GDS-1000B Series

100MHz/70MHz/50MHz Digital Storage Oscilloscope

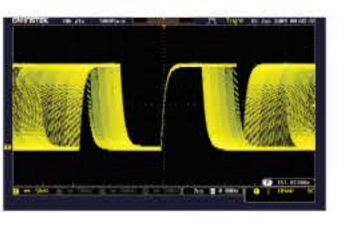
FEATURES

- 100/70/50MHz 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
- Zero Key Function For Horizontal Time, Vertical Voltage and Triggering
- Compact and Innovative Exterior Design

Realizing Professional Functionalities with an Entry-Level Pricing

The GDS-1000B Series features three bandwidth selections - 100 MHz, 70 MHz, 50MHz and equips with analog signal input terminals by four or two channels(50MHz, 4 channels input only). 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. Options such as the serial bus decoding function, the waveform search function, and the segmented memory function also arm the GDS-1000B Series with more advanced measurement technologies. 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



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. 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

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 intents to bring to the general purpose oscilloscope arena.

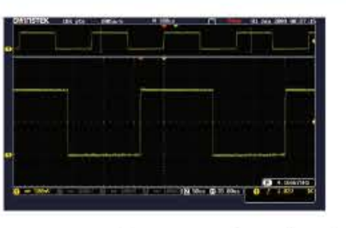
C. 10M MEMORY DEPTH PER CHANNEL INDEPENDENTLY

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 waveform is 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.

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 carrier waveform 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

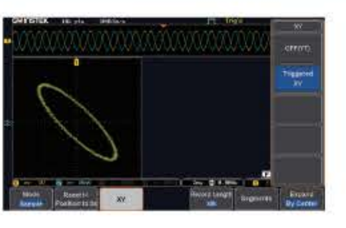


The GDS-1000B series provides engineers with partial waveform zoom in function to observe waveform in great details. The display screen can be split into two windows: the upper window shows waveform data log in a long period of time and the marked vicinity of the waveform needed to be zoomed in; the 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.

H. GO/NOGO FUNCTION

For the industries, the yield rate determination is very important to mass production. The GDS-1000B series oscilloscope provides the Go/NoGo analysis function to accelerate the yield rate analysis. From the right diagram, the Go/NoGo function provides a standard waveform template for examining DUT's waveforms. The function can freely adjust the size of template. A defect message will be shown if the DUT's waveform is abnormal and touches the template. The function is not only very useful measurement tool for production lines but also a very convenient tool for engineers to observe waveforms in a long period of time.

I. DIGITAL VOLTAGE METER FUNCTION

For electric circuit measurement and debugging, R&D engineers require oscilloscopes as well as basic voltage meters. The GDS-1000B series oscilloscope equips with a digital voltage meter with three-digit voltage value and five-digit frequency value. Engineers, by pressing the option key, can select the digital voltage meter function from the menu to measure DC/AC voltage, duty cycle, and frequency. Engineers can not only measure waveforms but also monitor the electric parameters of each component on the circuit board. The function is a very convenient tool.

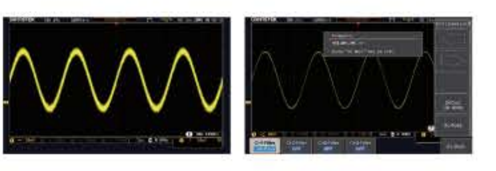
* Users need to download this application from GW Instek website

J. DATA LOG FUNCTION

The GDS-1000B Series oscilloscope has the data log function option, which allows users to observe and record waveform changes in a long period of time to ensure product's reliability and stability. The data log function can set data storage time and interval based on the test requirements. Record time can be set from 5 minutes to 100 hours and the interval can be set as 5 seconds the shortest. Data log formats include waveform and point data in CSV file. Data can be saved to USB, GDS-1000B or remote computer via LAN. It is very user-friendly and also an advanced measurement management tool.

* Users need to download this application from GW Instek website

K. DIGITAL FILTER FUNCTION



In electric circuit tests, engineers are often troubled by noise interference while measuring signals. The GDS-1000B series oscilloscope provides the digital filter function option, which can be set as high pass or low pass filter. The filter frequency can be adjusted according to the requirements. The filter parameters of each channel can also be set. The tracking on function can be used to set same filter frequency for all channels.

* Users need to download this application from GW Instek website

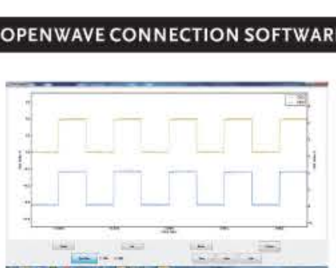
L. 36 MEASUREMENT PARAMETER SELECTIONS

The GDS-1000B series oscilloscope is equipped with 36 different automatic measurement parameter functions. Users, after obtaining measured waveforms, can select different measurement parameters from Measure key according to different measurement requirements. The GDS-1000B Series shows simultaneously eight sets of different measurement parameters on the bottom of the display screen. Users can also select to show all parameters if the preset eight sets are insufficient. Once the selection is made, all 36 measurement parameters will be shown on the center of the display screen. This is a very convenient measurement tool for students writing dissertations or engineers writing reports.

PANEL INTRODUCTION

1. 7 inch WVGA LCD Display
2. 1GSa/s Real-Time Sampling Rate
3. Zoom and Play/Pause
4. Math Computing, Waveform Reference
5. Demonstration Output and USB Port
6. Connecting Interface : USB, LAN
7. CAL and Go/NoGo 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
GDS-1074B 70MHz
GDS-1054B 50MHz

2 Channel Model

GDS-1102B 100MHz
GDS-1072B 70MHz

SPECIFICATIONS

		GDS-1054B	GDS-1072B	GDS-1074B	GDS-1102B	GDS-1104B
VERTICAL	Channels	4	2 + Ext	4	2 + Ext	4
	Bandwidth	DC~50MHz(-3dB)	DC~70MHz(-3dB)	DC~70MHz(-3dB)	DC~100MHz(-3dB)	DC~100MHz(-3dB)
	Rise Time	7ns	5ns	5ns	3.5ns	3.5ns
	Bandwidth Limit	20MHz	20MHz	20MHz	20MHz	20MHz

VERTICAL	Vertical Sensitivity Resolution	8 bit : 1mV~10V/div
	Input Coupling	AC, DC, GND
	Input Impedance	1MΩ// 16pF approx.
	DC Gain Accuracy*	±3%
	Polarity	Normal & Invert
	Maximum Input Voltage	300Vrms, CAT I (300Vrms CAT II with GTP-070B- 4/100B-4 10:1 probe)
	Offset Position Range	1mV/div : ±1.25V ; 2mV/div ~ 100mV/div : ±2.5V ; 200mV/div ~ 10V/div : ±125V
	Waveform Signal Process	+,-, x, ÷, FFT, FFTrms, User Defined Expression ; FFT: 1Mpts; FFT: Spectral magnitude. Set FFT Vertical Scale to Linear RMS or dBV RMS ; FFT Window Display : Rectangular, Hamming, Handing, or Blackman-Harris
TRIGGER	Source	CH1, CH2, CH3*, CH4*, Line, EXT** ; *four channel models only. ; **two channel models only
	Trigger Mode	Auto (supports Roll Mode for 100 ms/div and slower), Normal, Single Sequence
	Trigger Type	Edge, Pulse Width, Video, Pulse Runt, Rise & Fall, Timeout, Alternate, Event-Delay(1~65535 events), Time-Delay (Duration, 4nS~10S), Bus
	Holdoff range	4ns to 10s
	Coupling	AC, DC, LF rej., Hf rej., Noise rej.
	Sensitivity	1div
EXTERNAL TRIGGER	Range	±15V
	Sensitivity	DC ~ 100MHz Approx. 100mV ; 100MHz ~ 200MHz Approx. 150mV
	Input Impedance	1MΩ±3%~16pF
HORIZONTAL	Time base Range	5ns/div ~ 100s/div (1-2-5 increments)
	ROLL	100ms/div ~ 100s/div
	Pre-trigger	10 div maximum
	Post-trigger	2,000,000 div maximum
	Timebase Accuracy	±50 ppm over any ≥1 ms time interval
	Real Time Sample Rate	1GSa/s max.
	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(degree), Ration(%)
	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
	Cursors Measurement	Voltage difference between cursors (ΔV) Time ; difference between cursors (ΔT)
	Auto Counter	6 digits, range from 2Hz minimum to the rated bandwidth
CONTROL PANEL FUNCTION	Autoset	Single-button, automatic setup of all channels for vertical, horizontal and trigger systems, with undo Autoset
	Save Setup	20set
	Save Waveform	24set
DISPLAY	TFT LCD Type	7" TFT WVGA color display
	Display Resolution	800 horizontal × 480 vertical pixels (WVGA)
	Interpolation	Sin(x)/x
	Waveform Display	Dots, vectors, variable persistence (16ms~4s), infinite persistence
	Waveform Update Rate	50,000 waveforms per second, maximum
	Display Graticule	8 x 10 divisions
	Display Mode	YT, XY
INTERFACE	USB Port	USB 2.0 High-speed host port x1, USB High-speed 2.0 device port x1
	Ethernet Port(LAN)	RJ-45 connector, 10/100Mbps with HP Auto-MDIX (Only for the GDS-1074B, GDS-1104B.)
	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		AC 100V ~ 240V , 50Hz ~ 60Hz , Auto selection , Power consumption: 30 Watts
MISCELLANEOUS	Multi-Language Menu	Available
	Operation Environment	Temperature : 0°C ~ 50°C. Relative Humidity ≤ 80% at 40°C or below; ≤ 45% at 41°C ~ 50°C
	Online Help	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-1000BGD1BH

ORDERING INFORMATION

GDS-1104B	100MHz, 4 channels, Digital Storage Oscilloscope
GDS-1102B	100MHz, 2 channels, Digital Storage Oscilloscope
GDS-1074B	70MHz, 4 channels, Digital Storage Oscilloscope
GDS-1072B	70MHz, 2 channels, Digital Storage Oscilloscope
GDS-1054B	50MHz, 4 channels, Digital Storage Oscilloscope

ACCESSORIES

User manual x1, Power cord x1
GTP-100B-4 100MHz Passive Probe. Suitable for GDS-1104B, GDS-1102B
GTP-070B-4 70MHz Passive Probe.Suitable for GDS-1074B,GDS-1072B,GDS-1054B

OPTIONAL ASSESSORIES

GDB-03	Demo Board
GTL-110	Test lead, BNC to BNC heads
GTL-246	USB cable, USB 2.0 A-B type cable 4P, 1200mm

FREE DOWNLOAD

Software	OpenWave Software
Driver	USB Driver ; LabView Driver