

GW INSTEK
Simply Reliable

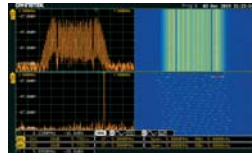
GDS-3000A Series

650MHz/350MHz

Digital Storage Oscilloscope



VPO
Visual Persistence Oscilloscope



Spectrogram



Control Loop Response

FEATURES

- * 650/350MHz Bandwidth, 2 Channels
- * 5GSa/s Real-time Sampling Rate (One Channel); 2.5GSa/s Real-time Sampling Rate (Dual 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
- * I²C/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 and 16-channel logic analyzer options. The series features the memory length of each channel up to 200Mpts; the sampling rate of 5GSa/s one channel and 2.5GSa/s on dual 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.



Website



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SPECIFICATIONS

		GDS-3352A	GDS-3652A
VERTICAL	Channels	2Ch+EXT	
	Bandwidth	DC-350MHz(-3dB)@50Ω/1MΩ input impedance	DC-650MHz(-3dB)@50Ω input impedance; DC-500MHz(-3dB)@1MΩ input impedance
VERTICAL	Calculated Rise Time	1 ns	
	Bandwidth Limit	20M/100M/200MHz ⁻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, ² , F, 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	CH1, CH2, 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(I ² C,SPI,UART,CAN,LIN)	
TRIGGER	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	
X-Y MODE	Post-trigger	10,000,000 div max (depend on time base)	
	Accuracy	±5ppm, about ±2ppm increase in error per year	
SIGNAL ACQUISITION	X-Axis Input/Y-Axis Input	Channel 1 , Channel 2	
	Phase Shift	±3° at 100kHz	
SIGNAL ACQUISITION	Real Time Sample Rate	5GSa/s one channel; 2.5GSa/s on dual channels	
	Record Length	Max.200M pts/CH	
	Acquisition Mode	Normal, Average, Peak detect, High resolution, Single Average: Selectable from 2 - 256, Peak detect: 400ps	
CURSORS AND MEASUREMENT	Number of Segments	1 - 490,000 maximum	
	Cursors	Amplitude, Time, Gating available;Unit:Seconds(s),Hz(1/s),Phase(degree),Ratio(%)	
CURSORS AND MEASUREMENT	Automatic Measurement	38 sets with indicator: Pk-Pk, Max, Min, Amplitude, High, Low, Mean, Cycle Mean, RMS, Cycle Area, Area, Cycle Area, ROVShoot, FOVShoot, RPRESHoot, RPRESHoot, Frequency, Period, RiseTime, FallTime, +Width, -Width, Duty Cycle, +Pulses, -Pulses, +Edges, -Edges, %Flicker, Flicker Idx, FRF, FRF, FFR, FFF, LRR, LRF, LFF, Phase.	
	Cursors Measurement	Voltage difference between cursors (ΔV) Time difference between cursors (ΔT)	
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	
POWER MEASUREMENTS (Option)	Save Waveform	20 sets	
	Save Reference Waveform	4 sets	
POWER MEASUREMENTS (Option)	AWG	Power Quality, Harmonics, Ripple, In-rush current, Switching Loss, Modulation, SOA, Transient, Efficiency, B-H curve, Control Loop Response, PSRR, Turn On/Off	
	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, 50Ω	
	Output Resolution	1mV	
	Output Accuracy	±2.5 V, HighZ;±1.25 V, 50Ω	
	Offset Range	±2.5 V, HighZ;±1.25 V, 50Ω	
SPECTRUM ANALYZER	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	Min. Pulse Width:30 ns ; Jitter:500 ps	
	Ramp	Frequency Range:100mHz-1MHz ; Linearity: 1% ; Symmetry: 0-100%	
	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	
LOGIC ANALYZER (Option)	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	
	Sample Rate	Per Channel 1GSa/s	
	Bandwidth	200MHz	
	Record Length	Per Channel 10M pts (max)	
	Input Channels	16 Digital (D15 - D0)	
FREQUENCY RESPONSE ANALYSIS	Trigger Type	Edge, Pattern, Pulse Width, Serial bus (I ² C, 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	±40V	
	Minimum Voltage Swing	±250 mV	
	Vertical Resolution	1 bit	
	Frequency Range	20 Hz - 25 MHz	
	Input and Output Sources	Channel 1 - 2	
	DISPLAY SYSTEM	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	
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	
INTERFACE	Waveform Display	Dots, Vectors, Variable persistence(16ms-4s), Infinite persistence,gray and color waveforms	
	Display Graticule	8 x 10 divisions	
	Display Mode	YT,Xy	
	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	
MISCELLANEOUS	Power Supply Receptacles	±12V/500mA for current probe usage,2 sets	
	Operating Line Voltage Range	0°C - 50°C, Relative Humidity≤80% at 40°C or below ; ≤ 45% at 41°C-50°C	
	Multi-Language Menu	AC 100V - 240V, 50Hz - 60Hz, auto selection. power consumption:100W	
	On-Line Help	Available	
	Time Clock	Available	
	Internal Flash Disk	Time and date, provide the date/time for saved data	
	Installed APP	800M bytes Single-Level Cell flash memory	
	User Define Key	Go/NoGo, DVM, DataLog, Digital Filter, Frequency Response Analyzer, Mask, Mount Remote Disk, Demo	
	DIMENSIONS & WEIGHT	420(W) X 253(H) 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-3000A_2CH_GD1DH

ORDERING INFORMATION

GDS-3652A	650MHz, 2-Channel, Digital Storage Oscilloscope
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ACCESSORIES

User manual CD x 1, Power cord x 1
GTP-351R:350MHz 10:1 passive probe for GDS-3352A(one per channel)
GTP-501R:500MHz 10:1 passive probe for GDS-3652A(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	GTL-248	GPIB Cable, Double Shielded, 2000mm
GTP-352R	350MHz 20:1 Passive probe	GTL-110	Test lead, BNC to BNC connector
GDP-025	25MHz High voltage differential probe	GTL-232	RS-232C cable, 9-pin female to 9-pin female, Null modem for computer
GDP-050	50MHz High voltage differential probe		
GDP-100	100MHz High voltage differential probe		
GCP-300	300kHz/200A Current probe	GTL-246	USB 2.0 cable, A-B type cable 4P, 1800mm
GCP-500	500kHz/150A Current probe		
GCP-530	50MHz/30A Current probe	GRA-443-E	Rack Adapter Panel
GCP-1000	1MHz/70A Current probe	GKT-100	Deskew Fixture
GCP-1030	100MHz/30A Current probe		

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