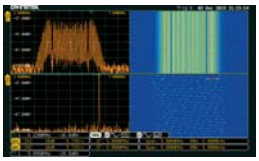
GW INSTEK
Simply Reliable

GDS-3000A Series

650MHz/350MHz
Digital Storage Oscilloscope

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

VPO
Visual Persistence Oscilloscope



Spectrogram

Control Loop Response

FEATURES

* 650/350MHz Bandwidth, 2 or 4 Input Channels
* 5GSa/s Real-time Sampling Rate(half channels); 2.5GSa/s Real-time Sampling Rate(all channels)
* Per Channel 200Mpts 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~2.5GHz) 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 650MHz and 350MHz models with two-channel, four-channel and 16-channel logic analyzer options. The series features the memory length of each channel up to 200Mpts; the sampling rate of 5GSa/s half channels and 2.5GSa/s on all channels. Its display is 10.2" TFT LCD and it provides the color display mode. The output RGB three primary colors are each 8 bits, which allow users to clearly analyze the strength distribution of the signal.

Accurate Signal Acquisition and Analysis

GDS-3000A strengthens many functions and specifications required for oscilloscope measurements including the memory depth of up to 200Mpts 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 200,000wfm/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 1M ohm and 50 ohm 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 50MHz (GCP-530) and 100MHz(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 25MHz 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.

SPECIFICATIONS

		GDS-3352A	GDS-3354A	GDS-3652A	GDS-3654A
VERTICAL	**Channels**	2Ch+EXT	4Ch+EXT	2Ch+EXT	4Ch+EXT
	Bandwidth	DC~350MHz(-3dB)@50Ω/1MΩ input impedance		DC~650MHz(-3dB)@50Ω input impedance; DC~500MHz(-3dB)@1MΩ input impedance	
	Calculated Rise Time	1ns		535ps	
	Bandwidth Limit	20M/100M/200MHz*1		20M/100M/200M/300MHz*1	
	Vertical Resolution	8 bits (Max.12bits with Hi Res)			
	Vertical Resolution(1MΩ)	1mV*2 ~ 10V/div			
	Vertical Resolution(50Ω)	1mV*2 ~ 1V/div			
	Input Coupling	AC, DC, GND			
	Input Impedance	1MΩ// 22pF approx.			
	DC Gain Accuracy	1mV : ±5% full scale ; ≥2mV : ±3% full scale			
	Polarity	Normal , Invert			
	Maximum Input Voltage(1MΩ)	300Vrms, CAT II			
	Maximum Input Voltage(50Ω)	5 Vrms			
	Offset Position Range	For 1MΩ input impedance:1mV/div~20mV/div:±1V;50mV/div~500mV/div:±10V;1V/div~5V/div:±100V;10V/div:±1000V For 50Ω input impedance:1mV/div~50mV/div:±1V;100mV/div~1V/div:±10V			
	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**	2CH models: CH1, CH2, Line , EXT ; 4CH models: CH1 , CH2 , CH3 , CH4 , Line , EXT			
	Trigger Mode	Auto(Supports Roll Mode for 100ms/div and slower), Normal, Single			
	Trigger Type	Edge, Pulse Width(Glitch), Video, Pulse Runt, Rise & Fall(Slope),Time out, Alternate, Event-Delay(1~65,535 events),Time-Delay(Duration, 4ns~10s),Bus(I²C,SPI,UART,CAN,LIN)			
	Trigger Holdoff Range	4ns~10s			
	Coupling	AC, DC, LF rej. , Hf rej. , Noise rej.			
	Sensitivity	1div			
EXT TRIGGER	**Range**	±20V			
	Sensitivity	DC ~ 100MHz Approx. 100mV 100MHz ~ 350MHz Approx. 150mV			
	Input Impedance	1MΩ±3% ~ 22pF			
HORIZONTAL	**Range**	1ns/div ~ 1000s/div (1-2-5 increments); ROLL : 100ms/div ~ 1000s/div			
	Pre-trigger	10 div maximum			
	Post-trigger	10,000,000 div max (depend on time base)			
	Accuracy	±5ppm, about ±2ppm increase in error per year			
X-Y MODE	**X-Axis Input/Y-Axis Input**	Channel 1, Channel 3 (for 4CH models); Channel 2, Channel 4 (for 4CH models)			
	Phase Shift	±3° at 100kHz			
SIGNAL ACQUISITION	**Real Time Sample Rate**	5GSa/s half channels; 2.5GSa/s all channels			
	Record Length	Max.200M pts/CH			
	Acquisition Mode	Normal, Average, Peak detect, High resolution, Single			
		Average: Selectable from 2 ~ 256, Peak detect: 400ps			
	Number of Segments	1 ~ 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 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", "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, High Z; 10 mVpp to 2.5 Vpp, 50Ω			
	Output Resolution	1mV			
	Output Accuracy	2% (1 kHz)			
	Offset Range	±2.5 V ac+dc, High Z; ±1.25 V ac+dc, 50Ω			
	Offset Resolution	1mV			
	Sine	Frequency Range:100mHz~25MHz;Flatness(relative to 1kHz):±0.5 dB<15MHz,±1dB(15MHz~25MHz);Harmonic Distortion:-40 dBc; Stray(Non-harmonic): -40 dBc; Total Harmonic Distortion: 1% ; S/N Ratio: 40 dB			
	Square/Pulse	Frequency Range: 100mHz~15MHz ; Rise/Fall time:<15ns ; Overshoot: <3% ; Duty cycle Square:50% & Pulse:0.4%~99.6% ; Min. Pulse Width: 30 ns ; Jitter: 500 ps			
	Ramp	Frequency Range: 100mHz~1MHz ; Linearity: 1% ; Symmetry: 0~100%			
SPECTRUM ANALYZER	**Frequency Range**	DC ~ 2.5GHz(Max.) dual channel with spectrogram (based on advanced FFT). Notice: Frequency which exceeds analog front end bandwidth is uncalibrated			
	Span	1kHz ~ 2.5GHz(Max.)			
	Resolution Bandwidth	1Hz ~ 2.5MHz(Max.)			
	Reference Level	-80 dBm to +40dBm in steps of 5dBm			
	Vertical Units	dBV RMS; Linear RMS; dBm			
	Vertical Position	-12divs to +12divs			
	Vertical Scale	1dB/div to 20dB/div in a 1-2-5 Sequence			
	Display Average Noise Level	1V/div < -450dBm, Avg : 16 ; 100mV/div < -60dBm, Avg : 16 ; 10mV/div < -80dBm, Avg : 16			
	Spurious Response	2nd harmonic distortion<35dBc ; 3rd harmonic distortion< 40dBc			
	Frequency Domain Trace Types	Normal ; Max Hold ; Min Hold ; Average (2 ~ 256)			
	Detection Methods	Sample ; +Peak ; -Peak ; Average			
	FFT Windows	FFT Factor : Hanning 1.44 ; Rectangular 0.89 ; Hamming 1.30 ; Blackman 1.68			
LOGIC ANALYZER (Option)	**Sample Rate**	Per Channel 1GSa/s			
	Bandwidth	200MHz			
	Record Length	Per Channel 10M pts (max)			
	Input Channels	16 Digital (D15 - D0)			
	Trigger Type	Edge, Pattern, Pulse Width, Serial bus (I²C, SPI, UART, CAN, LIN), Parallel Bus			
	Thresholds Quad	D0~D3, D4~D7,D8~D11 ,D12~D15 Thresholds			
	Threshold Selections	TTL, CMOS(5V,3.3V,2.5V), ECL, PECL,0V ,User Defined			
	User-defined Threshold Range	±5V			
	Maximum Input Voltage	±40 V			
	Minimum Voltage Swing	±250 mV			
	Vertical Resolution	1 bit			
FREQUENCY RESPONSE ANALYSIS	**Frequency Range**	20 Hz ~ 25 MHz			
	Input and Output Sources	Channel 1 ~ 2 for 2CH models ; Channel 1 ~ 4 for 4CH models			
	Number of Test Points	10, 15, 30, 45, 90 points per decade selectable for logarithm scale; 2 ~ 1000 points selectable for linear scale			
	Dynamic Range	> 80 dB (typical)			
	Test Amplitude	10mVpp to 2.5Vpp into 50Ω, 20mVpp to 5Vpp 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(16ms~4s), 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, 10/100Mbps 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	5V Max/10mA open collector output			
	Kensington Style Lock	Rear-panel security slot connects to standard Kensington-style lock			
	Power Supply Receptacles	±12V/500mA for current probe usage.2 sets for 2CH models;4 sets for 4CH models			
MISCELLANEOUS	**Operating**	0°C ~ 50°C, Relative Humidity≤80% at 40°C or below ;≤ 45% at 41°C~50°C			
	Line Voltage Range	AC 100V ~ 240V, 50Hz ~ 60Hz, auto selection. power consumption:100W			
	Multi-Language Menu	Available			
	On-Line Help	Available			
	Time Clock	Time and date, provide the date/time for saved data			
	Internal Flash Disk	800M 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 & WEIGHT	420(W) X 253(H) X 113.8(D)mm, Approx. 4.6 kg				

*1. The tolerance of bandwidth limit is±10%.
*2. The bandwidth is limited to 20MHz at 1mV/div and 2mV/div.

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

Specifications subject to change without notice. DS-3000AGD1DH

ORDERING INFORMATION

GDS-3652A	650MHz, 2-Channel, Digital Storage Oscilloscope
GDS-3654A	650MHz, 4-Channel, Digital Storage Oscilloscope
GDS-3352A	350MHz, 2-Channel, Digital Storage Oscilloscope
GDS-3354A	350MHz, 4-Channel, Digital Storage Oscilloscope

ACCESSORIES

User manual CD x 1, Power cord x 1
GTP-351R:350MHz 10:1 passive probe for GDS-3352A/3354A(one per channel)
GTP-501R:500MHz 10:1 passive probe for GDS-3652A/3654A (one per channel)

FREE DOWNLOAD

PC Software OpenWave software **Driver** LabView driver

OPTION

DS3A-PWR Power Analysis Software **DS3A-GPIB** GPIB Interface **DS3A-16LA** 16 Channel Logic Analyzer

OPTIONAL ACCESSORIES

GTP-033A	35MHz 1:1 Passive probe
GTP-352R	350MHz 20:1 Passive probe
GDP-025	25MHz High voltage differential probe
GDP-050	50MHz High voltage differential probe
GDP-100	100MHz High voltage differential probe
GCP-300	300kHz/200A Current probe
GCP-500	500kHz/150A Current probe
GCP-530	50MHz/30A Current probe
GCP-1000	1MHz/70A Current probe
GCP-1030	100MHz/30A Current probe
GTL-248	GPIB Cable, Double Shielded, 2000mm
GTL-110	Test lead, BNC to BNC connector
GTL-232	RS-232C cable, 9-pin female to 9-pin female, Null modem for computer
GTL-246	USB 2.0 cable, A-B type cable 4P, 1800mm
GRA-443-E	Rack Adapter Panel
GKT-100	Deskew Fixture

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