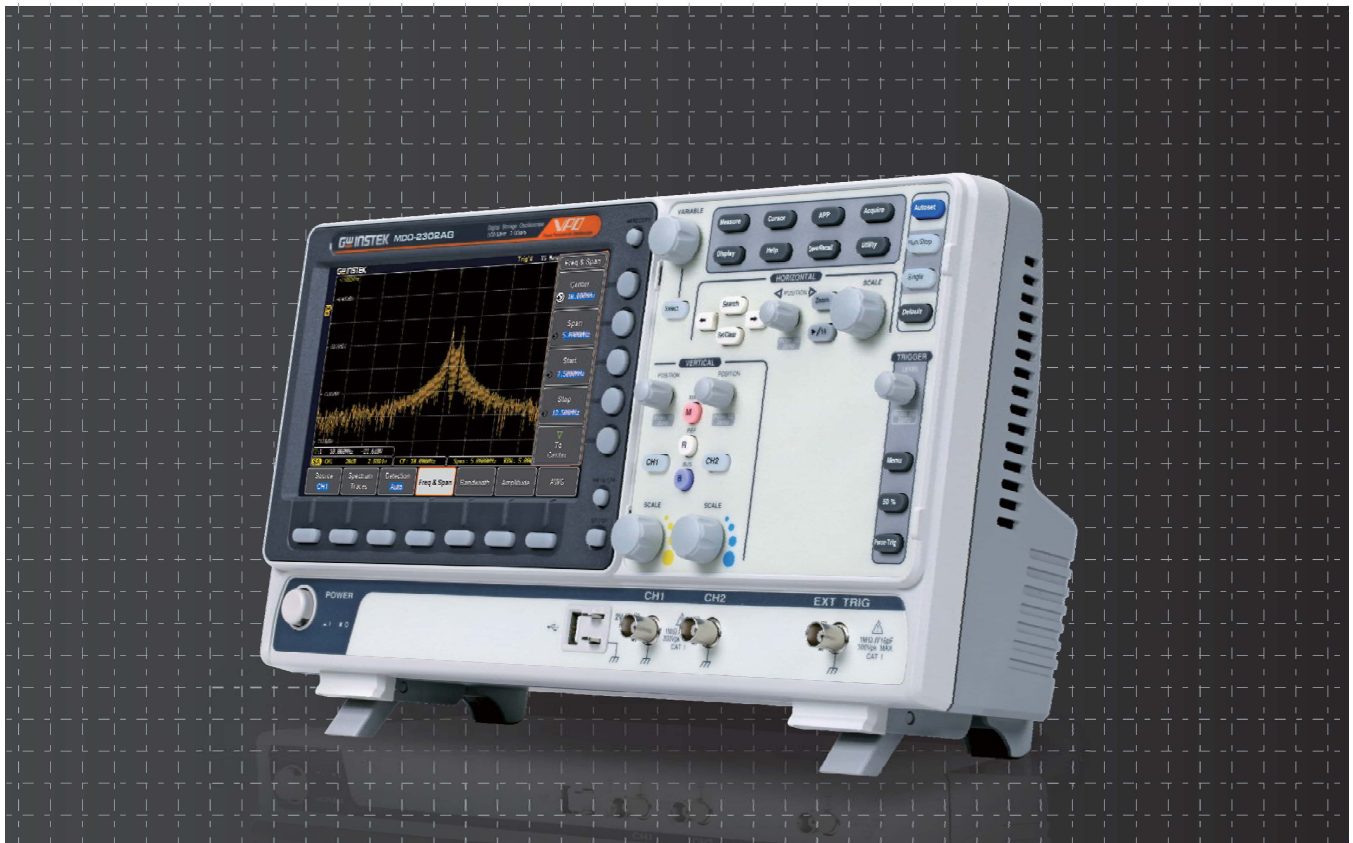




MDO-2000A Series

VPO
Visual Persistence Oscilloscope

300/200/100MHz Mixed-Domain Oscilloscope

FEATURES

- 300/200/100MHz Bandwidth Selections: 2 Channels
- Maximum Real Time Sampling Rate: 2 GSa/s
- MDO-2000A Equips with a Spectrum Analyzer
MDO-2000AG Equips with a Spectrum Analyzer ; a Dual Channel 25MHz AWG
- Per Channel 20M Memory Depth and VPO Waveform Display Technology
- Waveform Update Rate up to 120,000 wfms/s
- 8 " WVGA TFT LCD
- MDO-2000AG Provides Frequency Response Analysis Function
- Maximum 1M FFT Provides Higher Frequency Domain Resolution Measurements
- High Pass, Low Pass and Band Pass Filter Functions
- 29,000 Segmented Memory Sections and Waveform Search Function
- I²C/UART/CAN/LIN Serial Bus Trigger and Decoding Functions
- Data Log Function is able to Track Signal Changes up to 1000 Hours
- Mask Test Function
- Network Storage Function

SPECIFICATIONS				
		MDO-2102A/G	MDO-2202A/G	MDO-2302A/G
VERTICAL SENSITIVITY	Channels	2Ch+EXT	2Ch+EXT	2Ch+EXT
	Bandwidth	DC~100MHz(-3dB)	DC~200MHz(-3dB)	DC~300MHz(-3dB)
	Calculated Rise Time	3.5ns	1.75ns	1.17ns
	Bandwidth Limit	20MHz	20M/100MHz	20M/100M200MHz
	Vertical Resolution	8 bits : 1mV ~ 10V/div		
	Input Coupling	AC, DC, GND		
	Input Impedance	1M Ω // 16pF approx.		
	DC Gain Accuracy	$\pm$ (3% when 2mV/div or greater is selected ; $\pm$ (5%) when 1mV/div is selected		
	Polarity	Normal & Invert		
	Maximum Input Voltage	300Vrms , CAT I		
	Offset Position Range	1mV/div ~ 20mV/div : $\pm$ 0.5V ; 50mV/div ~ 200mV/div : $\pm$ 5V ; 500mV/div ~ 2V/div : $\pm$ 25V ; 5V/div~10V/div : $\pm$ 250V		
	Waveform Signal Process	+ , - , $\times$, $\div$, FFT , User Defined Expression FFT : 1Mpts ; 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 100 ms/div and slower), Normal, Single Sequence		
	Trigger Type	Edge, Pulse Width(Glitch), Video, Pulse Runt, Rise & Fall(Slope), Alternate, Time out, Event-Delay(1~65,535 events),Time-Delay(Duration;4ns~10s), Bus		
	Trigger Holdoff Range	4ns ~ 10s		
	Coupling	AC, DC, LF rej. , HF rej. , Noise rej.		
	Sensitivity	1div		
EXT TRIGGER	Range	$\pm$ 15V		
	Sensitivity	DC ~ 100MHz Approx. 100mV; 100MHz ~ 200MHz Approx. 150mV; 200MHz ~ 300MHz Approx. 150mV		
	Input Impedance	1M Ω $\pm$ 3%, ~16pF		
HORIZONTAL	Time Base Range	1ns/div ~ 100s/div (1-2-5 increments); ROLL : 100ms/div ~ 100s/div		
	Pre-trigger	10 div maximum		
	Post-trigger	2,000,000 div maximum		
	Time Base Accuracy	$\pm$ 50 ppm over any $\geq$ 1 ms time interval		
	Real Time Sample Rate	Max. : 2GSa/s (shared)		
	Record Length	Per Channel 20Mpts		
	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		
	Y-Axis Input	Channel 2		
	Phase Shift	$\pm$ 3° at 100kHz		
CURSORS AND MEASUREMENT	Cursors	Amplitude, Time, Gating Available; Unit : Seconds(S), Hz(1/S), Phase (Degrees), Ratio(%)		
	Automatic Measurement	38 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, %Flicker, Flicker Idx., FRR, FRF, FFR, FFF, LRR, LRF, LFR, LFF, Phase		
CONTROL PANEL FUNCTION	Auto Counter	6 digits, range from 2Hz minimum to the rated bandwidth		
	Autoset	Single-button, automatic setup of all channels for vertical, horizontal and trigger systems, with undo Autoset		
	Save Setup	20 sets		
	Save Waveform	24 sets		
DISPLAY SYSTEM	TFT LCD Type	8" TFT LCD WVGA color display		
	Display Resolution	800 horizontal x 480 vertical pixels (WVGA)		
	Interpolation	Sin(x)/x		
	Waveform Display	Dots, Vectors, Variable persistence(16ms~4s), Infinite persistence		
	Waveform Update Rate	120,000 waveforms per second, maximum		
	Display Mode	YT ; XY		
	Display Graticule	8 x 10 divisions		
INTERFACE	USB Port	USB 2.0 High-speed host port x 1, USB 2.0 High-speed device port x 1		
	Ethernet Port (LAN)	RJ-45 connector, 10/100Mbps with HP Auto-MDIX		
	Go/NoGo BNC	5V Max/10mA TTL open collector output		
	Kensington Style Lock	Rear-panel security slot connects to standard Kensington-style lock		
SPECTRUM ANALYZER SPECIFICATIONS	Frequency Range	DC~1GHz(Max.) (Max. bandwidth ~1GHz uncalibrated)		
	Span	1kHz ~ 1GHz(Max.)		
	Resolution Bandwidth	1Hz ~ 1MHz(Max.)		
	Reference Level	-50 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 < -50dBm, Avg : 16 ; 100mV/div < -70dBm, Avg : 16 ; 10mV/div < -90dBm, Avg : 16		
	Spurious Response	2nd harmonic distortion< 40dBc ; 3rd harmonic distortion< 45dBc		
	Frequency Domain	Normal ; Max Hold ; Min Hold ; Average (2 ~ 256)		
	Trace Types	Sample ; +Peak ; -Peak ; Average		
	Detection Methods	FFT Factor : Hanning 1.44 ; Rectangular 0.89 ; Hamming 1.30 ; Blackman 1.68		
	FFT Windows			
AWG SPECIFICATIONS (MDO-2000AG only)	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	1mV		
	Output Accuracy	2% (1 kHz)		
	Offset Range	$\pm$ 2.5 V, HighZ; $\pm$ 1.25 V, 50 Ω		
	Offset Resolution	1mV		
	Sine	Frequency Range : 100mHz~25MHz ; Flatness : $\pm$ 0.5 dB ; 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%		
FREQUENCY RESPONSE ANALYSIS (MDO-2000AG only)	Dynamic Range	> 80 dB (typical)		
	Input and Output Sources	Channel 1 or 2		
	Frequency Range	20 Hz to 25 MHz		
	Number of Test Points	10 to 90 points per decade		
	Test Amplitude	20 mVpp to 5 Vpp into High-Z ; Fixed test amplitude or custom amplitude for each decade		
	Test Results	Logarithmic overlaid gain and phase plot		
	Manual Measurements	Two pairs of tracking gain and phase markers		
	Plot Scaling	Auto-scaled during test		
MISCELLANEOUS	Line Voltage Range	AC 100V ~ 240V, 50Hz ~ 60Hz, auto selection		
	Multi-Language Menu	Available		
	On-Line Help	Available		
	Time Clock	Time and date, provide the date/time for saved data		
	Operation Environment	Temperature: 0°C to 50°C. Relative Humidity: $\leq$ 80% at 40°C or below; $\leq$ 45%, 41°C ~ 50°C		
	Dimensions & Weight	384(W) X 208(H) x 127.3(D) mm, Approx. 3kg		

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

Specifications subject to change without notice.

MDO2000AGD1BH

ORDERING INFORMATION

MDO-2302AG 300MHz, 2-channel, Digital Storage Oscilloscope, Spectrum Analyzer, dual channel 25MHz AWG
MDO-2202AG 200MHz, 2-channel, Digital Storage Oscilloscope, Spectrum Analyzer, dual channel 25MHz AWG
MDO-2102AG 100MHz, 2-channel, Digital Storage Oscilloscope, Spectrum Analyzer, dual channel 25MHz AWG
MDO-2302A 300MHz, 2-channel, Digital Storage Oscilloscope, Spectrum Analyzer
MDO-2202A 200MHz, 2-channel, Digital Storage Oscilloscope, Spectrum Analyzer
MDO-2102A 100MHz, 2-channel, Digital Storage Oscilloscope, Spectrum Analyzer

ACCESSORIES

User manual CD x 1, Power cord x 1,
GTL-110 BNC-BNC cable x 2 (only on MDO-2000AG)
GTP-100B-4 : 100MHz(10:1/1:1)Switchable passive probe for MDO-2102A/2102AG (one per channel)
GTP-200B-4 : 200MHz(10:1/1:1)Switchable passive probe for MDO-2202A/2202AG (one per channel)
GTP-300B-4 : 300MHz(10:1/1:1)Switchable passive probe for MDO-2302A/2302AG (one per channel)

OPTIONAL ACCESSORIES

GRA-426 Rack Adapter Panel	GCP-100 Current Probe, DC~100kHz, 100A, Current Probe
GAK-003 50 Ω Impedance Adapter	GCP-1030 Current Probe, DC~100MHz, 30Arms, Current Probe
GSC-008 Soft Carrying Case	GCP-206P Current Probe - Power Supply, 2 Channel Power Supply for GCP-530/1030
GTL-246 USB Cable, USB 2.0, A-B Type, 1200mm	GCP-425P Current Probe - Power Supply, 4 Channel Power Supply for GCP-530/1030
GDB-03 Oscilloscope Education & Training Kit	GCP-530 Current Probe, DC~50MHz, 30Arms, Current Probe
GCP-020 Current Probe, 40Hz~40kHz, 240A, Current Probe	GDP-025 Differential Probe, 25M High Voltage Differential Probe
GTP-033A Oscilloscope Probe, 35MHz 1:1 Passive Probe	GDP-050 Differential Probe, 50M High Voltage Differential Probe

FREE DOWNLOAD

PC Software	OpenWave software	Driver	USB driver ; LabView driver
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