



GDS-1000B Series

200/100MHz Digital Storage Oscilloscope

FEATURES

- 200/100MHz Bandwidth Selections, 2ch or 4ch Input
- 1GSa/s Maximum Sampling Rate
- 10M Maximum Memory Depth For Each Channel
- 7" 800 x 480 WVGA LCD Display
- 256 Color Gradient Display Function to Strengthen Waveform Performance
- 1Mpts FFT Frequency Domain Signal Display
- I²C/SPI/UART/CAN/LIN Serial Bus Trigger and Decoding Functions
- Zero Key Function For Horizontal Time, Vertical Voltage and Triggering
- Compact and Innovative Exterior Design

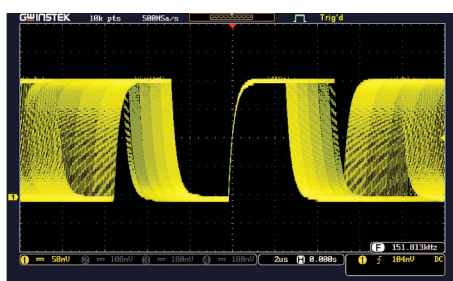
GWINSTEK
Simply Reliable

Realizing Professional Functionalities with an Entry-Level Pricing

The GDS-1000B Series features four bandwidth selections - 200MHz, 100 MHz and equips with analog signal input terminals by four or two channels. The maximum sampling rate for each single channel is 1GSa/s, and the memory depth is 10Mpts per channel independently. The GDS-1000B Series has a waveform update rate of 50,000wfms/s, which helps users to precisely observe the detailed waveform variation. Additionally, 7" WVGA color LCD display and the 256 color gradient display function together allow waveforms to be observed with the senses of transparency and gradation. With respect to the horizontal time scale adjustment knob and trigger level adjustment knob, GW Instek provides a very thoughtful design -the zero key function, which allows engineers to work more effectively. For mathematical analysis mode, 1Mpts FFT signal display makes the dull frequency domain signal analysis more delicate.

Moreover, the innovative exterior design and compact design also bring much convenience to users. Other diversified and charming multi-functional operation demonstrates the concept of complete technology integration.

A. WAVEFORM UPDATE RATE UP TO 50,000wfms/s AND VPO DISPLAY TECHNOLOGY



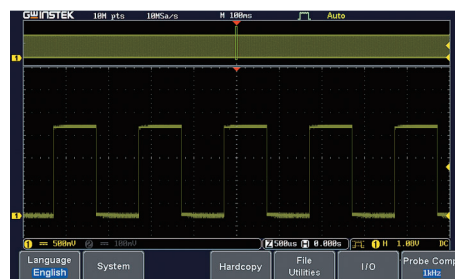
The GDS-1000B Series oscilloscope is under the category of general and fundamental oscilloscope by the market segmentation. Nevertheless, the series arms itself with the waveform update rate up to 50,000wfms/s and VPO waveform display technology. Users can input a rapid frequency modulation carrier signal as shown on the diagram. An unsmooth temporarily holding phenomenon will occur while using conventional digital oscilloscopes to measure this signal. As a result, the conventional digital oscilloscopes could

not clearly yield the modulation variation process of frequency modulation signals. With the GDS-1000B Series oscilloscope, the measurement result will produce not only a smooth waveform modulation variation, but also detailed changes by distinct layers. Engineers could easily grasp the root cause of electric circuits while measuring the unexpected and fast changing signals. The GDS-1000B Series is indeed an excellent debugging weapon for the test and measurement industry.

B. 256 COLOR GRADIENT DISPLAY & 10M MEMORY DEPTH PER CHANNEL INDEPENDENTLY

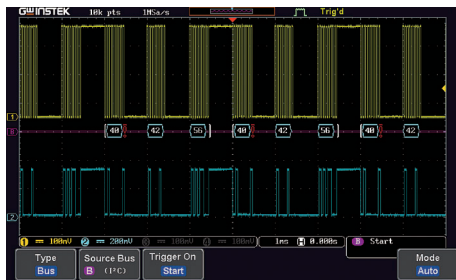


With respect to the waveform display technology, the GDS-1000B Series oscilloscope is capable of displaying 256 color gradients which can delineate the profound gradational fluctuations; as if it can recreate the analog oscilloscope display capability. When a multi-layer video signal is input, the GDS-1000B Series, with 256 color gradient display, has the ability to precisely reveal the colored burst signal and to show details of layers with the brightness. Hence, the dull monochrome waveform is imbued with vitality, which is precisely the unlimited measurement fascination the GDS-1000B Series intends to bring to the general purpose oscilloscope arena.



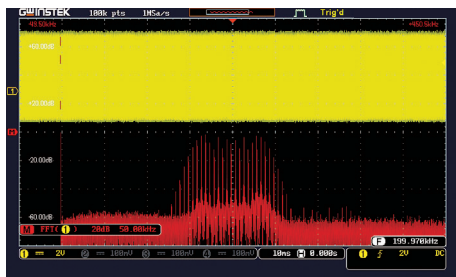
The GDS-1000B Series oscilloscope has a powerful and incomparable memory depth for the data retrieving. 10M memory depth per channel independently surpasses the specification of the industry's 1000 Series boundary. 10M memory depth allows users to easily seize the waveform detail while conducting fundamental measurement applications. If a long serial sequent sine waveforms input and the time scale is adjusted to 1mv/div, other GDS-1000 Series oscilloscopes for lack of sufficient memory depth will appear a distorted waveform while enlarging the waveform for its details. The GDS-1000B Series while enlarging the waveform to 20ns/div reveals a very clear sine waveform detail which is precisely the true value of the GDS-1000B Series oscilloscope.

C. SUPPORT I²C ,SPI ,UART,CAN, LIN BUS TRIGGER AND DECODING FUNCTIONS



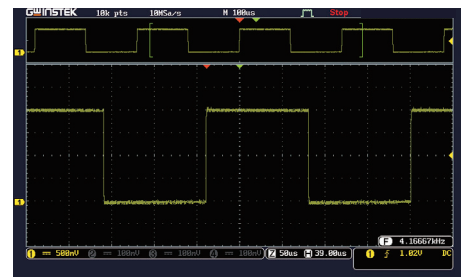
The serial bus technology has been widely applied in the present embedded application design. The IoT devices connecting sensors and the peripheral components are using serial bus such as UART, I²C, and SPI. To rapidly and correctly trigger and analyze serial bus data has posed a difficult challenge to engineers. The GDS-1000B series provides serial bus analysis function with 10M long memory depth. Users can trigger, decode, and analyze frequently used I²C, SPI and UART serial bus and CAN/LIN bus, which is often used by automotive communications.

D. 1M FFT MATHEMATICAL SAMPLING ANALYSIS MODE



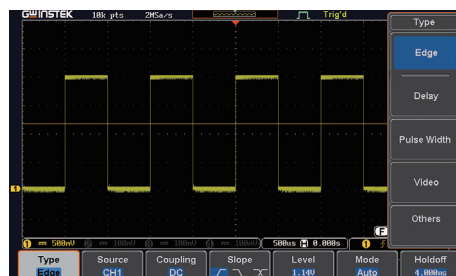
The GDS-1000B Series oscilloscope, under the Fast Fourier Transform mathematical analysis mode, is equipped with the 1M memory depth retrieving mode. For the conventional digital oscilloscopes, the FFT mode often has only 1000 point retrieving length; therefore, they can not show the strength distribution of each spectrum quantity under the frequency domain mode. The GDS-1000B Series oscilloscope leads the industry to provide the display mode of 1M retrieving points, which can clearly show the detail of each spectrum quantity. On top of that, the 50,000 wfms/s waveform update rate augments the FFT analysis mode to be fast and precise as if a real time spectrum analyzer is used. These features substantially elevate oscilloscope's signal processing capability for the frequency domain analysis. The diagram illustrates a 200 kHz carrier waveform to be modulated as a standard FM signal with 40 kHz and 5 kHz frequency deviation. Since the GDS-1000B Series is equipped with 1M memory depth, a 5 kHz frequency deviation interval can be clearly revealed that allows engineers to fully grasp the measurement details.

E. ZOOM IN/PLAY AND PAUSE FUNCTION



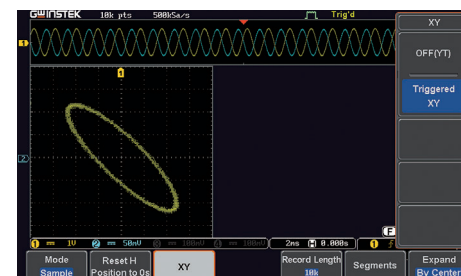
The GDS-1000B series provides engineers with partial waveform zoom in function to observe waveform in great details. The display screen can be split into two windows: the upper window shows waveform data log in a long period of time and the marked vicinity of the waveform needed to be zoomed in; the lower window shows the enlarged partial waveform. The function not only allows engineers to make a comparison but also grasp waveform details in the different timeframe. Additionally, the GDS-1000B series also features the play/pause function. For the long waveform observation, the play/pause function facilitates engineers to rapidly skim through the whole section of DUT's waveforms as well as to swiftly identify waveform's problems.

F. DIVERSIFIED TRIGGER FUNCTIONS



The GDS-1000B series oscilloscope is equipped with diversified trigger functions, including Edge Trigger, Delay Trigger, Pulse Width Trigger, and Video Trigger. Engineers, based upon different waveform measurements, can select different trigger functions to lock waveforms in order to identify the root cause of the complicated circuit designs to save development time and to accomplish tasks.

G. X-Y MODE DISPLAY



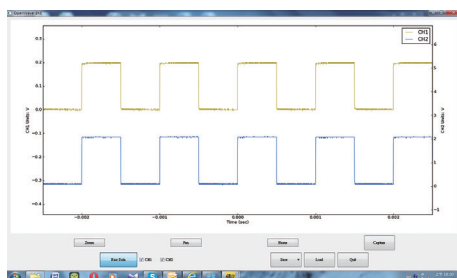
The GDS-1000B series oscilloscope provides the educational market with some powerful measurement functions. Among them, the X-Y mode display is an excellent example. Teachers and students can use X-Y mode display to conduct Lissajou diagram teaching, which allows users to easily understand the relation between waveforms and frequency while measuring sine waveforms with different frequency by dual channels. For engineers working for the industries, the X-Y mode display can be used to conduct yield rate tests for basic components' electric conduction and non conduction. Therefore, the X-Y mode display plays an important role in basic oscilloscopes.

PANEL INTRODUCTION



1. Hardcopy Key
2. Autoset, Run/Stop, Single & Default Keys
3. Zooming Controls
4. Trigger Controls
5. Math, Reference & Bus Keys
6. Probe Calibration Output
7. USB Host Port
8. Menu Off Key
9. USB Device Port
10. LAN Port
11. Go-NoGo Output
12. Calibration Output

M. OPENWAVE CONNECTION SOFTWARE



The GDS-1000B Series oscilloscope, via the OpenWave connection software developed by GW Instek, can connect with the PC. Users, after installing USB driver under Windows interface, can connect GDS-1000B with the PC through USB cable and OpenWave software. Waveform interpretation and retrieval can be done from the PC end. Data retrieval and storage can better facilitate users in processing analysis. OpenWave connection software is indeed a very powerful tool for engineers to compile reports or to integrate systems.

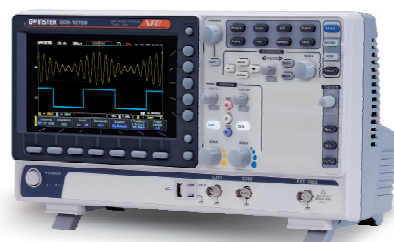
4 Channel Model

GDS-1104B 100MHz



2 Channel Model

GDS-1202B 200MHz
GDS-1102B 100MHz



SPECIFICATIONS

		GDS-1102B	GDS-1104B	GDS-1202B
VERTICAL	Channels Bandwidth Calculated Rise Time Bandwidth Limit Vertical Sensitivity Resolution Input Coupling Input Impedance DC Gain Accuracy* Polarity Maximum Input Voltage Offset Position Range Waveform Signal Process	2 + Ext DC~100MHz(-3dB) 3.5ns 20MHz 8 bit : 1mV~10V/div AC, DC, GND 1M Ω // 16pF approx. ; GDS-1202B : 1M Ω // 14pF approx. $\pm 3\%$ Normal & Invert 300Vrms, CAT I (300Vrms CAT II with GTP-100B-4, GPT-200B-4 10:1 probe) 1mV/div : $\pm 1.25V$; 2mV/div ~ 100mV/div : $\pm 2.5V$; 200mV/div ~ 10V/div : $\pm 125V$ +, -, x, $\div$, FFT, User Defined Expression ; FFT: 1Mpts; FFT: Spectral magnitude. Set FFT Vertical Scale to Linear RMS or dBV RMS ; FFT Window Display : Rectangular, Hamming, Hanning, or Blackman-Harris	4 DC~100MHz(-3dB) 3.5ns 20MHz	2 + Ext DC~200MHz(-3dB) 1.75ns 20MHz
TRIGGER	Source Trigger Mode Trigger Type Holdoff range Coupling Sensitivity	CH1, CH2, CH3*, CH4*, Line, EXT** ; *four channel models only. ; **two channel models only Auto (supports Roll Mode for 100 ms/div and slower), Normal, Single Sequence Edge, Pulse Width, Video, Pulse Runt, Rise & Fall, Timeout, Alternate, Event-Delay(1~65535 events), Time-Delay(Duration, 4ns~10S) 4ns to 10s AC, DC, LF rej., HF rej., Noise rej. 1div		
EXTERNAL TRIGGER	Range Sensitivity Input Impedance	$\pm 2.5V$ DC ~ 100MHz Approx. 100mV ; 100MHz ~ 200MHz Approx. 150mV 1M Ω $\pm 3\%$ ~16pF		
HORIZONTAL	Time base Range ROLL Pre-trigger Post-trigger Timebase Accuracy Real Time Sample Rate Record Length Acquisition Mode Peak Detection Average	5ns/div ~ 100s/div (1-2.5 increments) 100ms/div ~ 100s/div 10 div maximum 2,000,000 div maximum ± 50 ppm over any ≥ 1 ms time interval 1GSa/s max. Max. 10Mpts Normal, Average, Peak Detect, Single 2nS (typical) selectable from 2 to 256		
X-Y MODE	X-Axis Input Y-Axis Input Phase Shift	Channel 1; Channel 3*(*four channel models only) Channel 2; Channel 4*(*four channel models only) $\pm 3^\circ$ at 100kHz		
CURSORS AND MEASUREMENT	Cursors Automatic Measurement Cursors Measurement Auto Counter	Amplitude, Time, Gating available; Unit : Seconds(s), Hz(1/s), Phase(degree), Ration(%) 36 sets: Pk-Pk, Max, Min, Amplitude, High, Low, Mean, Cycle Mean, RMS, Cycle RMS, Area, Cycle Area, ROVShoot, FOVShoot, RPREShoot, FPRESShoot, Frequency, Period, RiseTime, FallTime, +Width, -Width, Duty Cycle, +Pulses, -Pulses, +Edges, -Edges, FRR, FRF, FFR, FFF, LRR, LRF, LFR, LFF, Phase Voltage difference between cursors (ΔV) Time ; difference between cursors (ΔT) 6 digits, range from 2Hz minimum to the rated bandwidth		
CONTROL PANEL FUNCTION	Autoset Save Setup Save Waveform	Single-button, automatic setup of all channels for vertical, horizontal and trigger systems, with undo Autoset 20set 24set		
DISPLAY	TFT LCD Type Display Resolution Interpolation Waveform Display Waveform Update Rate Display Graticule Display Mode	7" TFT WVGA color display 800 horizontal x 480 vertical pixels (WVGA) Sin(x)/x Dots, vectors, variable persistence (16ms~4s), infinite persistence 50,000 waveforms per second, maximum 8 x 10 divisions YT, XY		
INTERFACE	USB Port Ethernet Port(LAN) Go-NoGo BNC Kensington Style Lock	USB 2.0 High-speed host port x1, USB High-speed 2.0 device port x1 RJ-45 connector, 10/100Mbps with HP Auto-MDIX (Only for 4 channel models.) 5V Max/10mA TTL open collector output Rear-panel security slot connects to standard kensington-style lock		
POWER SOURCE		AC 100V ~ 240V , 50Hz ~ 60Hz , Auto selection , Power consumption: 30 Watts		
MISCELLANEOUS	Multi-Language Menu Operation Environment Online Help	Available Temperature : 0°C ~ 50°C. Relative Humidity $\leq 80\%$ at 40°C or below; $\leq 45\%$ at 41°C ~ 50°C Available		
DIMENSIONS & WEIGHT	380(W) x 208 (H) x 127.3(D)mm, Approx. 2.8kg			

The specifications apply when the GDS-1000B is powered on for at least 30 minutes under +20°C~+30°C.

Specifications subject to change without notice.

DS-1000BGD5BH

ORDERING INFORMATION

GDS-1202B 200MHz, 2 channels, Digital Storage Oscilloscope
GDS-1104B 100MHz, 4 channels, Digital Storage Oscilloscope
GDS-1102B 100MHz, 2 channels, Digital Storage Oscilloscope

ACCESSORIES

Power cord x 1

GTP-100B-4 100 MHz(10:1/1:1) Switchable passive probe for GDS-1104B, GDS-1102B(one per channel)

GTP-200B-4 200 MHz(10:1/1:1) Switchable passive probe for GDS-1202B(one per channel)

OPTIONAL ASSESSORIES

GRA-426 Rack Adapter Panel	GDP-025 25 MHz High voltage differential probe
GAK-003 50 Ω Impedance Adapter	GDP-050 50 MHz High voltage differential probe
GSC-008 Soft Carrying Case	GDP-100 100 MHz High voltage differential probe
GTL-246 USB Cable, USB 2.0, A-B Type, 1200 mm	GDP-1020P 1 GHz/20 V High Frequency Differential Probe
GCP-300 300 kHz/200 A Current probe	GDP-2035H 200 MHz/3500 Vpk High Voltage Differential Probe
GCP-530 50 MHz/30 A Current probe	GTP-033A Oscilloscope probe, 35MHz 1:1 passive probe, BNC(P/M)
GCP-500 500 kHz/150 A Current probe	
GCP-1030 100 MHz/30 A Current probe	
GCP-1000 1 MHz/70 A Current probe	
GCP-0275 2 MHz/750 A Current probe	
GCP-0550 5 MHz/500 A Current probe	
GCP-2525 25 MHz/250 A Current probe	
GCP-206P Power supply for current probe (2 input channel)	
GCP-425P Power supply for current probe (4 input channel)	

FREE DOWNLOAD

Software	OpenWave Software	Driver	USB Driver ; LabView Driver
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