



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 Maximum Memory Depth and VPO Waveform Display Technology
- Waveform Update Rate of 120,000 wfms/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
- I²C/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

APPLICATIONS

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

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 wfms/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 wfms/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 I²C, 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.

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 | 1MΩ // 16pF approx. | | | | | |
| | DC Gain Accuracy | ±(3% when 2mV/div or greater is selected ; ±(5%) when 1mV/div is selected | | | | | |
| | Polarity | Normal & Invert | | | | | |
| | Maximum Input Voltage | 300Vrms , CAT I | | | | | |
| | Offset Position Range | 1mV/div ~ 20mV/div ; ±0.5V ; 50mV/div ~ 200mV/div ; ±5V ; 500mV/div ~ 2V/div ; ±25V ; 5V/div~10V/div ; ±250V | | | | | |
| | Waveform Signal Process | + , - , × , ÷ , FFT , FFTrms , Uesr 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 | ±15V | | | | | |
| | Sensitivity | DC ~ 100MHz Approx. 100mV 100MHz ~ 200MHz Approx. 150mV | | | | | |
| | Input Impedance | 1MΩ ±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 | ±50 ppm over any ≥ 1 ms time interval | | | | | |
| | Real Time Sample Rate | Max. : 1GSa/s (4ch model); Per channel 1GSa/s (2ch model) | | | | | |
| | Record Length | Max. : 10Mpts | | | | | |
| | 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 | ±3° 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°C to 50°C. Relative Humidity: ≤80%, 40°C or below; ≤45%, 41°C ~ 50°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

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

ACCESSORIES

Quick start guide , User manual CD x 1, Power cord x 1
GTP-070A-4 : 70MHz(10:1/1:1) Switchable passive probe for GDS-2072E/2074E(one per channel)
GTP-150A-4 : 150MHz(10:1/1:1) Switchable passive probe for GDS-2102E/2104E(one per channel)
GTP-300A-4 : 300MHz(10:1/1:1) Switchable passive probe for GDS-2202E/2204E(one per channel)

FREE DOWNLOAD

PC Software OpenWave software **Driver** USB driver ; LabView driver

Global Headquarters

GOOD WILL INSTRUMENT CO., LTD.

No.7-1, Jhongsing Road, Tucheng Dist., New Taipei City 236, Taiwan
 T +886-2-2268-0389 F +886-2-2268-0639
 E-mail: marketing@goodwill.com.tw

China Subsidiary

GOOD WILL INSTRUMENT (SUZHOU) CO., LTD.

No. 521, Zhujiang Road, Snd, Suzhou Jiangsu 215011 China
 T +86-512-6661-7177 F +86-512-6661-7277
 E-mail: marketing@instek.com.cn

Malaysia Subsidiary

GOOD WILL INSTRUMENT (M) SDN. BHD.

27, Persiaran Mahsuri 1/1, Sunway Tunas,
 11900 Bayan Lepas, Penang, Malaysia
 T +604-6309988 F +604-6309989
 E-mail: sales@goodwill.com.my

Europe Subsidiary

GOOD WILL INSTRUMENT EURO B.V.

De Run 5427A, 5504DG Veldhoven, THE NETHERLANDS
 T +31(0)40-2557790 F +31(0)40-2541194

U.S.A. Subsidiary

INSTEK AMERICA CORP.

5198 Brooks Street Montclair, CA 91763, U.S.A.
 T +1-909-399-3535 F +1-909-399-0819
 E-mail: sales@instekamerica.com

Japan Subsidiary

TEXIO TECHNOLOGY CORPORATION.

7F Towa Fudosan Shin Yokohama Bldg., 2-18-13 Shin
 Yokohama, Kohoku-ku, Yokohama, Kanagawa,
 222-0033 Japan
 T +81-45-620-2305 F +81-45-534-7181
 E-mail: info@texio.co.jp

Korea Subsidiary

GOOD WILL INSTRUMENT KOREA CO., LTD.

#1406, Ace Hightech-City B/D 1Dong,
 Mullaee-Dong 3Ga 55-20, Yeongduengpo-Gu, Seoul, Korea
 T +82-2-3439-2205 F +82-2-3439-2207
 E-mail : gwinstek@gwinstek.co.kr

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www.gwinstek.com