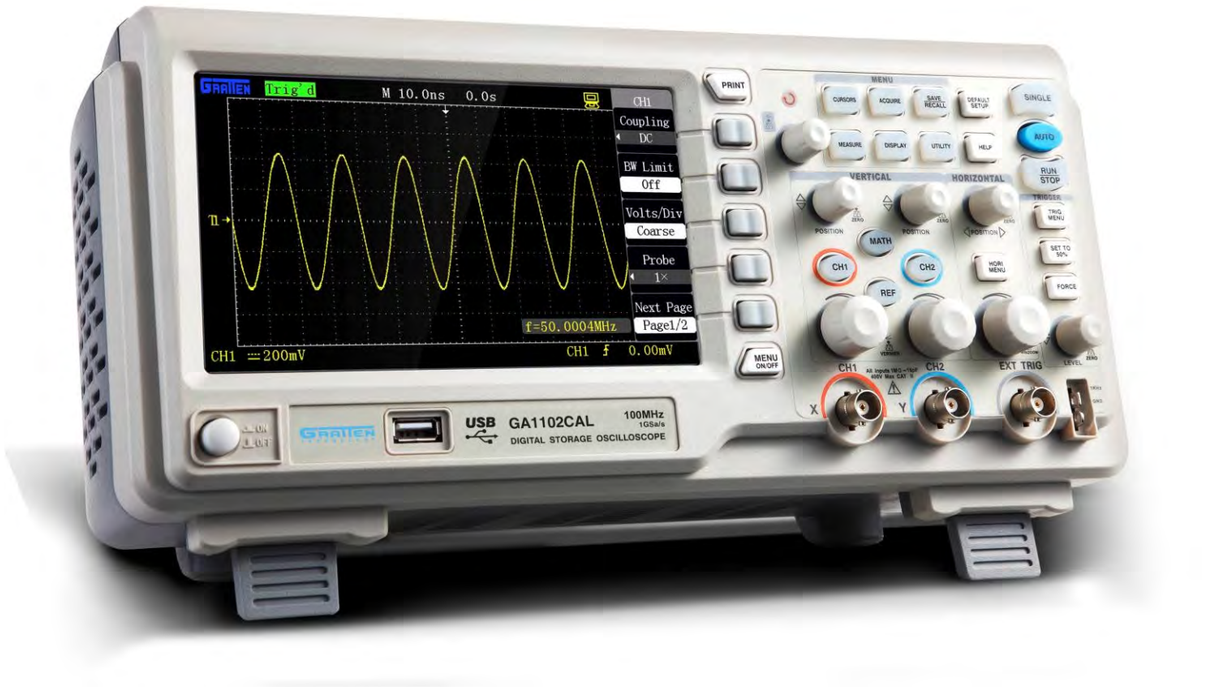
DIGITAL STORAGE OSCILLOSCOPE

GA1022CAL / GA1042CAL/ GA1062CAL / GA1102CAL



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 lineup

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

- Industrial power design, troubleshooting, installation and maintenance
- 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)

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Input

Input coupling	AC, DC, GND
Input impedance	1MΩ± 3% | | 16pF ± 3pF
Maximum input voltage	400V (DC+AC peak value, 1MΩ input impedance)
Probe attenuation	1X, 10X, 100X, 1000X

Signal acquisition system

Sampling mode	Real-time sampling
Sampling rate	Single channel 1GSa/s, dual channel 500MSa/s
Storage depth	Single channel 40kpts Dual channel 20kpts
Acquire mode	Sampling, peak value detection, average value
Average time	4, 16, 32, 64, 128, 256

Vertical system

Vertical Sensitivity	2mV/div - 5V/div (1-2-5 step-by-step)
Channel voltage offset range	±10div offset from the screen center
Vertical Resolution	8bit
Channels	2
Bandwidth	GA1022CAL 25MHz | GA1042CAL 40MHz | GA1062CAL 60MHz | GA1102CAL 100MHz
AC plus accuracy	2mV/div ≤±4%, the rest gears ≤±3%
DC measurement accuracy	±[DC measurement accuracy x reading+ (1% x vertical displacement reading) +0.2div]
Rise time	< 14ns | < 8.7ns | < 5.8 ns | < 3.5ns
Vertical coupling	AC,DC,GND
Arithmetical operation	+, -, × , ÷ , FFT
FFT	Window mode: Hanning, Hamming, Blackman Sampling points : 1024
Bandwidth limit	20MHz (-3dB)

Horizontal system

Time base	20ns/div ~ 50s/div, (sequence 1-2-5) 10ns/div ~ 50s/div (sequence 1-2-5) Wherein, 100ms/div ~ 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	Point display, vector display

Trigger system

Trigger type	Edge, pulse, video, slope, alternation
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
Trigger electric level range	CH1, CH2:±10div EXT: ±1.5V EXT/5: ±7.5V
Trigger sensitivity	CH1, CH2: ≤1div EXT: ≤0.15V EXT/5: ≤0.75V
Hold-off range	100ns ~10s
Edge trigger	Type: rise, descend, rise and descend edge

Trigger system

Pulse width trigger	Type: (>, <, =) positive pulse width (>, <, =) negative pulse width Pulse width: 20ns ~ 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
Slope trigger	(>, <, =) positive slope (>, <, =) negative slope Time setup: 20ns-10s
Alternating trigger	CH1 trigger type: edge, pulse, video, slope CH2 trigger type: edge, pulse, video, slope

Measurement system

Automatic measurement (32 kinds)	Maximal valve, minimal value, peak-to-peak value, amplitude, top value, bottom value, periodic average value, average value, periodic mean square root, mean square root, rise extreme, 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 panel Function

Auto setup	The auto setup function can realize automatic regulation of the vertical system, the horizontal system and the trigger position.
Save/recall	2 groups of reference waveform, 20 groups of common waveform, 16 groups of setups; 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) are supported.

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

GENERAL SPECIFICATIONS

Hardware frequency counter

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 × 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

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Power supply

Power voltage	100-240 VAC, CAT II, auto selection
AC power supply frequency range	45Hz to 440Hz
Consumed power	50VA Max

Environment

Temperature	Operating: 10 ºC to +40 ºC Non operating: -20 ºC to +60 ºC
Cooling	Forced cooling of fan
Humidity	≤ 90% below 40 ºC
Height	Operating: smaller than 3000m Non operating: smaller than 15000m

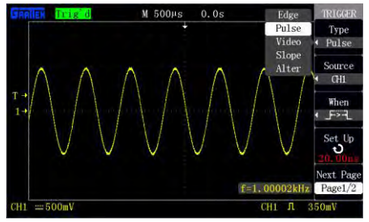
Mechanical

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 ×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

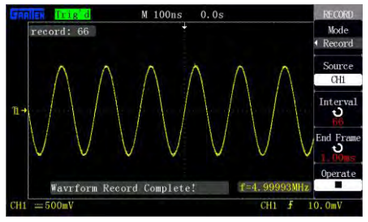


Advanced trigger settings

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.

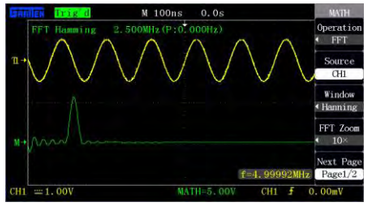
Automatic measurement function

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.



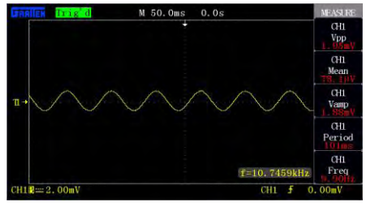
The waveform recording / playback

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.



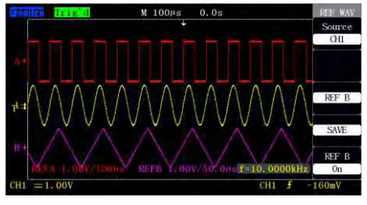
The reference waveform storage

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



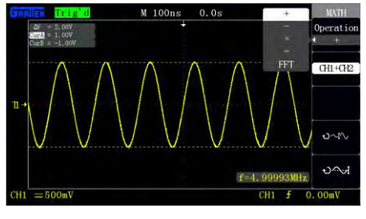
Small Signal Capture

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



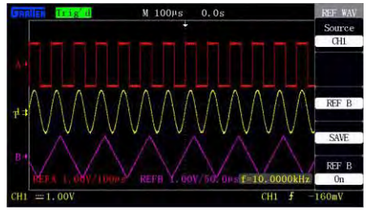
XY mode display

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



FFT split-screen display

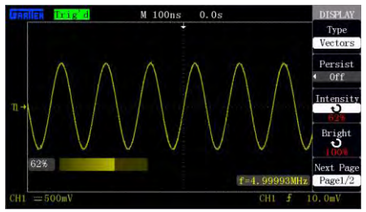
FFT waveform and its Channel waveform can display on split screen at the same time. In split display mode, the screen is divided into two parts and each part is divided eight divides in vertical direction. That is similar to under the entire screen pattern simultaneously to observe two waveforms. This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



PASS / FAIL

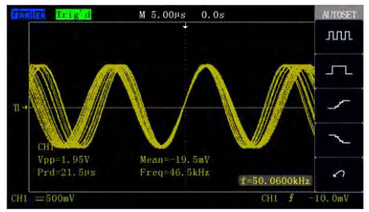
Users may use the Pass/Fail function to carry on the product test. Through a series of setups, the oscilloscope can output the test result automatically which enhanced the product production efficiency greatly.

USER-FRIENDLY DESIGN



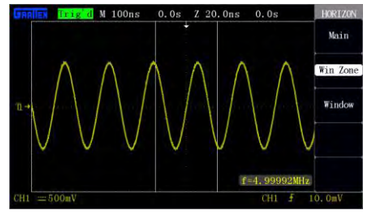
A waveform adjustable brightness

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.