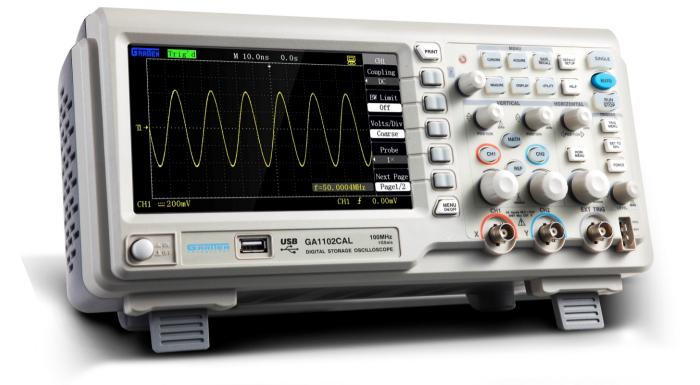
DIGITAL STORAGE OSCILLOSCOPE GA1000CAL Series



FEATURES

- 1GSa/s Sampling Rate
- 2 Channels
- 7" Widescreen LCD Color Display
- USB Host/Device: Support USB Printer and USB Flash Drive
- PictBridge Function
- . Easyscope Software

APPLICATIONS

- · Industrial power design, troubleshooting, installation and maintenance
- Electronics design, troubleshooting, installation and maintenance
- · Circuit design & debug
- Educational lab & training institution
- . Repair & service
- Production test & quality inspection

GA1000 Series

GA1022CAL 25MHz, 1GSa/s, 2 Ch, 40Kpts memory

GA1042CAL 40MHz, 1GSa/s, 2 Ch, 40Kpts memory

GA1062CAL 60MHz, 1GSa/s, 2 Ch, 40Kpts memory

GA1102CAL 100MHz, 1GSa/s, 2 Ch, 40Kpts memory

CHARACTERISTICS

- The oscilloscope has a totally new ultrathin appearance design, and is small in size and more portable.
- A 7-inch widescreen color TFT LCD displays clear, crisp and more stable waveform display. 25% more viewing area with the menu switched off.
- Storage/ Memory depth: single channel: 40Kpts; double channels: 20Kpts.
- · Various trigger functions: Edge, Pulse, Video, Slope and Alternation.
- Unique digital filtering and waveform recording functions.
- Pass/Fail function.
- 32 kinds of automatic measurement and manual cursor tracking measurement functions.
- Two groups of reference waveforms, 16 groups of common waveforms, 20 groups of internal storage/output; support waveform setting, external storage and output of CSV and bitmap file by USB flash disc (CSV and bitmaps cannot be output from USB flash disc).
- · Adjustable waveform brightness and screen grid brightness.
- The pop-up menu display mode realizes more flexible and more natural for users' operations.
- Various kinds of language interface display, Chinese and English.
- · On-line help system.
- Shortcut key to PRINT, support print screen.
- Standard configuration interfaces: USB Host, USB Device, RS-232.
- · USB Host: support storage of USB flash disc and upgrading of USB flash disc system software.
- USB Device: support PC connection for remote communication.

Accessories:

- User's manual
- · Product warranty card
- · Certificate of approval
- 1:1/10:1 probes(2 PCS ea)
- · Power cord satisfying the standard of the user's country
- USB cable
- CD (containing PC software GAScope1.0)

DIGITAL STORAGE OSCILLOSCOPE GA1000CAL Series

nput					
	Input coupling	AC, DC, GND			
	Input impedance	$1M\Omega \pm 3\% \mid \mid 16pF \pm 3pF$			
	Maximum input voltage	400V (DC+AC peak value, $1M\Omega$ input impedance)			
	Probe attenuation	1X, 10X, 100X, 1000X			
innal a	acquisition system				
iyilal a	Sampling mode	Real-time sampling			
	Sampling rate				
	Storage depth	Single channel 1GSa/s, dual channel 500MSa/s Single channel 40kpts			
	Storage depth	Dual channel 20kpts			
	Acquire mode	•			
	Average time	Sampling, peak value detection, average value 4, 16, 32, 64, 128, 256			
/ertical	system				
	Vertical Sensitivity	2mV/div - 5V/div (1-2-5 step-by-step)			
	Channel voltage offset range	± 10 div offset from the screen center			
	Vertical Resolution	8bit			
	Channels	2			
	Bandwidth	GA1022CAL GA1042CAL GA1062CAL GA1102CAL			
	Danuwiuti	25MHz 40MHz 60MHz 100MHz			
	AC plus accuracy	$2mV/div \le \pm 4\%$, the rest gears $\le \pm 3\%$			
	DC measurement accuracy	\pm [DC measurement accuracy x reading+ (1% x vertical displacement reading) +0.2div]			
	Rise time	< 14ns < 8.7ns < 5.8ns 3.5ns			
	Vertical coupling	AC,DC,GND			
	Arithmetical operation	+,-, × , ÷ , FFT			
	FFT	Window mode: Hanning, Hamming, Blackman Sampling points : 1024			
	Bandwidth limit	20MHz (-3dB)			
Horizon	tal system				
	Time base	2ns/div \sim 50s/div, step 32 gears according to sequence 1-2-5			
	Time base	Wherein, 100ms/div \sim 50s/div is the scan shift.			
	Horizontal displacement range	100div			
	Display mode	Y-T mode, X-Y mode			
	X-Y mode phase difference	± 3 Degrees			
	Display type	E S Degrees Point display, vector display			
		rome display, voctor display			
Frigger :					
	Trigger type	Edge, pulse, video, slope, alternate			
	Trigger signal source	CH1, CH2, EXT, EXT/5, AC Line			
	Trigger mode	Auto, normal, single			
	Trigger coupling	DC, AC, Low-frequency rejection, high-frequency rejection			
	T 1 1 1	CH1, CH2:±10div EXT: ±1.5V			
	Trigger electric level range				
		EXT/5: ±7.5V			
		CH1, CH2: ≤ 1 div			
	Trigger sensitivity	EXT: ≤0.15V			
		EXT/5: ≤0.75V			
	Hold-off range	100ns ~10s			
	Edge trigger Type: rise, descend, rise and descend edge				

Trigger syst	em	
		Type: $(>, <, =)$ positive pulse width
	Pulse width trigger	(>, <, =) negative pulse width
		Pulse width: 20ns \sim 10s
		Pulse width resolution: 5ns or 1‰ (take the higher value)
	Video trigger	Support signal system: PAL, NTSC
		Trigger condition: odd field, even field, all rows, specified row
		(>, <, =) positive slope
	Slope trigger	(>, <, =) negative slope
		Time setup: 20ns-10s
	Alternating trigger	CH1 trigger type: edge, pulse, video, slope
	Alternating trigger	CH2 trigger type: edge, pulse, video, slope
leasureme	nt system	
		Maximum valve, minimum value, peak-to-peak value, amplitude, top value, bottom value,
	Automatic measurement	periodic average value, average value, periodic mean square root, mean square root, rise extreme
	(32 kinds)	descend extreme, rise time, descend time, frequency, period, pulse width, positive pulse width,
		negative pulse width, positive duty ratio, negative duty ratio, phase,
		FRR, FRF, FFR, FFF, LRR, LRF, LFR, LFF
	Cursor measurement	Manual measurement mode, cursor tracking measurement mode
control pane	el Function	
		The auto setup function can realize automatic regulation of the vertical system,
	Auto setup	the horizontal system and the trigger position.
		2 groups of reference waveform, 20 groups of common waveform, 16 groups of setups;

Hardware	Hardware frequency counter			
	Reading resolution ratio	6 bits		
	Range	Alternating-current coupling, from 10Hz to the maximal bandwidth		
	Signal source	All sources capable of being triggered in pulse trigger or edge trigger type		

are supported.

save and recall from USB flash drive of the waveform, setups,

CSV and bitmap files (CSV and the bitmaps cannot be recalled from the USB flash disc)

GENERAL SPECIFICATIONS

Save/recall

Display		
	Display type	TFT 7-inch (178mm) LCD
	Display resolution ratio	800 (horizontal) pixels x 480 (vertical) pixels
	Display color	64k color
	Contrast ratio (typical)	500:1
	Background intensity (typical)	300 Cd/m2
	Waveform display range	14 imes 8 grids
	Afterglow	Off, 1 second, 2 seconds, 5 seconds, infinite
	Menu display	2 seconds, 5 seconds, 10 seconds, 20 seconds, infinite
	Screen saver	Off, 1min, 2min, 5min, 10min, 15min, 20min, 1h, 2h, 5h
	Interpolation mode	Sine interpolation, linear interpolation
	Screen color mode	Normal, inverse phase
	Display language	Simplified Chinese, English

DIGITAL STORAGE OSCILLOSCOPE GA1000CAL Series

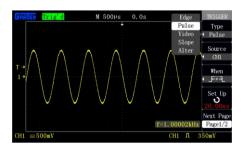
Power voltage	100-240 VAC, CAT II, auto selection	
AC power supply frequency range	45Hz to 440Hz	
Consumed power	50VA Max	
nt		
Temperature	Operating: 10 °C to +40 °C	
lemperature	Non operating: -20 °C to +60 °C	
Cooling	Forced cooling of fan	
Humidity	\leq 90% below 40 °C	
Height	Operating: smaller than 3000m	
	Non operating: smaller than 15000m	

wechanical				
Dimension	Length	Width	Height	
	399mm	111mm	149mm	
Weight	2.4 kg			

All technical specifications are applicable to probes of which the attenuation switches are set as $\times 10$ and this series of digital oscilloscope. To check whether the oscilloscope satisfies the technical specifications, the oscilloscope should satisfy the following conditions at first:

All the specifications are ensured to satisfy the requirement except that marked with "TYPICAL" sign.

FEATURES



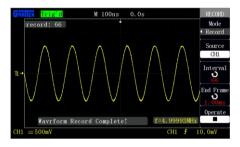
Advanced trigger settings

Various triggering options is available to capture any signal of interest with Edge, slope, video, pulse width, alternating triggering modes. This gives you flexible observation, analysis signal types, saving the cost of testing. Alternative trigger mode is usually used to observing two non-correlated signals at the same time and users can select different trigger mode for two channels, which is a kind reproduction that analog oscilloscope function in the digital oscilloscope.



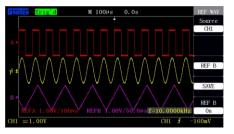
Automatic measurement function

The full featured acquisition model and 32 automatic measurement functions help user to measure captured waveform parameters more accurately. Auto measure function can eliminate user error consumedly, and users will measure parameters what they need faster and more accurately using it. It also have an all measurement function that displays all the waveform parameters on the screen simultaneously according to measure kinds, and users can ready measure parameters value expediently.



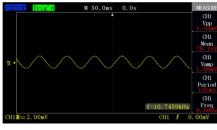
The waveform recording / playback

Using this function, Users can continue record data of their need signals as the form of frame. Waveform recorder can record input waveform from CH1 and CH2, with maximum record length of 1500 frames. This record behavior can also be activated by the pass/fail test output, which makes this function especially useful to capture abnormal signals in long term without keeping an eye watching it.



The reference waveform storage

Two reference waveforms can be stored into the internal memory and can be opened simultaneously, thus showing the sample and reference waveforms in comparison.



Small Signal Capture

Better noise function with excellent performance, accurately captures even the faint signal giving you the confidence in testing.



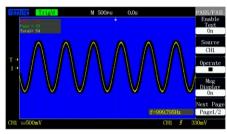
XY mode display

Use XY format to analyze phase. In this mode the data is displayed as dots.



FFT split-screen display

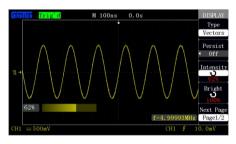
FFT waveform and its Channel waveform can display on split screen at the same time. In split display mode, the screen is divided into two parts and each part is divided eight divides in vertical direction. That is similar to under the entire screen pattern simultaneously to observe two waveforms. This way will make users observe waveforms to be clearer and convenient.



PASS / FAIL

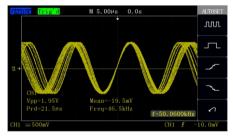
Users may use the Pass/Fail function to carry on the product test. Through a series of setups, the oscilloscope can output the test result automatically which enhanced the product production efficiency greatly.

USER-FRIENDLY DESIGN



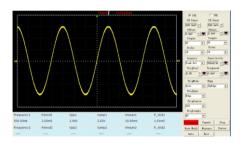
A waveform adjustable brightness

Waveform brightness adjustable at any time, may be needed to facilitate clearly observe the waveforms.GA1101 series use the 7" Wide Screen Color TFT LCD. The screen displays parameter value and the waveform are visible clearly and from a broad range of viewing angle.



Signal persistence view

Display the signal path of the frequency. When acquisitions are stopped, the screen may show data from many acquisitions or the last acquisition. The past acquisition can be displayed based on 4 different time based options of (1-2-5-infinite).



PC software

Easy to use PC control software is the easiest and convenient way to remotely capture and analyzer the waveform data. This software can be compatible RS-232 and USB Device to realize communication between the computer and the oscilloscope, then realizes long-distance control. Simultaneously this software can automatic real-time refresh waveform data, provide waveforms measure data sampling data, screen images read storage and printing functions.