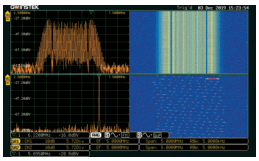
GW INSTEK
Simply Reliable

GDS-3000A Series

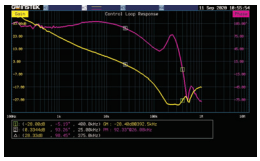
1 GHz DigitalStorageOscilloscope

CE | USB Full Speed | PC Software | Labview Driver | RS-232 | GPIB | Ethernet | PictBridge Compatible

VPO
Visual Persistence Oscilloscope



Spectrogram



Control Loop Response

FEATURES

* 1 GHz Bandwidth, 2 or 4 Input Channels
* 5 GSa/s Real-time Sampling Rate(half channels); 2.5 GSa/s Real-time Sampling Rate(all channels)
* Per Channel 200 Mpts Memory Depth
* 200,000 wfm/s of Waveform Update Rate
* 10.2 inch 800 x 480 TFT LCD Display
* 490,000 Segments of Segmented Memory and the Waveform Search Function to Optimize the Efficiency of Record Length
* Zoom Window and Play/Pause Rapidly Navigate the Waveforms
* 38 sets of Automatic Measurement Offer Various Measurement Selections
* High resolution acquisition mode
* I^2C/SPI/UART/CAN/LIN Serial Bus Trigger and Decoding Functions
* Dual Channel Spectrum Analyzer (DC to 2.5 GHz) with spectrogram
* Dual Channel 25MHz Arbitrary Waveform Generator
* Optional 13 Sets of Power Analysis Measurements
* Optional 16 Digital Channels with a Logic Analyzer(MSO)
* Flexible Remote Control Connectivity (Standard: USB/LAN/RS-232; Option: GPIB)

APPLICATIONS

* Engineering Verification and Testing
* Switching Mode Power Supply Measurement
* Product Development and Debugging

GDS-3000A digital storage oscilloscopes have 1 GHz models with two-channel, four-channel and 16-channel logic analyzer options.The series features the memory length of each channel up to 200 Mpts; the sampling rate of 5 GSa/s half channels and 2.5 GSa/s on all channels. Its display is 10.2" TFT LCD and it provides the color display mode.

Accurate Signal Acquisition and Analysis

GDS-3000A strengthens many functions and specifications required for oscilloscope measurements including the memory depth of up to 200 Mpts per channel. The advantage of long memory is that it allows users to maintain high sampling rate even at low speed time settings; the waveform update rate is up to 200,000 wfm/s; and the segmented memory can capture and analyze up to 490,000 segments.For measurement, GDS-3000A incorporates the Fine scale function to allow users to fine-tune the vertical scale according to the requirements so as to achieve full scale measurement to improve its measurement accuracy. With a 10.2" large screen display and the acquisition method with the high resolution mode allow low-noise signals under high-bandwidth measurements.

In addition, the series is equipped with 1 MΩ and 50 Ω input impedance selections, which can be set according to different DUT measurement requirements to achieve the effect of impedance matching. The search function can quickly find the signals that meet the conditions according to the needs of the test. The cursor mark function allows users to clearly observe the voltage (or current), time and delta data of each point measured by the cursor. Via the indicator function, the measured range is to be shown at the specific section of the waveform.

Dual Domain Measurement

For frequency domain measurement, it is equipped with a dual channel spectrum analyzer, which allows users to measure and analyze the frequency domain signals of two channels at the same time. It is also equipped with Spectrogram function, which allows users to easily observe complex frequency domain fluctuations that are proportionally decomposed into simple superimposed waves so as to understand the signal strength distribution. The soft keys allow users to have more intuitive settings for operation, which can improve the measurement efficiency.

13 Sets of Switching Mode Power Supply Measurements

GDS-3000A provides a rich measurement items for switch mode power supply testing. The provided power supply test items include AC input analysis items: Power Quality, Harmonics, Inrush Current; DC output analysis required test items: Ripple/Noise, Transient Response Analysis, Turn On/OFF, Efficiency; Control Loop response(Bode) and PSRR(Power Supply Rejection Ratio); Complete switching component analysis items: Modulation, Switching loss, SOA(Safe Operation Area) and Magnetics analysis: B-H curve. On one side of GDS-3000A, a power supply for 50 MHz (GCP-530) and 100 MHz(GCP-1030) current probes is provided. This feature can save users the cost of purchasing the power supply for current probes and relief the burden of carrying the power supply when going out.

GDS-3000A is standardly equipped with a dual-channel 25 MHz arbitrary waveform generator and the frequency response analysis function. The FRA has the load function, which can load multiple FRA measurement results for comparison. User define shortcut key provides user-definable shortcut keys. The use of the shortcut key can improve measurement efficiency. GDS-3000A provides a rich communication interfaces. In addition to the commonly used USB Host, USB Device port, and LAN port, it also includes a highly stable RS232 interface and an optional GPIB interface.

Website | Facebook | LinkedIn

SPECIFICATIONS

		GDS-3102A	GDS-3104A
VERTICAL	Channels	2 CH+EXT	4 CH+EXT
	Bandwidth	DC to 1 GHz (-3 dB)@50 Ω input impedance; DC to 500 MHz (-3 dB)@1 MΩ input impedance	
	Calculated Rise Time	350 ps	
	Bandwidth Limit	20 MHz/100 MHz/200 MHz/350 MHz[*1]	
	Vertical Resolution	8 bits, (Max.12 bits with Hi Res)	
		For 1 MΩ input impedance : 1 mV[*2] to 10 V/div	
		For 50 Ω input impedance:1 mV[*2] to 1 V/div	
	Input Coupling	AC, DC, GND	
	Input Impedance	1 MΩ// 22 pF approx.	
	DC Gain Accuracy	1 mV : ±5 % full scale ; ≥2 mV : ±3 % full scale	
	Polarity	Normal , Invert	
	Maximum Input Voltage(1 MΩ)	300 Vrms, CAT II	
	Maximum Input Voltage(50 Ω)	5 Vrms	
	Offset Position Range	For 1 MΩ input impedance : 1 mV/div to 20 mV/div : ±1 V; 50 mV/div to 500 mV/div : ±10 V ; 1 V/div to 5 V/div: ±100 V ; 10 V/div: ±1000 V For 50 Ω input impedance : 1 mV/div to 50 mV/div : ±1 V ; 100 mV/div to 1 V/div: ±10 V	
	Waveform Signal Process	+, - x, ÷FFT, User Defined Expression FFT: Spectral magnitude. Set FFT Vertical Scale to Linear RMS or dBV RMS, and FFT Window to Rectangular, Hamming, Hanning or Blackman	
TRIGGER	Source	2 CH model: CH1, CH2, Line , EXT ; 4 CH model: CH1 , CH2 , CH3 , CH4 , Line , EXT	
	Trigger Mode	Auto(Supports Roll Mode for 100 ms/div and slower), Normal, Single	
	Trigger Type	Edge, Pulse Width(Glitch), Video, Pulse Runt, Rise & Fall(Slope),Time out, Alternate, Event-Delay(1 to 65,535 events), Time-Delay (Duration, 4 ns to 10 s), Bus(I^2C,SPI,UART,CAN,LIN)	
	Trigger Holdoff Range	4 ns to 10 s	
	Coupling	AC, DC, LF rej. , HF rej. , Noise rej.	
	Sensitivity	1 div	
EXT TRIGGER	Range	±20 V	
	Sensitivity	DC to 100 MHz Approx. 100 mV ; 100 MHz to 350 MHz Approx. 150 mV	
	Input Impedance	1 MΩ ± 3 % // 22 pF	
HORIZONTAL	Range	1 ns/div to 1000 s/div (1-2-5 increments); ROLL : 100 ms/div to 1000 s/div	
	Pre-trigger	10 div maximum	
	Post-trigger	10,000,000 div max (depend on time base)	
	Accuracy	±5 ppm, about ±2 ppm increase in error per year	
X-Y MODE	X-Axis Input/Y-Axis Input	Channel 1, Channel 3 (for 4 CH model); Channel 2, Channel 4 (for 4 CH model)	
	Phase Shift	±3° at 100 kHz	
SIGNAL ACQUISITION	Real Time Sample Rate	5 GSa/s half channels; 2.5 GSa/s all channels	
	Record Length	Max.200 Mpts/CH	
	Acquisition Mode	Normal, Average, Peak detect, High resolution, Single ; Average: Selectable from 2 to 512, Peak detect: 400 ps	
	Number of Segments	1 to 490,000 maximum	
CURSORS AND MEASUREMENT	Cursors	Amplitude, Time, Gating available; Unit:Seconds(s), Hz(1/s), Phase(degree), Ratio(%)	
	Automatic Measurement	38 sets with indicator: 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, %Flicker, Flicker Idx ,FRR, FRF, FFR, FFF, LRR, LRF, LFR, LFF, Phase	
	Cursors Measurement	Voltage difference between cursors (△ V) Time difference between cursors (△ T)	
	Auto Counter	6 digits, range from 2 Hz 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”, “Fit Screen”/ “AC Priority” mode, and “Fine Scale” functions.	
	Save Setup	20 sets	
	Save Waveform	20 sets	
	Save Reference Waveform	4 sets	
POWER MEASUREMENTS (Option)		Power Quality, Harmonics, Ripple, In-rush current, Switching Loss, Modulation, SOA, Transient, Efficiency, B-H curve, Control Loop Response, PSRR, Turn On/Off	
AWG	Channels	2	
	Sample Rate	200 MSa/s	
	Vertical Resolution	14 bits	
	Max. Frequency	25 MHz	
	Waveforms	Sine, Square, Pulse, Ramp, DC, Noise, Sinc, Gaston, Lorentz, Exponential Rise, Exponential Fall, Haversine, Cardiac	
	Output Range	20 mVpp to 5 Vpp, HighZ; 10 mVpp to 2.5 Vpp, 50 Ω	
	Output Resolution	1 mV	
	Output Accuracy	2 % (1 kHz)	
	Offset Range	±2.5 V, High Z; ±1.25 V, 50 Ω	
	Offset Resolution	1 mV	
	Sine	Frequency Range:100 mHz to 25 MHz; Flatness(relative to 1 kHz): ± 0.5 dB < 15 MHz, ±1 dB (15 MHz to 25 MHz); Harmonic Distortion:-40 dBc; Stray(Non-harmonic):-40 dBc; Total Harmonic Distortion: 1 % ; S/N Ratio:40 dB	
	Square/Pulse	Frequency Range:100 mHz to 15 MHz ; Rise/Fall time: <15 ns ; Overshoot: <3 % ; Duty cycle Square:50 % & Pulse:0.4 % to 99.6 % ; Min. Pulse Width:30 ns ; Jitter:500 ps	
	Ramp	Frequency Range:100 mHz to 1 MHz ; Linearity: 1 % ; Symmetry: 0 % to 100 %	
SPECTRUM ANALYZER	Frequency Range	DC to 2.5 GHz(Max.) dual channel with spectrogram (based on advanced FFT). Notice: Frequency which exceeds analog front end bandwidth is uncalibrated	
	Span	1 kHz to 2.5 GHz(Max.)	
	Resolution Bandwidth	1 Hz to 2.5 MHz(Max.)	
	Reference Level	-80 dBm to +40 dBm in steps of 5 dBm	
	Vertical Units	dBV RMS; Linear RMS; dBm	
	Vertical Position	-12 divs to +12 divs	
	Vertical Scale	1 dB/div to 20 dB/div in a 1-2-5 Sequence	
	Display Average Noise Level	1 V/div < -40 dBm, Avg : 16 ; 100 mV/div < -60 dBm, Avg : 16 ; 10 mV/div < -80 dBm, Avg : 16	
	Spurious Response	2nd harmonic distortion < 35 dBc ; 3rd harmonic distortion < 40 dBc	
	Frequency Domain Trace Types	Normal ; Max Hold ; Min Hold ; Average (2 to 256)	
	Detection Methods	Sample ; +Peak ; -Peak ; Average	
	FFT Windows	FFT Factor : Hanning 1.44 ; Rectangular 0.89 ; Hamming 1.30 ; Blackman 1.68	

*1. The tolerance of bandwidth limit is ± 10 %.
*2. The bandwidth is limited to 20 MHz at 2 mV/div or below; The bandwidth is limited to 900 MHz at 5 mV/div

SPECIFICATIONS

LOGIC ANALYZER (Option)	Sample Rate	Per Channel 1G Sa/s
	Bandwidth	200 MHz
	Record Length Input Channels	Per Channel 10 M pts (max) 16 Digital (D15 to D0)
	Trigger Type	Edge, Pattern, Pulse Width, Serial bus (I^2C, SPI, UART, CAN, LIN), Parallel Bus
	Thresholds Quad	Settable thresholds for: D0 to D3, D4 to D7,D8 to D11 ,D12 to D15
	Threshold Selections	TTL, CMOS(5 V,3.3 V,2.5 V), ECL, PECL,0 V ,User Defined
	User-defined Threshold Range	±5 V
	Maximum Input Voltage	±40 V
	Minimum Voltage Swing	±250 mV
	Vertical Resolution	1 bit
FREQUENCY RESPONSE ANALYSIS	Frequency Range	20 Hz to 25 MHz
	Input and Output Sources	Channel 1 to 2 for 2 CH model ; Channel 1 to 4 for 4 CH model
	Number of Test Points	10, 15, 30, 45, 90 points per decade selectable for logarithm scale; 2 to 1000 points selectable for linear scale
	Dynamic Range	> 80 dB (typical)
	Test Amplitude	10 mVpp to 2.5 Vpp into 50 Ω, 20 mVpp to 5 Vpp into High-Z, Fixed test amplitude or custom amplitude for each decade
	Test Results	Logarithmic or linear overlaid gain and phase plot, may also overlay with reference plots for cross comparison. Test results saved in csv format for offline analysis
	Manual Measurements	Tracking gain and phase markers
	Plot Scaling	Auto-scaled during test
DISPLAY SYSTEM	TFT LCD Type	10.2" TFT LCD WVGA color display
	Waveform Update Rate	200,000 wfms/sec max.
	Display Resolution	800 horizontal x 480 vertical pixels (WVGA)
	Interpolation	Sin (x)/x
	Waveform Display	Dots, Vectors, Variable persistence(16 ms to 4 s), Infinite persistence,gray and color waveforms
	Display Graticule	8 x 10 divisions
	Display Mode	YT,XY
INTERFACE	RS-232C	DB-9 male connector
	USB Port	USB 2.0 high-speed host port x 1 ; USB high-speed 2.0 device port x 1
	Ethernet Port	RJ-45 connector, 10 M/100 Mbps with HP Auto-MDIX
	VGA Video Port	DB-15 female connector, monitor output for display on VGA monitor
	Optional GPIB Module	Fully programmable with IEEE488.2 compliance
	Go/NoGo BNC	5 V Max/10 mA open collector output
	Kensington Style Lock	Rear-panel security slot connects to standard Kensington-style lock
	Power Supply Receptacles	±12 V/500 mA for current probe usage. 2 sets for 2 CH model; 4 sets for 4 CH model
MISCELLANEOUS	Operating	0 °C to 50 °C, Relative Humidity ≤ 80 % at 40 °C or below ; ≤ 45 % at 41 °C to 50 °C
	Line Voltage Range	AC 100 V to 240 V, 50 Hz to 60 Hz, auto selection. power consumption:100 W
	Multi-Language Menu	Available
	On-Line Help	Available
	Time Clock	Time and date, provide the date/time for saved data
	Internal Flash Disk	800 Mega bytes Single-Level Cell flash memory
	Installed APP	Go/NoGo, DVM, DataLog, Digital Filter, Frequency Response Analyzer, Mask, Mount Remote Disk, Demo
	User Define Key	User can select one of the several different preset functions as shortcut key
DIMENSIONS &	420(W) mm X 253(H) mm X 113.8(D) mm, Approx. 4.6 kg	

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

Specifications subject to change without notice. DS-3000AGD1DS

ORDERING INFORMATION

GDS-3102A 1 GHz, 2-Channel, Digital Storage Oscilloscope
GDS-3104A 1 GHz, 4-Channel, Digital Storage Oscilloscope

ACCESSORIES

Power cord x 1
GTP-501R : 500 MHz 10:1 passive probe for GDS-3102A/3104A (one per channel)

FREE DOWNLOAD

PC Software OpenWave software **Driver** LabView driver

OPTION

DS3A-PWR Power Analysis Software **DS3A-GPIB** GPIB Interface (Factory Pre-installed)
DS3A-16LA 16 Channel Logic Analyzer

OPTIONAL ACCESSORIES

GTP-033A 35 MHz 1:1 Passive probe
GTP-352R 350 MHz 20:1 Passive probe
GDP-025 25 MHz High voltage differential probe
GDP-050 50 MHz High voltage differential probe
GDP-100 100 MHz High voltage differential probe
GCP-300 300 kHz/200 A Current probe
GCP-500 500 kHz/150 A Current probe
GCP-530 50 MHz/30 A Current probe
GCP-1000 1 MHz/70 A Current probe
GCP-1030 100 MHz/30 A Current probe

GTL-248 GPIB Cable, Double Shielded, 2000 mm
GTL-110 Test lead, BNC to BNC connector
GTL-232 RS-232C cable, 9-pin female to 9-pin female
GTL-246 USB 2.0 cable, A-B type,1800 mm
GRA-443 Rack Adapter Panel
GKT-100 Deskew Fixture
GTP-1501R 1.5 GHz 10:1 Passive 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

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