ // 16pF approx.					
	DC Gain Accuracy	$\pm$ (3% when 2mV/div or greater is selected ; $\pm$ (5%) when 1mV/div is selected					
	Polarity	Normal & Invert					
	Maximum Input Voltage	300Vrms , CAT I (300Vrms CAT II with GTP-070A-4/150A-4/300A-4, 10 : 1 probe)					
	Offset Position Range	1mV/div ~ 20mV/div : $\pm$ 0.5V ; 50mV/div ~ 200mV/div : $\pm$ 5V ; 500mV/div ~ 2V/div : $\pm$ 25V ; 5V/div~10V/div : $\pm$ 250V					
	Waveform Signal Process	+ , - , $\times$ , $\div$ , FFT , FFTrms , User Defined Expression FFT : 1Mpts ; FFT : Spectral magnitude. Set FFT Vertical Scale to Linear RMS or dBV RMS ; FFT Window Displays : Rectangular, Hamming , Hanning, Blackman-Harris					
TRIGGER	Source	CH1 ,CH2, CH3, CH4, Line, EXT* ; *dual channel models only.					
	Trigger Mode	Auto (Supports Roll Mode for 100 ms/div and slower), Normal, Single Sequence					
	Trigger Type	Edge, Pulse Width(Glitch), Video, Pulse Runt, Rise & Fall(Slope), Alternate, Time out, Event-Delay(1~65,535 events), Time-Delay(Duration;4ns~10s), Bus					
	Trigger Holdoff Range	4ns ~ 10s					
	Coupling	AC, DC, LF rej. , Hf rej. , Noise rej.					
	Sensitivity	1div					
EXT TRIGGER	Range	$\pm$ 15V					
	Sensitivity	DC ~ 100MHz Approx. 100mV 100MHz ~ 200MHz Approx. 150mV					
	Input Impedance	1M $\Omega$ $\pm$ 3%, ~16pF					
HORIZONTAL	Time Base Range	1ns/div ~ 100s/div (1-2-5 increments); ROLL : 100ms/div ~ 100s/div					
	Pre-trigger	10 div maximum					
	Post-trigger	2,000,000 div maximum					
	Time Base Accuracy	$\pm$ 50 ppm over any $\geq$ 1 ms time interval					
	Real Time Sample Rate	Max. : 1GSa/s (4ch model); Per channel 1GSa/s (2ch model)					
	Record Length	10Mpts/CH					
Acquisition Mode	Normal, Average, Peak Detect, Single						
Peak Detection	2ns (typical)						
Average	Selectable from 2 to 256						
X-Y MODE	X-Axis Input	Channel 1 ; Channel 3* (* : four channel models only )					
	Y-Axis Input	Channel 2 ; Channel 4* (* : four channel models only )					
	Phase Shift	$\pm$ 3 $^{\circ}$ at 100kHz					
CURSORS AND MEASUREMENT	Cursors	Amplitude, Time, Gating Available; Unit : Seconds(S), Hz(1/S), Phase (Degrees), Ratio(%)					
	Automatic Measurement	36 sets: Pk-Pk, Max, Min, Amplitude, High, Low, Mean, Cycle Mean, RMS, Cycle RMS, Area, Cycle Area, ROVShoot, FOVShoot, RPREShoot, FPREShoot, Frequency, Period, RiseTime, FallTime, +Width, -Width, Duty Cycle, +Pulses, -Pulses, +Edges, -Edges, FRR, FRF, FFR, FFF, LRR, LRF, LFR, LFF, Phase					
	Control Panel Function	Cursors measurement					
	Auto Counter	6 digits, range from 2Hz minimum to the rated bandwidth					
	Autoset	Single-button, automatic setup of all channels for vertical, horizontal and trigger systems, with undo Autoset					
	Save Setup	20set					
Save Waveform	24set						
DISPLAY SYSTEM	TFT LCD Type	8" TFT LCD WVGA color display					
	Display Resolution	800 horizontal x 480 vertical pixels (WVGA)					
	Interpolation	Sin(x)/x					
	Waveform Display	Dots, Vectors, Variable persistence(16ms~10s), Infinite persistence					
	Waveform Update Rate	120,000 waveforms per second, maximum					
Display mode	YT ; XY						
Display Graticule	8 x 10 divisions						
INTERFACE	USB Port	USB 2.0 Full-speed host port x 1, USB High-speed 2.0 device port x 1					
	Ethernet Port (LAN)	RJ-45 connector, 10/100Mbps with HP Auto-MDIX					
	Go/NoGo BNC	5V Max/10mA TTL open collector output					
	Kensington Style Lock	Rear-panel security slot connects to standard Kensington-style lock					
POWER SOURCE MISCELLANEOUS	Line Voltage Range	AC 100V ~ 240V, 48Hz ~ 63Hz, auto selection					
	Multi-Language Menu	Available					
	On-Line Help	Available					
	Time clock	Time and date, provide the date/time for saved data					
Operation Environment	Temperature: 0 $^{\circ}$ C to 50 $^{\circ}$ C. Relative Humidity: $\leq$ 80%, 40 $^{\circ}$ C or below; $\leq$ 45%, 41 $^{\circ}$ C ~ 50 $^{\circ}$ C						
DIMENSIONS & WEIGHT	384(W) X 208(H) X 127.3(D)mm, Approx. 2.8 kg						

Note : Three-year warranty, excluding probes & LCD display panel.

Specifications subject to change without notice.

DS-2000EGD1DH

### ORDERING INFORMATION

<b>GDS-2204E</b>	200MHz, 4-Channel, Digital Storage Oscilloscope
<b>GDS-2202E</b>	200MHz, 2-Channel, Digital Storage Oscilloscope
<b>GDS-2104E</b>	100MHz, 4-Channel, Digital Storage Oscilloscope
<b>GDS-2102E</b>	100MHz, 2-Channel, Digital Storage Oscilloscope
<b>GDS-2074E</b>	70MHz, 4-Channel, Digital Storage Oscilloscope
<b>GDS-2072E</b>	70MHz, 2-Channel, Digital Storage Oscilloscope

### ACCESSORIES

Quick start guide , User manual CD x 1, Power cord x 1  
GTP-070B-4:70MHz(10:1/1:1)Switchable passive probe for GDS-2072E/2074E(one per channel)  
GTP-100B-4:100MHz(10:1/1:1)Switchable passive probe for GDS-2102E/2104E(one per channel)  
GTP-200B-4:200MHz(10:1/1:1)Switchable passive probe for GDS-2202E/2204E(one per channel)

### OPTIONAL ACCESSORIES

<b>GRA-426</b>	Rack Adapter Panel	<b>GCP-1030</b>	Current Probe, DC ~ 100MHz, 30Arms, Current probe
<b>GAK-003</b>	50 $\Omega$ Impedance Adapter	<b>GCP-206P</b>	Current Probe-Power Supply, 2 Channel Power Supply for GCP-530/1030
<b>GSC-008</b>	Soft Carrying Case	<b>GCP-245P</b>	Current Probe-Power Supply, 4 Channel Power Supply for GCP-530/1030
<b>GTL-246</b>	USB Cable, USB 2.0, A-B Type, 1200mm	<b>GCP-530</b>	Current Probe, DC ~ 50MHz, 30Arms, Current Probe
<b>GCP-005</b>	Current Probe, 40Hz~1kHz, 5A, Current Probe	<b>GDP-025</b>	Differential Probe, 25M High Voltage Differential Probe
<b>GCP-020</b>	Current Probe, DC~100kHz, 10A, Current Probe	<b>GDP-050</b>	Differential Probe, 50M High Voltage Differential Probe
<b>GCP-100</b>	Current Probe, 40Hz~10kHz, 20A, Current Probe	<b>GDP-100</b>	Differential Probe, 100M High Voltage Differential Probe
<b>GTP-033A</b>	Oscilloscope Probe, 35MHz 1:1 Passive Probe, BNC(P/M)		

### FREE DOWNLOAD

<b>PC Software</b>	OpenWave software	<b>Driver</b>	USB driver ; LabView driver
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