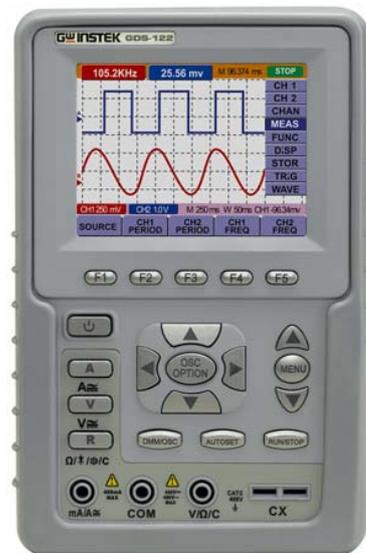


GDS-122 20MHz Handheld Digital Oscilloscope

New Product Announcement

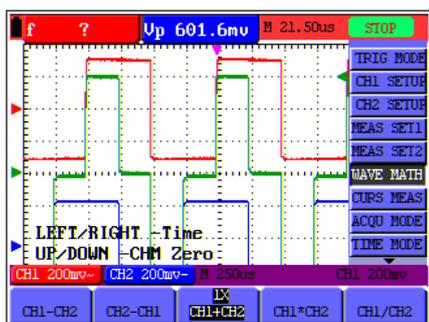
GDS-122 is GW Instek's first handheld oscilloscope launched to the market. It is equipped with 3.8-inch color LCD, which is helpful to clearly show 2 different channel waveforms at one display. Its 100 MSa/s real-time sampling rate and Dual Waveform Math (DWM) function provide users with the fast waveform analyzing capability. What's more, the additional 6k memory brings the GDS-122 with the impressive accurate data-capturing capability to satisfy diverse industrial requirements. Besides, the DMM mode offers 3 ¾ build-in 4,000 count digital multimeter and auto/manual range adjusting function. No matter in the situation like dealing with voltage, electric current, resistance, diode or even auxiliary measuring, GDS-122 helps obtaining precise information without any delay.



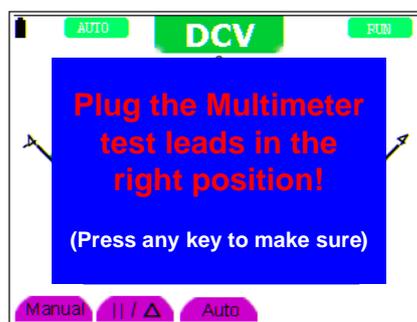
GDS-122 Main Features

- **Dual Mode: Oscilloscope and Multimeter**

GDS-122 is a multi-function measurement tool. By using the oscilloscope functionalities, you can measure simple waveforms, use advanced measurement functions, and configure system settings. The multimeter functionality includes three major items (Voltage, Current, and Impedance) and three additional items (Diode, Continuity, and Capacitance). The current measurement and capacitance measurement use extension modules to deal with large current and small capacitance, respectively. Delta measurement and automatic range switching features offer flexibility and convenience.



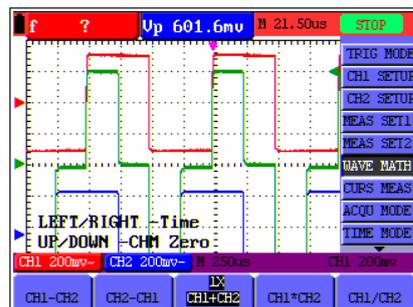
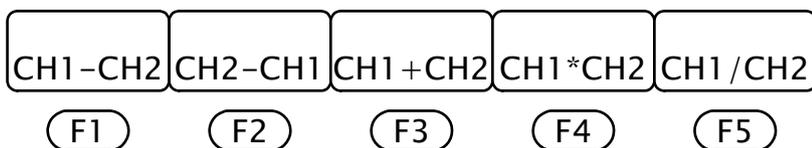
Oscilloscope Mode



Multimeter Mode

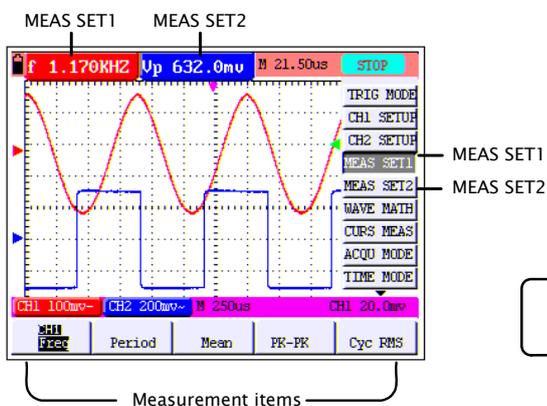
▪ **Waveform Math Function**

The waveform math function runs mathematical operations between CH1 and CH2 waveform, and then shows the result in the display. It offers 5 math function, CH1-CH2, CH2-CH1, CH1+CH2, CH1*CH2, and CH1/CH2.

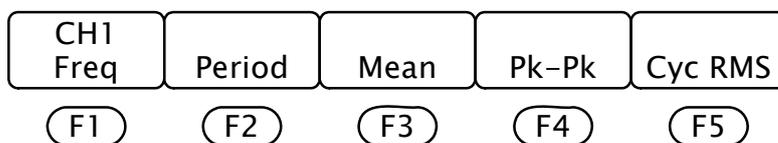


CH1+CH2 Math

▪ **Automatic Measurement Function**

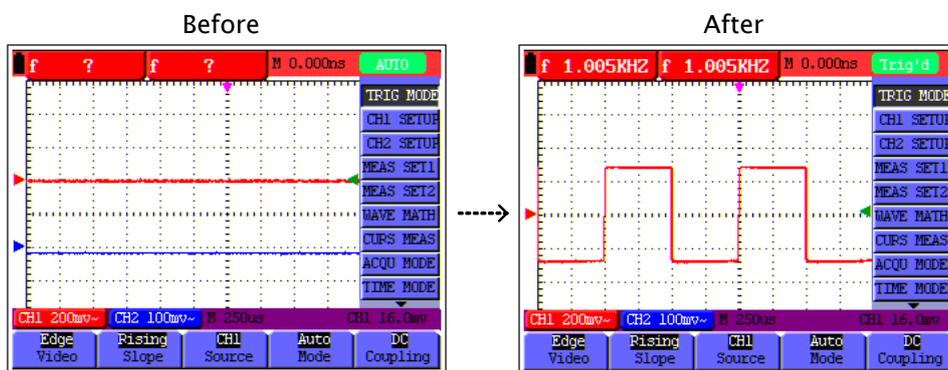


The automatic measurement function measures the input signal's characteristics and lists them in the top left corner of the display. The measurement items are Frequency, Period, Mean Voltage, Peak-to-Peak Voltage, and Cycle Voltage (True RMS).



▪ **Autoset Function**

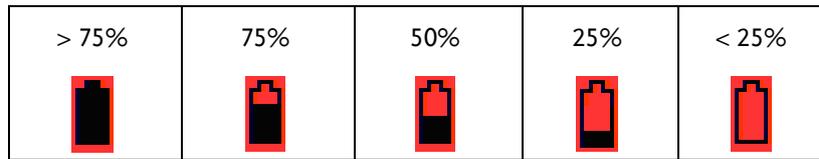
The Autoset function automatically configures the following parameters according to the input signal. It can offer CH1/CH2 on/off, Vertical scale/level, Horizontal scale/level, Trigger level.



▪ **6 Hours Running Time Li-ion Battery & Light Weight**

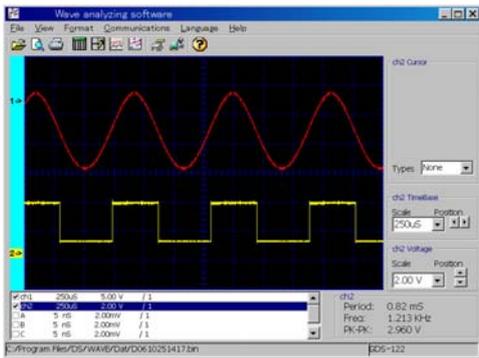
GDS-122 is equipped with a Li-ion battery, which is able to maintain its normal operation for about 6 hours. After pressing the power key, press any key (for example the MENU key) to enter the oscilloscope or multimeter mode. See the battery level icon at the top left corner of the display. With only 690g light weight and compact

size, GDS-122 well fits into outdoor applications.



Battery Level Icon

▪ **Free PC Software**



The GDS-122 PC software, included in the CD-ROM, allows you to view the waveforms in your familiar PC environment – large display and mouse operation. Multiple cursors provide flexible waveform measurements. The PC Software is through from USB connection.

▪ **Self Calibration**

The self calibration function automatically configures internal parameters to maintain the sensitivity and accuracy. Run the self calibration in the following cases.

- When the temperature changes more than 5 degrees Celsius during operations
- When operating the GDS-122 in a new benchtop or field environment

**Do
Self Cal**

F2

Self Calibration
 Remove all probes & cables from (CH1 CH2)
 Press <Do Self Cal> for Calibration
 Press any key to quit

Self Calibration

GDS-122 Product Description

GDS-122, 20MHz Handheld Digital Oscilloscope

Key Features

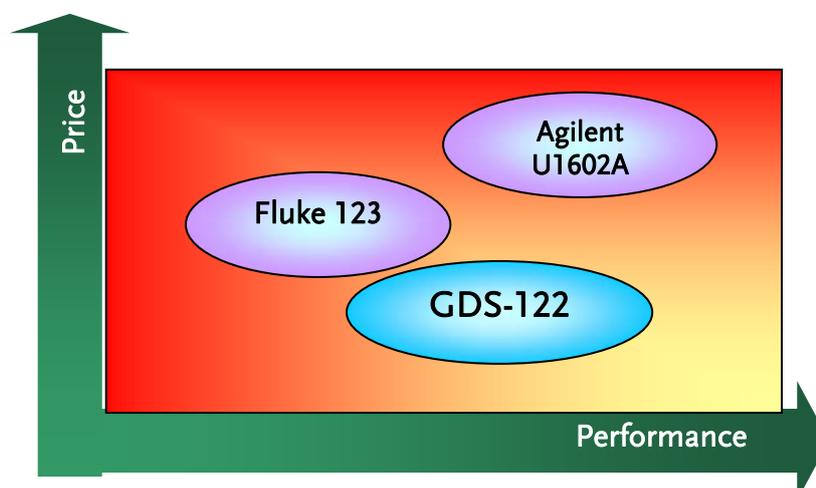
- **Oscilloscope**
 - Dual channel
 - 20MHz bandwidth
 - 100MS/s real-time sampling rate
 - $\leq 17.5\text{ns}$ rising time
 - 5ns to 5s/div horizontal scale
 - 5mV to 5V/div vertical scale
 - 6k memory points per channel
 - Dual waveform math with +, -, x, /
 - Autoset function
 - Trigger mode: Auto, Free run, Single shot, Edge, Video
 - 2 cursors
 - 5 automatic measurements
 - 4 display image memories
 - Self-calibration function
- **Multimeter**
 - Volts, Amps, Ohms, Continuity, Diode, Capacitance measurement
 - 20A maximum amplitude
 - True RMS measurement
- **Common**
 - Isolated inputs between oscilloscope and multimeter
 - USB & RS-232C interface
 - 1kHz square wave output
 - Free PC Software
 - 3.8 inch color LCD display, 320 x 240 resolution
 - 6 hours running time Li-ion battery
 - 180mm x 113mm x 40mm compact size
 - 690g light weight

GDS-122 Product Position

The GDS-122 product position could be seen from the following two aspects:

1. Pricing & Competition Position

The list price of GDS-122 is set as follows for the basic unit without any options. From the chart under you will easily see that GDS-122 locates in the middle position of performance/price value. Besides price advantage, GDS-122 stays at the level of moderate performance, which adequately covers most of the applications in the manufacturing and the service markets, whereas most of the competitors stand within a crowded range of high price.



Spec.	GDS-122	Fluke 123	Agilent U1602A
Bandwidth	20MHz	20MHz	20MHz
Input Channel	2	2	2
Sampling Rate	100M/sinx(x)	25M/1.25G(ET)	200 MSa/s
Record Length	6k	0.5k	125K
Time/Div.	5ns~5s	10ns~60s	50ns~50s
Voltage/Div.	5mV~5V	5mV~500V	5 mV~100V
DC Gain Accuracy	5%	1%	5%
Battery	YES	YES	YES
Color	YES	NO	YES
Peak Detect	YES	NO	YES
Roll/Scan (Low frequency)	YES	YES	
Cursor	YES	YES	YES
FFT	NO	NO	YES
Auto Measurement	5 items	NO	22 items
Max. Input	400V CATII	1250V CATIII	300V CATIII
DMM Function	YES	YES	YES
DMM Range (Max. VDC)	400V	1250V	600V
Full Scale Count	4000	5000	6000
USB	YES	NO	YES
RS-232C	YES	YES	NO
Weight	690g	1.2kg	1.5kg

2. Completeness of GW Product Line

GW Instek has been developing Digital Oscilloscope for many years, starting from GDS-800 Series to GDS-2000/1000 Series and now to handheld oscilloscope GDS-122. We expect the elevated brand image through GDS-122 announcement will bring benefit not just to GW Instek but to its partners as well.

Market Strategy

1. Focus on the targeted markets of installation and verification for the transformer, power supply, and automobile manufacturers. These industries do not require high frequency capability, but they do need outdoor testing and measuring capability.
2. Focus on low frequency (<20MHz) user range and for those who need to the outdoors or no ac power source testing/measuring environment. However, if the customers need higher accuracy and higher frequency capability, they would need to use GDS-2000 series products.
3. The product line of the original GDS-2000/1000/800 is expanded after the GDS-122 is added in.

Key Dates for Product Announcement

1. Order Queue Open (End of Nov.)
2. Distributor Announcement (Beg. of Dec.)
3. Global Market Announcement (Beg. of Dec.)
4. Demo Units Shipped to Distributors (Mid. of Dec.)
5. Mass Quantity Order Fulfillment (Mid. of Dec.)

Service Policy

1. GDS-122 carries **1-year** warranty. The exception is for the Li-ion Battery, which carries a **3-months** warranty.

2. Service Support.

The service instructions in the Service Manual will help distributors repairing defective units promptly. Should the board replacement is necessary to fix the defective unit, the board swapping service support is provided by Good Will Instrument to facilitate the repair jobs done at the distributor's site.

Marketing Department
Good Will Instrument Co., Ltd
No. 7-1, Jhongsing Road, Tucheng City,
Taipei County, 236, Taiwan
Email: marketing@goodwill.com.tw

Specifications

Oscilloscope	Vertical	Channels	2		
		Bandwidth	DC ~ 20M (-3dB)		
		A/D converter	8 bits resolution (2CH simultaneously)		
		Sensitivity	5mV/div~5V/div (at input)		
		Displacement	±50V(500mV~5V),±1V(5mV~200mV)		
		Single	Full bandwidth		
		Low frequency	≥5Hz (at input, AD coupling, -3dB)		
		Rise time	≤17.5ns (at input, typical)		
		DC accuracy	±5% (DC gain)		
		DC accuracy (avg.)	Avg >16: ±(5% rdg + 0.05 div) for ΔV		
		Waveform Signal Process	+, -, *, /		
		Trigger	Sensitivity	CH1 and CH2: 1div(DC~full bandwidth) DC coupling: ≥ 50Hz.	
			Trigger level	±6 divisions from the screen center	
	Level accuracy		±0.3 div (typical, rise/fall time ≥ 20ns)		
	Displacement		655div (pre-trigger), 4div (post- trigger)		
	50% level setting		Input signal frequency ≥ 50Hz (typical)		
	Trigger sensitivity		2 div of peak-to-peak (video trigger)		
	Signal system		NTSC, PAL, SECAM (any frequency)		
	Horizontal	Sampling rate	10S/s~100mS/s		
		Interpolation	(sin x) /x		
		Record length	6K points on each channel		
		Scanning speed	5ns/div~5s/div, 1-2.5-5 step		
		Sampling rate / relay time accuracy	±100ppm (time interval ≥ 1ms)		
		Interval (ΔT) accuracy (full bandwidth)	Single: ±(1 interval time +100ppm×reading + 0.6ns) Average >16 : ±(1 interval time +100ppm×reading+0.4ns)		
		Sampling	Mode	Normal, Peak detection, Average	
	Rate		100 MSa/s		
	Input	Coupling	DC, AC		
		Impedance	1MΩ±2% in parallel with 20pF±3pF		
		Probe	1X, 10X, 100X, 1000X		
		Max. Input	400V (peak)		
	Measurement	Channel delay	150ps (typical)		
		Cursor	ΔV and ΔT between cursors		
	Probe	Automatic	Peak-to-peak, average, root mean square, frequency, and cycle.		
			1X position	10X position	
		Bandwidth	≤ 6 MHz (DC)	Full bandwidth (DC)	
		Attenuation rate	1: 1	10: 1	
		Compensation	10pf~35pf	10pf~35pf	
		Input impedance	1MΩ±2%	10MΩ±2%	
		Input impedance	85pf~115pf	14.5pf~17.5pf	
		Input voltage	150 V DC	300V DC	
		Multimeter	VDC	Input impedance	10MΩ
Max. input				1000V (DC or AC peak-to-peak value)	
Accuracy	±1%±1 digit				
Resolution	400mV range: 100uV 4V range: 1mV 40V range: 10mV 400V range: 100mV				

	VAC	Input impedance	10M Ω	
		Max. input	750V(AC, virtual value)	
		Frequency range	40Hz~400Hz	
		Display	Virtual value of sine wave	
		Accuracy	$\pm 1\% \pm 3$ digits	
		Resolution	4V range: 1mV 40V range: 10mV 400V range: 100mV	
	DCA	Accuracy	40mA range: $\pm 1\% \pm 1$ digit 400mA range: $\pm 1.5\% \pm 1$ digit 20A range: $\pm 3\% \pm 3$ digits	
		Resolution	40mA range: 10uA 400mA range: 100uA 20A range: 10mA	
		Accuracy	40mA range: $\pm 1.5\% \pm 3$ digit 400mA range: $\pm 2\% \pm 1$ digit 20A range: $\pm 5\% \pm 3$ digits	
	ACA	Resolution	40mA range: 10uA 400mA range: 100uA 20A range: 10mA	
		Accuracy	400 Ω range: $\pm 1\% \pm 3$ digits 4k Ω ~4M Ω range: $\pm 1\% \pm 1$ digit 40M Ω range: $\pm 1.5\% \pm 1$ digit	
	Resistance	Resolution	400 Ω range: 0.1 Ω 4k Ω range: 1 Ω 40k Ω range: 10 Ω 400k Ω range: 100 Ω 4M Ω range: 1k Ω 40M Ω range: 10k Ω	
		Accuracy	$\pm 3\% \pm 3$ digits	
	Capacitance	Resolution	51.2nF range: 10pF 512nF range: 100pF 5.12uF range: 1nF 51.2uF range: 10nF 100uF range: 100nF	
		Reading range	0V~1.5V On/Off measurement < 50 (± 30) beeping	
	Diode	Threshold	< 30 Ω	
		Continuity		
	General	Display	Type	3.8" color liquid crystal display
			Resolution	320 (horizontal) \times 240 (vertical) pixels
			Color	4096 colors
Power		Consumption	< 6W	
		Supply	100V~240V AC, 50/60Hz	
		DC input	8.5VDC, 1500mA	
Environment		Operating	Temperature: 0 to 40 $^{\circ}$ C(32 to 104 $^{\circ}$ F) Relative humidity: < 75%	
		Storage	Temperature: -20 to 60 $^{\circ}$ C(-4 to 140 $^{\circ}$ F) Relative humidity: < 75%	
Mechanical		Dimension	18 cm \times 11.5cm \times 4cm	
		Weight	690g	

Specifications are subject to change without notice.

Ordering Information

GDS-122 20MHz Handheld Digital Oscilloscope

Standard Accessories

Instruction Manual

Oscilloscope probe x 2
Multimeter test lead x 2
AC-DC adaptor
Probe adjustment tool
Soft Carrying case
Extension module for large current measurement
Extension module for small capacitance measurement
USB communication cable, CD-ROM (PC software)
1kHz square wave cable