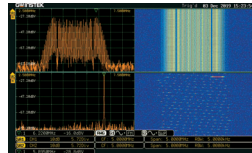
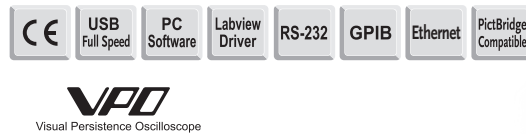


## GDS-3000A Series

### 1 GHz Digital Storage 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<sup>2</sup>C/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 M $\Omega$  and 50  $\Omega$  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



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# SPECIFICATIONS

		GDS-3102A	GDS-3104A
VERTICAL	Channels	2 CH+EXT	
	Bandwidth	DC to 1 GHz (-3 dB)@50 Ω input impedance; DC to 500 MHz (-3 dB)@1 MΩ input impedance 350 ps 20 MHz/100 MHz/200 MHz/350 MHz <sup>*1</sup>	
	Calculated Rise Time Bandwidth Limit		
	Vertical Resolution	8 bits, (Max.12 bits with Hi Res) For 1 MΩ input impedance : 1 mV <sup>*2</sup> to 10 V/div For 50 Ω input impedance:1 mV <sup>*2</sup> to 1 V/div AC, DC, GND 1 MΩ// 22 pF approx. 1 mV : ±5 % full scale ; ≥2 mV : ±3 % full scale Normal , Invert 300 Vrms, CAT II 5 Vrms 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 +, - 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	
	Input Coupling Input Impedance DC Gain Accuracy Polarity Maximum Input Voltage(1 MΩ) Maximum Input Voltage(50 Ω) Offset Position Range		
	Waveform Signal Process		
TRIGGER	Source Trigger Mode Trigger Type  Trigger Holdoff Range Coupling Sensitivity	2 CH model: CH1, CH2, Line , EXT ; 4 CH model: CH1 , CH2 , CH3 , CH4 , Line , EXT Auto(Supports Roll Mode for 100 ms/div and slower), Normal, Single Edge, Pulse Width(Clitch), 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 <sup>2</sup> C,SPI,UART,CAN,LIN) 4 ns to 10 s AC, DC, LF rej. , HF rej. , Noise rej. 1 div	
EXT TRIGGER	Range Sensitivity Input Impedance	±20 V DC to 100 MHz Approx. 100 mV ; 100 MHz to 350 MHz Approx. 150 mV 1 MΩ ± 3 % // 22 pF	
HORIZONTAL	Range Pre-trigger Post-trigger Accuracy	1 ns/div to 1000 s/div (1-2-5 increments); ROLL : 100 ms/div to 1000 s/div 10 div maximum 10,000,000 div max ( depend on time base ) ±5 ppm, about ±2 ppm increase in error per year	
X-Y MODE	X-Axis Input/Y-Axis Input Phase Shift	Channel 1, Channel 3 (for 4 CH model); Channel 2, Channel 4 (for 4 CH model) ±3° at 100 kHz	
SIGNAL ACQUISITION	Real Time Sample Rate Record Length Acquisition Mode Number of Segments	5 GSa/s half channels; 2.5 GSa/s all channels Max.200 Mpts/CH Normal, Average, Peak detect, High resolution, Single ; Average: Selectable from 2 to 512, Peak detect: 400 ps 1 to 490,000 maximum	
CURSORS AND MEASUREMENT	Cursors Automatic Measurement  Cursors Measurement Auto Counter	Amplitude, Time, Gating available; Unit:Seconds(s), Hz(1/s), Phase(degree), Ratio(%) 38 sets with indicator: Pk-Pk, Max, Min, Amplitude, High, Low, Mean, Cycle Mean, RMS, Cycle RMS, Area, Cycle Area, ROVShoot, FOVShoot, RPRESShoot, FPRESShoot, Frequency, Period, RiseTime, FallTime, +Width, -Width, Duty Cycle, +Pulses, -Pulses, +Edges, -Edges, %Flicker, Flicker Idx ,FRR, FRF, FFR, FFF, LRR, LRF, LFR, LFF, Phase Voltage difference between cursors (△ V) Time difference between cursors (△ T) 6 digits, range from 2 Hz minimum to the rated bandwidth	
CONTROL PANEL FUNCTION	Autoset  Save Setup Save Waveform Save Reference Waveform	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. 20 sets 20 sets 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 Sample Rate Vertical Resolution Max. Frequency Waveforms Output Range Output Resolution Output Accuracy Offset Range Offset Resolution Sine  Square/Pulse  Ramp	2 200 MSa/s 14 bits 25 MHz Sine, Square, Pulse, Ramp, DC, Noise, Sinc, Gaston, Lorentz, Exponential Rise, Exponential Fall, Haversine, Cardiac 20 mVpp to 5 Vpp, HighZ; 10 mVpp to 2.5 Vpp, 50 Ω 1 mV 2 % (1 kHz) ±2.5 V, High Z; ±1.25 V, 50 Ω 1 mV 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 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 Frequency Range:100 mHz to 1 MHz ; Linearity: 1 % ; Symmetry: 0 % to 100 %	
SPECTRUM ANALYZER	Frequency Range  Span Resolution Bandwidth Reference Level Vertical Units Vertical Position Vertical Scale Display Average Noise Level Spurious Response Frequency Domain Trace Types Detection Methods FFT Windows	DC to 2.5 GHz(Max.) dual channel with spectrogram (based on advanced FFT). Notice: Frequency which exceeds analog front end bandwidth is uncalibrated 1 kHz to 2.5 GHz(Max.) 1 Hz to 2.5 MHz(Max.) -80 dBm to +40 dBm in steps of 5 dBm dBV RMS; Linear RMS; dBm -12 divs to +12 divs 1 dB/div to 20 dB/div in a 1-2-5 Sequence 1 V/div < -40 dBm, Avg : 16 ; 100 mV/div < -60 dBm, Avg : 16 ; 10 mV/div < -80 dBm, Avg : 16 2nd harmonic distortion < 35 dBc ; 3rd harmonic distortion < 40 dBc Normal ; Max Hold ; Min Hold ; Average (2 to 256) Sample ; +Peak ; -Peak ; Average FFT Factor : Hanning 1.44 ; Rectangular 0.89 ; Hamming 1.30 ; Blackman 1.68	

SPECIFICATIONS		
LOGIC ANALYZER (Option)	Sample Rate Bandwidth Record Length Input Channels Trigger Type Thresholds Quad Threshold Selections User-defined Threshold Range Maximum Input Voltage Minimum Voltage Swing Vertical Resolution	Per Channel 1G Sa/s 200 MHz Per Channel 10 M pts (max) 16 Digital (D15 to D0) Edge, Pattern, Pulse Width, Serial bus (I <sup>2</sup> C, SPI, UART, CAN, LIN), Parallel Bus Settable thresholds for: D0 to D3, D4 to D7,D8 to D11 ,D12 to D15 TTL, CMOS(5 V,3.3 V,2.5 V), ECL, PECL,0 V ,User Defined ±5 V ±40 V ±250 mV 1 bit
FREQUENCY RESPONSE ANALYSIS	Frequency Range Input and Output Sources Number of Test Points Dynamic Range Test Amplitude Test Results  Manual Measurements Plot Scaling	20 Hz to 25 MHz Channel 1 to 2 for 2 CH model ; Channel 1 to 4 for 4 CH model 10, 15, 30, 45, 90 points per decade selectable for logarithm scale; 2 to 1000 points selectable for linear scale > 80 dB (typical) 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 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 Tracking gain and phase markers Auto-scaled during test
DISPLAY SYSTEM	TFT LCD Type Waveform Update Rate Display Resolution Interpolation Waveform Display  Display Graticule Display Mode	10.2" TFT LCD WVGA color display 200,000 wfms/sec max. 800 horizontal x 480 vertical pixels (WVGA) Sin (x)/x Dots, Vectors, Variable persistence(16 ms to 4 s), Infinite persistence,gray and color waveforms 8 x 10 divisions YT,XY
INTERFACE	RS-232C USB Port Ethernet Port VGA Video Port Optional GPIB Module Go/NoGo BNC Kensington Style Lock Power Supply Receptacles	DB-9 male connector USB 2.0 high-speed host port x 1 ; USB high-speed 2.0 device port x 1 RJ-45 connector, 10 M/100 Mbps with HP Auto-MDIX DB-15 female connector, monitor output for display on VGA monitor Fully programmable with IEEE488.2 compliance 5 V Max/10 mA open collector output Rear-panel security slot connects to standard Kensington-style lock ±12 V/500 mA for current probe usage. 2 sets for 2 CH model; 4 sets for 4 CH model
MISCELLANEOUS	Operating Line Voltage Range Multi-Language Menu On-Line Help Time Clock Internal Flash Disk Installed APP User Define Key	0 °C to 50 °C, Relative Humidity ≤ 80 % at 40 °C or below ; ≤ 45 % at 41 °C to 50 °C AC 100 V to 240 V, 50 Hz to 60 Hz, auto selection. power consumption:100 W Available Available Time and date, provide the date/time for saved data 800 Mega bytes Single-Level Cell flash memory Go/NoGo, DVM, DataLog, Digital Filter, Frequency Response Analyzer, Mask, Mount Remote Disk, Demo 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	
<b>GDS-3102A</b>	1 GHz, 2-Channel, Digital Storage Oscilloscope
<b>GDS-3104A</b>	1 GHz, 4-Channel, Digital Storage Oscilloscope
ACCESSORIES	
Power cord x 1	
<b>GTP-501R</b>	: 500 MHz 10:1 passive probe for GDS-3102A/3104A (one per channel)
FREE DOWNLOAD	
<b>PC Software</b>	OpenWave software <b>Driver</b> LabView driver
OPTION	
<b>DS3A-PWR</b>	Power Analysis Software (Free try during warranty)
<b>DS3A-GPIB</b>	GPIB Interface (Factory Pre-installed)
<b>DS3A-16LA</b>	16 Channel Logic Analyzer

OPTIONAL ACCESSORIES	
<b>GTP-033A</b>	35 MHz 1:1 Passive probe
<b>GTP-352R</b>	350 MHz 20:1 Passive probe
<b>GDP-025</b>	25 MHz High voltage differential probe
<b>GDP-050</b>	50 MHz High voltage differential probe
<b>GDP-100</b>	100 MHz High voltage differential probe
<b>GCP-300</b>	300 kHz/200 A Current probe
<b>GCP-500</b>	500 kHz/150 A Current probe
<b>GCP-530</b>	50 MHz/30 A Current probe
<b>GCP-1000</b>	1 MHz/70 A Current probe
<b>GCP-1030</b>	100 MHz/30 A Current probe
<b>GTL-248</b>	GPIB Cable, Double Shielded, 2000 mm
<b>GTL-110</b>	Test lead, BNC to BNC connector
<b>GTL-232</b>	RS-232C cable, 9-pin female to 9-pin female
<b>GTL-246</b>	USB 2.0 cable, A-B type,1800 mm
<b>GRA-443</b>	Rack Adapter Panel
<b>GKT-100</b>	Deskew Fixture
<b>GTP-1501R</b>	1.5 GHz 10:1 Passive probe
<b>GCP-0275</b>	2 MHz / 750 A Current probe
<b>GCP-0550</b>	5 MHz / 500 A Current probe
<b>GCP-2525</b>	25 MHz / 250 A Current probe

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