GDS-2000E Series

VPO
Visual Persistence Oscilloscope

200/100/70MHz Digital Storage Oscilloscope

FEATURES

- 200/100/70MHz Bandwidth
- Sampling Rate : Max. 1GSa/s (4ch Model);Per Channel 1GSa/s (2ch Model)
- 10M Maximum Memory Depth and VPO Waveform Display Technology
- Waveform Update Rate of 120,000 wfm/s
- 8 " 800 x 480 TFT LCD Display
- Max. 1M pts of FFT to Get Higher Resolution in Frequency Domain
- Digital Filter Function
- Segmented Memory and Waveform Search Functions
- I^2C/SPI/UART/CAN/LIN Serial Bus Trigger and Decoding Function
- Data Log Function for Waveform Observation in Long Periods of Time
- Network Storage Function

GW INSTEK
Simply Reliable

Fast Retrieval, Precision Measurement

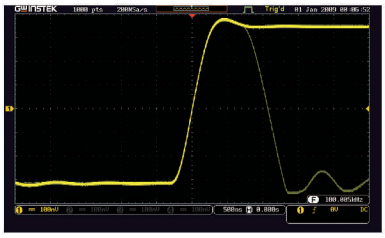
1GSa/s Maximum Real-Time Sampling Rate and 10M Maximum Memory Depth

The GDS-2000E digital oscilloscope features bandwidth selections of 200MHz, 100MH, and 70MHz. Two-channel model provides 1GSa/s real-time sampling rate for each channel; four-channel model provides 1GSa/s maximum real-time sampling rate. The 8-inch 800 x 480 TFT LCD display and the minimum 1mV/div vertical range allow the GDS-2000E Series to measure complex feeble signals and clearly display measurement results.

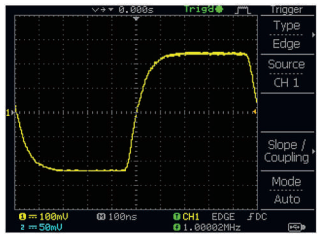
With respect to the memory depth, the GDS-2000E Series digital oscilloscope provides 10M long memory for users to completely retrieve and analyze waveforms. Users, based upon the application requirements, can select 1K, 10K, 100K, 1M or 10M memory depth. Short memory depth collocating with the high sampling rate allows users to observe fast-changing waveforms and, on the other hand, long memory depth aims for continuously changing waveforms. The GDS-2000E Series is equipped with waveform search and segmented memory functions to expand the flexible applications of 10M long memory. The segmented memory can be divided the maximum into 29,000 sections for users to bypass any unimportant waveforms so as to swiftly search all required waveforms. With the function, more meaningful waveforms can be saved and target waveforms can be displayed rapidly. With the waveform search function, users can rapidly search desired waveforms according to the required trigger conditions.

Waveform Update Rate of 120,000 wfm/s and VPO Waveform Display Technology

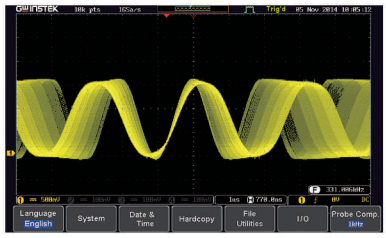
The GDS-2000E digital oscilloscope allows users to easily and completely observe inrush signals and rare transient waveforms to increase waveform debugging efficiency by using features, including advanced VPO (Visual Persistence Oscilloscope) signal processing technology, waveform update rate as high as 120,000 wfm/s, and multi-layered afterglow display to enhance waveform display efficiency. Oscilloscope with VPO technology displays signals with three dimensional waveforms constructing by amplitude, time and signal strength to show each waveform point. 256 color gradients yield clear waveform changes. Comparing with the conventional digital storage oscilloscope, the GDS-2000E Series provides more natural and more genuine signal display effect which is very close to the original analog signal.



120,000wfms/s

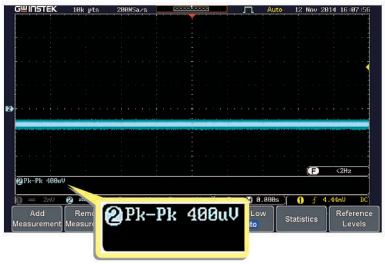


500wfms/s



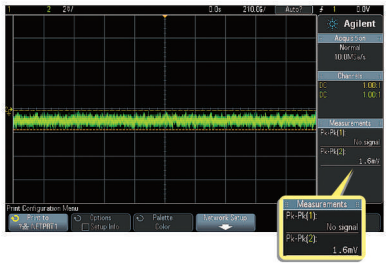
Rich Color Gradient Performance

A. Low Background Noise(Beneficial to Small Signal Measurement)



GW Instek

RIGOL



KEYSIGHT

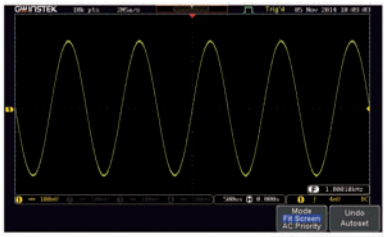
BACKGROUND NOISE COMPARISON			
Model	GW Instek GDS-2000E	Rigol DS2000A	Keysight DSOX2000A
Vp-p(*)	400μV	560μV	1.6mV

For small signal measurement, oscilloscope's background noise will affect the measurement results. The brand new GDS-2000E low noise amplifying circuit can tremendously improve overall noise interference to produce the genuine signal demonstration.

As shown in the above diagram, the GDS-2000E series has merely the background noise of 400μV under 2mV/div that is superior to the same category oscilloscopes from competitors.

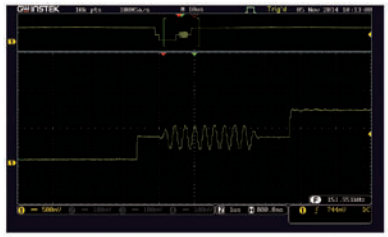
* The measurement data were retrieved from actual tests, under same test conditions.

B. Small Signal Autoset Retrieving Capability



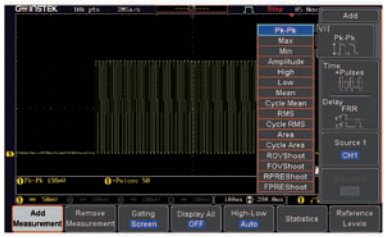
The Autoset function of the GDS-2000E series can retrieve waveform as fast as 0.7 seconds. The GDS-2000E series assists users to rapidly retrieve waveforms of small signals equivalent to 8mV/30Hz.

C. Dual Display Screen Zoom-In and Play/Pause Functions

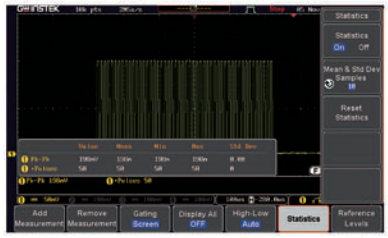


The GDS-2000E series provides the dual display screen zoom-in function to simultaneously display waveforms and major target areas. Users can zoom in display area by adjusting time/div. Under zoom-in mode, waveform can be played or paused so as to automatically view all input waveforms on the moving zoom-in screen. Users can swiftly identify each desired event. Manual control play speed and direction can be adjusted according to users' requirements. Press “Pause” to stop the play function. With “waveform search”, all desired events from different stages can be rapidly identified and examined back and forth. The GDS-2000E series is capable of swiftly searching signals and observing signals' details. 10M long memory depth provides the function of complete waveform retrieval and analysis.

D. 36 Items of Auto Measurement Selection and the Statistics Function



The GDS-2000E series soundly provides 36 measurement items. Based upon the parameters such as voltage, current, time, frequency, and delay measurement, users can decide which measurement items to choose. On the single display screen, the GDS-2000E series provides 8 measurement selections.

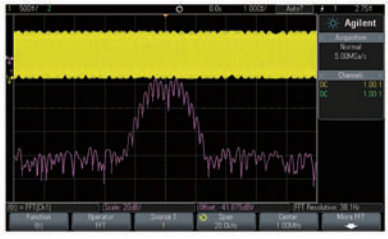


The statistics mode can also be selected for users to analyze the mean value, the maximum, the minimum, and standard deviation of the retrieved waveforms to ensure signal's integrity and identify abnormal waveforms.

E. 1M FFT Frequency Domain Display Function

GW Instek GDS-2000E - FFT Display

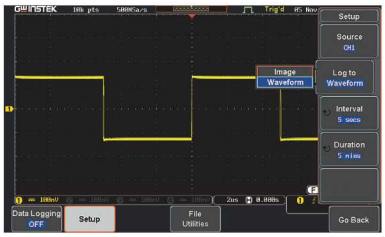
RIGOL DS2000A - FFT Display



KEYSIGHT DSOX2000A - FFT Display

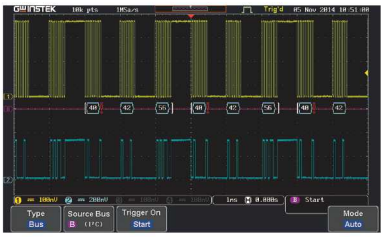
The FFT function of the GDS-2000E Series provides the maximum 1M display for more precision frequency domain display. The function supports four window displays, including Rectangular, Hamming, Hanning, and Black-harris. Users select window display for frequency domain analysis according to test requirements. The GDS-2000E Series not only provides the FFT function but also FFTrms, vertical adjustment, and local zoom-in functions for users to adjust waveforms of frequency domain by their requirements. Via rapid waveform update rate and waveform search functions, users can precisely observe the test results of frequency domain, Users can clearly differentiate the difference between 1M FFT and low-resolution FFT by viewing the above diagrams.

F. Data Log Function



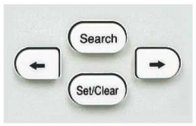
Users, via the data log function, can observe waveform changes in long periods of time to ensure product reliability or measure sporadically appeared signals. The data log function, based on the requirements, can set record time and interval. Record time can be selected from 5 minutes to 100 hours, and record interval is 5 seconds, the minimum. Waveform type for record data and CSV file format for each channel can also be selected. Data can be stored in USB drive, the GDS-2000E series or the remote computer via LAN.

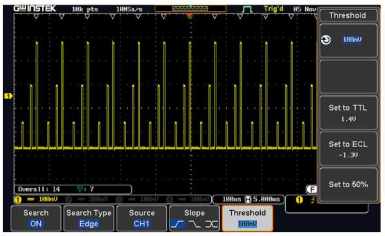
G. Support Serial Bus Trigger and Decoding Function



The serial bus technology has been widely applied in the present embedded application design. How to rapidly and correctly trigger and analyze serial bus data has posed a difficult challenge to engineers. The GDS-2000E series provides serial bus analysis function and 10M long memory depth to trigger, decode, and analyze frequently used I^2C, SPI ,UART serial bus and CAN/LIN bus, which is often used by automotive communications.

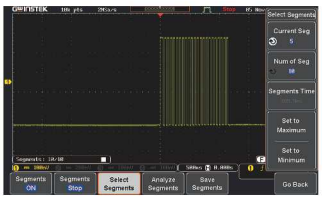
H. Waveform Search Function





Users can rapidly search desired waveforms according to the trigger condition. After activating the search function, hollow inverted triangles will show the location met the trigger condition. The upper left hand corner Overall will show the total number of waveforms met the trigger condition. Users can set waveform search by the trigger condition such as Edge, pulse width, Runt, Rise/Fall, and Bus. When the trigger condition is met, hollow inverted triangles will appear. Users can save all marks to compare with the next input signal. The front panel of the GDS-2000E series controls waveform zoom-out and play/pause function to swiftly identify each desired event. The function allows users to conveniently complete waveform search and save marks for rapid comparison and analysis.

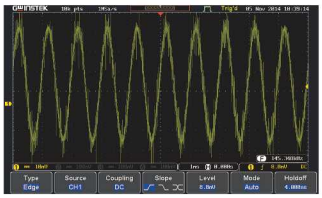
I. Segmented Memory Function

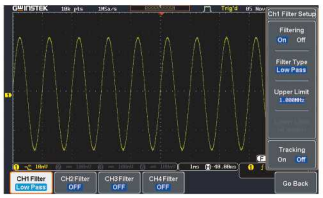


Users Can Also Select "Analyze Segments" To Conveniently Obtain The Analysis Results.

To achieve the most ideal application for memory depth, the GDS-2000E series has the built-in segmented memory function. The segmented memory function allows users to select the desired important signals for observation. Hence, insignificant signals can be neglected and serial bus decoding; pulse or inrush signals can be identified when retrieving signals. The segmented memory function of the GDS-2000E series allows users to select the number of sections. The maximum sections can be selected are 29,000. After activating the function, users can select and observe waveform for each segment by turning the Variable knob. The ultimate application of memory depth, therefore, is completely realized.

J. Digital Filter Function



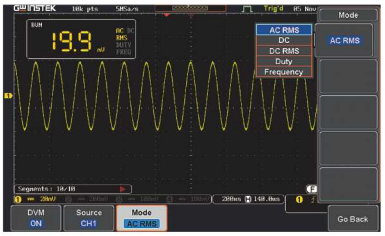


Unfiltered Waveform with Noise Interference

Filtered Waveform, Noise Removed

Engineers are often troubled by noise interference while measuring signals in the electric circuit tests. The GDS-2000E series features the digital filter function which can be set to high pass or low pass digital filter. Digital filter allows users to independently set filter frequency for each channel. The tracking on function rapidly sets same filter frequency for all channels.

K. Digital Voltage Meter



The integrated digital voltage meter provides three-digit voltage meter and five-digit frequency counter. Its function includes tests for AC rms, DC, DC rms, period and frequency. Under the limited resources, engineers can simultaneously monitor voltage and frequency as well as conduct complex measurement for signal trigger to elevate the R&D efficiency. This feature is very convenient for users to grasp the actual issue, diagnose and debug system circuit.

PANEL INTRODUCTION

CE | USB high Speed | PC Software | Labview Driver | Ethernet | PictBridge Compatible

1. Hardcopy key
2. Autoset, Run/Stop, Single & Default keys
3. Search and Zooming Controls
4. Trigger controls
5. Math, Reference & Bus keys
6. Probe calibration output
7. USB Host port
8. Option key
9. Menu off key
10. USB device port
11. LAN port
12. Go-NoGo output
13. Calibration output

4 Channel Model

2 Channel Model

SELECTION GUIDE

Model	GDS-2204E	GDS-2202E	GDS-2104E	GDS-2102E	GDS-2074E	GDS-2072E
Bandwidth	200MHz	200MHz	100MHz	100MHz	70MHz	70MHz
Channels	4	2	4	2	4	2
Record Length	10M / ch	10M / ch	10M / ch	10M / ch	10M / ch	10M / ch
Real-time Sampling Rate	Max. 1 GSa/s	1 GSa/s / ch	Max. 1 GSa/s	1 GSa/s / ch	Max. 1 GSa/s	1 GSa/s / ch
Waveform Update Rate	120,000wfms/s	120,000wfms/s	120,000wfms/s	120,000wfms/s	120,000wfms/s	120,000wfms/s

PANEL INTRODUCTION

4 Channel Model

2 Channel Model

SELECTION GUIDE

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Bandwidth	200MHz	200MHz	100MHz	100MHz	70MHz	70MHz
Channels	4	2	4	2	4	2
Record Length	10M / ch	10M / ch	10M / ch	10M / ch	10M / ch	10M / ch
Real-time Sampling Rate	Max. 1 GSa/s	1 GSa/s / ch	Max. 1 GSa/s	1 GSa/s / ch	Max. 1 GSa/s	1 GSa/s / ch
Waveform Update Rate	120,000wfms/s	120,000wfms/s	120,000wfms/s	120,000wfms/s	120,000wfms/s	120,000wfms/s

SPECIFICATIONS

		GDS-2072E	GDS-2074E	GDS-2102E	GDS-2104E	GDS-2202E	GDS-2204E
VERTICAL SENSITIVITY	Channels	2Ch+EXT	4Ch	2Ch+EXT	4Ch	2Ch+EXT	4Ch
	Bandwidth	DC~70MHz(-3dB)		DC~100MHz(-3dB)		DC~200MHz(-3dB)	
	Rise Time	5ns		3.5ns		1.75ns	
	Bandwidth Limit	20MHz		20MHz		20M/100MHz	
	Vertical Resolution	8 bits : 1mV ~ 10V/div					
	Input Coupling	AC, DC, GND					
	Input Impedance	1MΩ// 16pF approx.					
	DC Gain Accuracy	±(3% when 2mV/div or greater is selected ; ±(5%) when 1mV/div is selected					
	Polarity	Normal & Invert					
	Maximum Input Voltage	300Vrms , CAT I					
	Offset Position Range	1mV/div ~ 20mV/div : ±0.5V ; 50mV/div ~ 200mV/div : ±5V ; 500mV/div ~ 2V/div : ±25V ; 5V/div~10V/div : ±250V					
	Waveform Signal Process	+、-、×、÷、FFT、FFTrms , User Defined Expression FFT : 1Mpts ; FFT : Spectral magnitude. Set FFT Vertical Scale to Linear RMS or dBV RMS ; FFT Window Displays : Rectangular, Hamming , Hanning, Blackman-Harris					
TRIGGER	Source	Ch1 ,CH2, CH3, CH4, Line, EXT* ; *dual channel models only.					
	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	±15V					
	Sensitivity	DC ~ 100MHz Approx. 100mV 100MHz ~ 200MHz Approx. 150mV					
	Input Impedance	1MΩ±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	±50 ppm over any ≥ 1 ms time interval					
	Real Time Sample Rate	Max. : 1GSa/s (4ch model); Per channel 1GSa/s (2ch model)					
	Record Length	Max. : 10Mpts					
	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 ; Channel 3* (* : four channel models only)					
	Y-Axis Input	Channel 2 ; Channel 4* (* : four channel models only)					
	Phase Shift	±3° at 100kHz					
CURSORS AND MEASUREMENT	Cursors	Amplitude, Time, Gating Available; Unit : Seconds(S), Hz(1/S), Phase (Degrees), Ratio(%)					
	Automatic Measurement	36 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, FRR, FRF, FFR, FFF, LRR, LRF, LFR, LFF, Phase					
	Control Panel Function	Cursors measurement					
	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	20set					
	Save Waveform	24set					
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~10s), 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 Full-speed host port x 1, USB High-speed 2.0 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					
POWER SOURCE MISCELLANEOUS	Line Voltage Range	AC 100V ~ 240V, 48Hz ~ 63Hz, 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: ≤80%, 40°C or below; ≤45%, 41°C ~ 50°C					
DIMENSIONS & WEIGHT		384(W) X 208(H) X 127.3(D)mm, Approx. 2.8 kg					

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

Specifications subject to change without notice. DS-2000EGD2BH

ORDERING INFORMATION

GDS-2204E	200MHz, 4-Channel, Digital Storage Oscilloscope
GDS-2202E	200MHz, 2-Channel, Digital Storage Oscilloscope
GDS-2104E	100MHz, 4-Channel, Digital Storage Oscilloscope
GDS-2102E	100MHz, 2-Channel, Digital Storage Oscilloscope
GDS-2074E	70MHz, 4-Channel, Digital Storage Oscilloscope
GDS-2072E	70MHz, 2-Channel, Digital Storage Oscilloscope

ACCESSORIES

Quick start guide , User manual CD x 1, Power cord x 1

GTP-070A-4 : 70MHz(10:1/1:1) Switchable passive probe for GDS-2072E/2074E(one per channel)
GTP-150A-4 : 150MHz(10:1/1:1) Switchable passive probe for GDS-2102E/2104E(one per channel)
GTP-300A-4 : 300MHz(10:1/1:1) Switchable passive probe for GDS-2202E/2204E(one per channel)

OPTIONAL ACCESSORIES

GTL-08LA	8-Channel Logic Analyzer Probe	**GDB-03**	Oscilloscope Education & Training Kit
GTL-16LA	16-Channel Logic Analyzer Probe	**GCP-005**	Current Probe, 40Hz ~ 1kHz, 5A, Current Probe
GLA-08	8-Channel Logic Analyzer Card	**GCP-020**	Current Probe, DC ~ 100kHz, 10A, Current Probe
GLA-16	16-Channel Logic Analyzer Card	**GCP-100**	Current Probe, 40Hz ~ 100kHz, 20A, Current Probe
GRA-420	Rack Adapter Panel	**GCP-1030**	Current Probe, DC ~ 100MHz, 30Arms, Current probe
GAK-003	50Ω Impedance Adapter	**GCP-206P**	Current Probe - Power Supply, 2 Channel Power Supply for GCP-530/1030
DS2-FH1	Module extension bay & USB Type A to Type A/B cable	**GCP-245P**	Current Probe - Power Supply, 4 Channel Power Supply for GCP-530/1030
GSC-008	Soft Carrying Case	**GCP-530**	Current Probe, DC ~ 50MHz, 30Arms, Current Probe
GTL-232	RS-232C Cable, 9-pin, F-F Type, null modem, 2000mm	**GDP-025**	Differential Probe, 25M High Voltage Differential Probe
GTL-246	USB Cable, USB 2.0, A-B Type, 1200mm	**GDP-050**	Differential Probe, 50M High Voltage Differential Probe
GTL-248	GPIB Cable, Double Shielded, 2000mm	**GDP-100**	Differential Probe, 100M High Voltage Differential Probe
GTL-251	USB-GPIB Adapter, GPIB-USB-HS, USB 2.0, Hi-Speed USB compliance, 2000mm	**GTP-033A**	Oscilloscope Probe, 35MHz 1:1 Passive Probe, BNC(F/M)

FREE DOWNLOAD

PC Software OpenWave software **Driver** USB driver ; LabView driver

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GDS-2000E Series

VPO Visual Persistence Oscilloscope

200/100/70MHz Digital Storage Oscilloscope

請套用ai檔

FEATURES

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- 10M Maximum Memory Depth and VPO Waveform Display Technology
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- 8 ” 800 x 480 TFT LCD Display
- Max. 1M pts of FFT to Get Higher Resolution in Frequency Domain
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GW INSTEK
Simply Reliable

Fast Retrieval, Precision Measurement

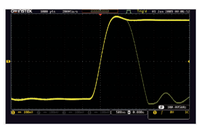
1GSa/s Maximum Real-Time Sampling Rate and 10M Maximum Memory Depth

The GDS-2000E digital oscilloscope features bandwidth selections of 200MHz, 100MH, and 70MHz. Two-channel model provides 1GSa/s real-time sampling rate for each channel; four-channel model provides 1GSa/s maximum real-time sampling rate. The 8-inch 800 x 480 TFT LCD display and the minimum 1mV/div vertical range allow the GDS-2000E Series to measure complex feeble signals and clearly display measurement results.

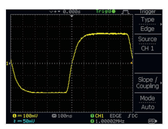
With respect to the memory depth, the GDS-2000E Series digital oscilloscope provides 10M long memory for users to completely retrieve and analyze waveforms. Users, based upon the application requirements, can select 1K, 10K, 100K, 1M or 10M memory depth. Short memory depth collocating with the high sampling rate allows users to observe fast-changing waveforms and, on the other hand, long memory depth aims for continuously changing waveforms. The GDS-2000E Series is equipped with waveform search and segmented memory functions to expand the flexible applications of 10M long memory. The segmented memory can be divided the maximum into 29,000 sections for users to bypass any unimportant waveforms so as to swiftly search all required waveforms. With the function, more meaningful waveforms can be saved and target waveforms can be displayed rapidly. With the waveform search function, users can rapidly search desired waveforms according to the required trigger conditions.

Waveform Update Rate of 120,000 wfm/s and VPO Waveform Display Technology

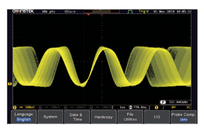
The GDS-2000E digital oscilloscope allows users to easily and completely observe inrush signals and rare transient waveforms to increase waveform debugging efficiency by using features, including advanced VPO (Visual Persistence Oscilloscope) signal processing technology, waveform update rate as high as 120,000 wfm/s, and multi-layered afterglow display to enhance waveform display efficiency. Oscilloscope with VPO technology displays signals with three dimensional waveforms constructing by amplitude, time and signal strength to show each waveform point. 256 color gradients yield clear waveform changes. Comparing with the conventional digital storage oscilloscope, the GDS-2000E Series provides more natural and more genuine signal display effect which is very close to the original analog signal.



120,000wfms/s

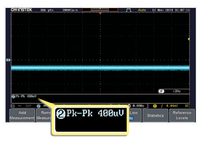


500wfms/s



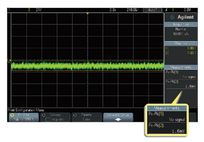
Rich Color Gradient Performance

A. Low Background Noise(Beneficial to Small Signal Measurement)



GW Instek

RIGOL



KEYSIGHT

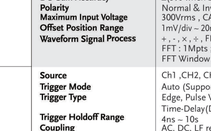
BACKGROUND NOISE COMPARISON			
Model	GW Instek GDS-2000E	Rigol DS2000A	Keysight DSOX2000A
Vp-p(※)	400μV	560μV	1.6mV

For small signal measurement, oscilloscope's background noise will affect the measurement results. The brand new GDS-2000E low noise amplifying circuit can tremendously improve overall noise interference to produce the genuine signal demonstration.

As shown in the above diagram, the GDS-2000E series has merely the background noise of 400μV under 2mV/div that is superior to the same category oscilloscopes from competitors.

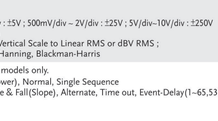
※ The measurement data were retrieved from actual tests, under same test conditions.

B. Small Signal Autoset Retrieving Capability



The Autoset function of the GDS-2000E series can retrieve waveform as fast as 0.7 seconds. The GDS-2000E series assists users to rapidly retrieve waveforms of small signals equivalent to 8mV/30Hz.

C. Dual Display Screen Zoom-In and Play/Pause Functions



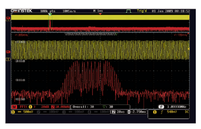
The GDS-2000E series provides the dual display screen zoom-in function to simultaneously display waveforms and major target areas. Users can zoom in display area by adjusting time/div. Under zoom-in mode, waveform can be played or paused so as to automatically view all input waveforms on the moving zoom-in screen. Users can swiftly identify each desired event. Manual control play speed and direction can be adjusted according to users' requirements. Press “Pause” to stop the play function. With “waveform search”, all desired events from different stages can be rapidly identified and examined back and forth. The GDS-2000E series is capable of swiftly searching signals and observing signals' details. 10M long memory depth provides the function of complete waveform retrieval and analysis.

D. 36 Items of Auto Measurement Selection and the Statistics Function

The GDS-2000E series soundly provides 36 measurement items. Based upon the parameters such as voltage, current, time, frequency, and delay measurement, users can decide which measurement items to choose. On the single display screen, the GDS-2000E series provides 8 measurement selections.

The statistics mode can also be selected for users to analyze the mean value, the maximum, the minimum, and standard deviation of the retrieved waveforms to ensure signal's integrity and identify abnormal waveforms.

E. 1M FFT Frequency Domain Display Function



GW Instek GDS-2000E - FFT Display

RIGOL DS2000A - FFT Display

KEYSIGHT DSOX2000A - FFT Display

The FFT function of the GDS-2000E Series provides the maximum 1M display for more precision frequency domain display. The function supports four window displays, including Rectangular, Hamming, Hanning, and Black-harris. Users select window display for frequency domain analysis according to test requirements. The GDS-2000E Series not only provides the FFT function but also FFTrms, vertical adjustment, and local zoom-in functions for users to adjust waveforms of frequency domain by their requirements. Via rapid waveform update rate and waveform search functions, users can precisely observe the test results of frequency domain, Users can clearly differentiate the difference between 1M FFT and low-resolution FFT by viewing the above diagrams.

F. Data Log Function

Users, via the data log function, can observe waveform changes in long periods of time to ensure product reliability or measure sporadically appeared signals. The data log function, based on the requirements, can set record time and interval. Record time can be selected from 5 minutes to 100 hours, and record interval is 5 seconds, the minimum. Waveform type for record data and CSV file format for each channel can also be selected. Data can be stored in USB drive, the GDS-2000E series or the remote computer via LAN.

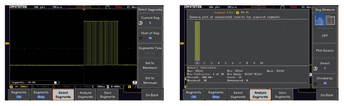
G. Support Serial Bus Trigger and Decoding Function

The serial bus technology has been widely applied in the present embedded application design. How to rapidly and correctly trigger and analyze serial bus data has posed a difficult challenge to engineers. The GDS-2000E series provides serial bus analysis function and 10M long memory depth to trigger, decode, and analyze frequently used I^2C, SPI ,UART serial bus and CAN/LIN bus, which is often used by automotive communications.

H. Waveform Search Function

Users can rapidly search desired waveforms according to the trigger condition. After activating the search function, hollow inverted triangles will show the location met the trigger condition. The upper left hand corner Overall will show the total number of waveforms met the trigger condition. Users can set waveform search by the trigger condition such as Edge, pulse width, Runt, Rise/Fall, and Bus. When the trigger condition is met, hollow inverted triangles will appear. Users can save all marks to compare with the next input signal. The front panel of the GDS-2000E series controls waveform zoom-out and play/pause function to swiftly identify each desired event. The function allows users to conveniently complete waveform search and save marks for rapid comparison and analysis.

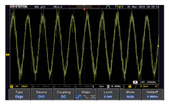
I. Segmented Memory Function



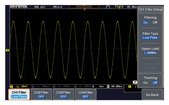
Users Can Also Select “Analyze Segments” To Conveniently Obtain The Analysis Results.

To achieve the most ideal application for memory depth, the GDS-2000E series has the built-in segmented memory function. The segmented memory function allows users to select the desired important signals for observation. Hence, insignificant signals can be neglected and serial bus decoding; pulse or inrush signals can be identified when retrieving signals. The segmented memory function of the GDS-2000E series allows users to select the number of sections. The maximum sections can be selected are 29,000. After activating the function, users can select and observe waveform for each segment by turning the Variable knob. The ultimate application of memory depth, therefore, is completely realized.

J. Digital Filter Function



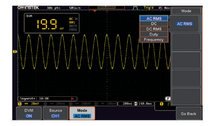
Unfiltered Waveform with Noise Interference



Filtered Waveform, Noise Removed

Engineers are often troubled by noise interference while measuring signals in the electric circuit tests. The GDS-2000E series features the digital filter function which can be set to high pass or low pass digital filter. Digital filter allows users to independently set filter frequency for each channel. The tracking on function rapidly sets same filter frequency for all channels.

K. Digital Voltage Meter



The integrated digital voltage meter provides three-digit voltage meter and five-digit frequency counter. Its function includes tests for AC rms, DC, DC rms, period and frequency. Under the limited resources, engineers can simultaneously monitor voltage and frequency as well as conduct complex measurement for signal trigger to elevate the R&D efficiency. This feature is very convenient for users to grasp the actual issue, diagnose and debug system circuit.