DS03010-E07B

DataSheet

SHS1000 Series Handheld Digital Oscilloscope

SH1102/SHS1062

Features & Benefits

- SHS1000 Series have 2 channels; provide functions as Oscilloscope, Multimeter and Recorder (TrendPlot and waveform Recorder).
- SHS1000 Series with patent IsolatedChannel technology provide isolation from ground and isolation between channels
- CATII1000V and CATIII600V between two channels references，between channels reference and earth ground
  CATII600V and CATIII300V between channels reference and Multimeter input reference
- CATII300V and CATIII150V input direct
  CATII1000V and CATIII600V input with 10：1 probe
- 5.7 inch TFT color LCD display
- 100MHz Bandwidth, 1GS/s real-time sampling per channel, up to 50GSa/s equivalent sampling rate, 2Mpts memory depth
- 6000 counts Multimeter, provides measurements of DCV, ACV, DCI, ACI, Resistance, Diode, Capacitance, Continuity
- Support Scope TrendPlot, Meter TrendPlot and Scope Recorder
- Automatic and manual trigger modes
  Trigger types: Edge, Pulse, Video，Slope and Alternative
- 32 automatic waveform measurements，3 cursor measure modes
- Digital Filter functions:
  Low pass filter，High pass filter, Band pass filter, Band limit filter

- Math functions: +, - ×, ÷,FFT operations
- Multiple Language User Interface
- Standard setup interface: USB Device，USB Host
  USB storage update, PC communication and PictBridge print are available
- Rechargeable battery and battery charger / line power adapter included

Applications

- Power electronics test, such as Switch mode power supply, Inverter, Converter and Lighting electronics.
- Wind power, PV power and other new energy equipment test
- Automotive electronic, electric vehicles test
- Industrial Power systems strong power test
- Electrical industrial site commissioning and test
- Field test
- Applications from microelectronic circuits to power electronics, in fields floating measurements or locale site measurements needed
- Education

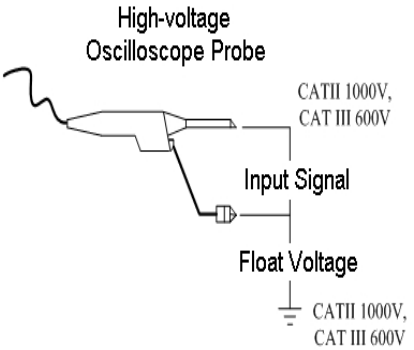
Introduction

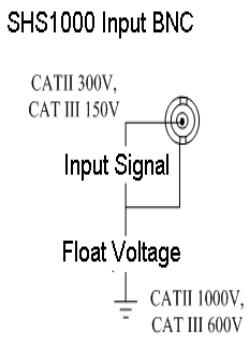
SHS1000 series are dual isolated channel handhold oscilloscopes with patent IsolatedChannel technology. SHS1000 series integrate functions as Oscilloscope, Multimeter and Recorder.

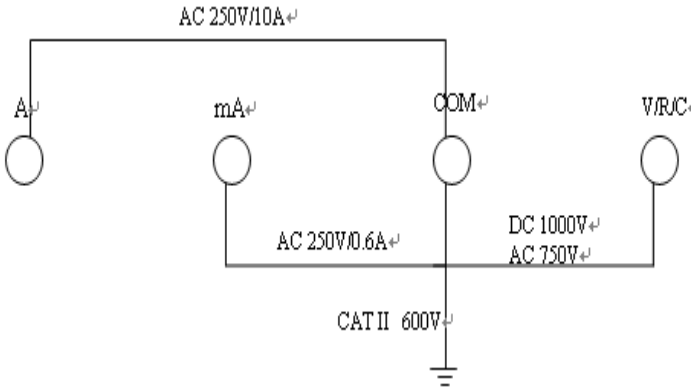
SHS1000 Series provides isolation from ground and isolation between channels allowing you to take floating measurements without worrying about damaging circuitry.

100 MHz Bandwidths, 1GS/s real-time sampling per channel, up to 50GSa/s equivalent sampling rate, 2Mpts memory depth. Support Scope TrendPlot, Meter TrendPlot and Scope Waveform Record, record length up to 7Mpts. 5.7 inch TFT color LCD display. Support USB storage and internal memory. Battery included, handhold available, convenient for outdoor measurement.

Isolated input，make measurements in security



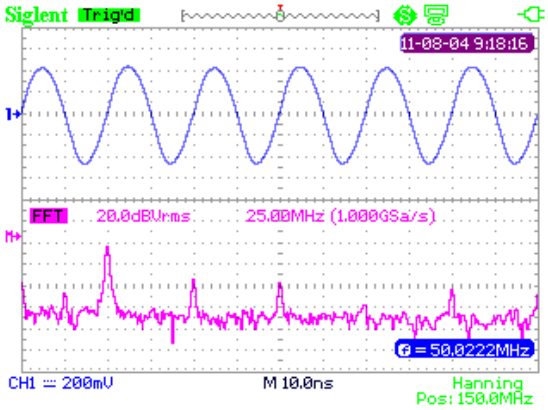




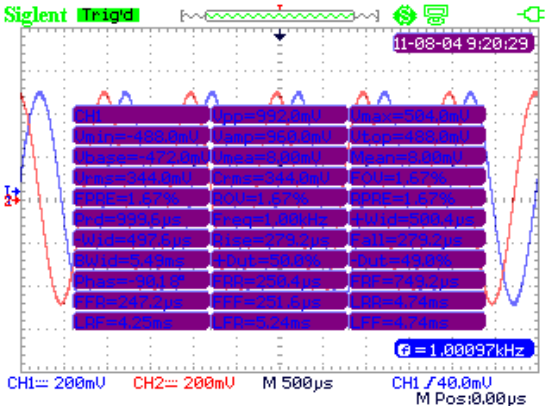
- Patent IsolatedChannel technology used in SHS1000 series oscilloscopes, dual channel, and 100MHz bandwidth.
- CATII300V and CATIII150V maximum BNC input voltage direct, CATII1000V and CATIII600V with standard 10:1 probe.
- CATII1000V and CATIII600V maximum voltage between two channels references.
- CATII600V and CATIII300V maximum voltage between Multimeter input reference and the ground.

High-performance oscilloscope

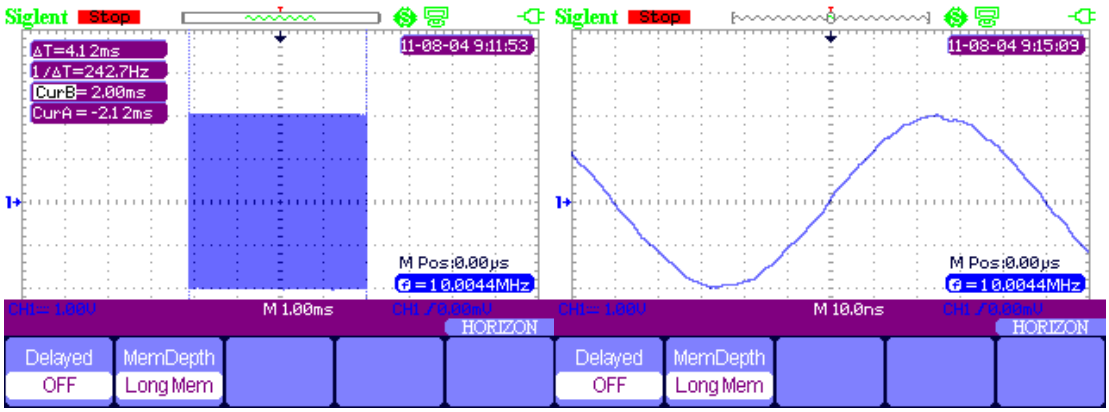
- The SHS1000 series channels are isolated from each other; real-time sampling rate is up to 1GSa/s per channel, equivalent sampling rate up to 50GSa/s
- 2Mpts memory depth
- Dynamic and broad input voltage range, 5mV/div~100V/div direct input
- Math functions: +, - ×, ÷,and FFT
- Digital Filter functions:
  Low pass filter，High pass filter, Band pass filter, Band limit filter
- 32 types of automatic waveform measurements，3 cursor measure modes
- Automatic and manual trigger modes
  Trigger types: Edge, Pulse, Video，Slope and Alternative
- Support EasyScope software
- Standard SPCI command collections, support telecommuting
- Multiple Language User Interface, support Multilingual help system online



FFT



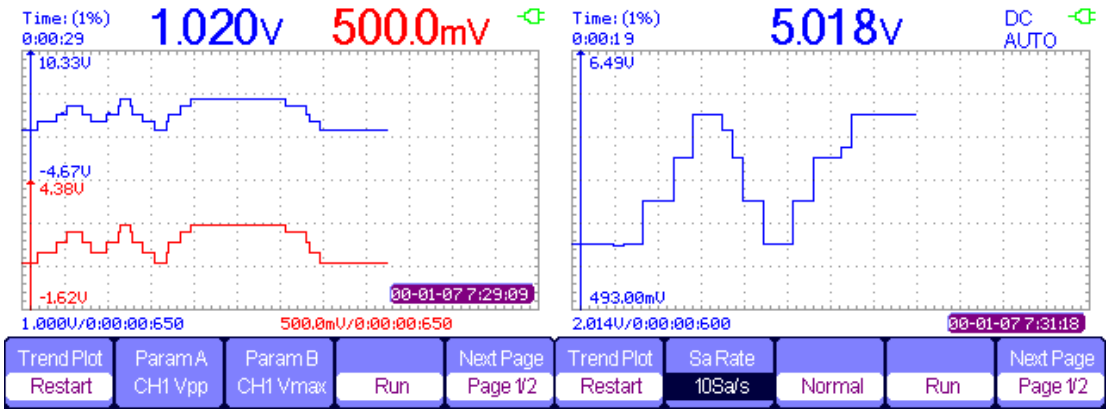
32 types of measurements



Long Memory

TrendPlot

- Scope TrendPlot records scope measurement data in scan mode, 800K points capacity, more than 24 hours recording time
- Meter TrendPlot records multimeter measurement data, 1.2M points recording depth, at 0.5GSa/s, recording time 8120 hours
- Recording results export available, convenient for father analysis
- Two kinds of display mode, 'ALL' and 'NORMAL'; support zoom and cursor
- Support recording real time



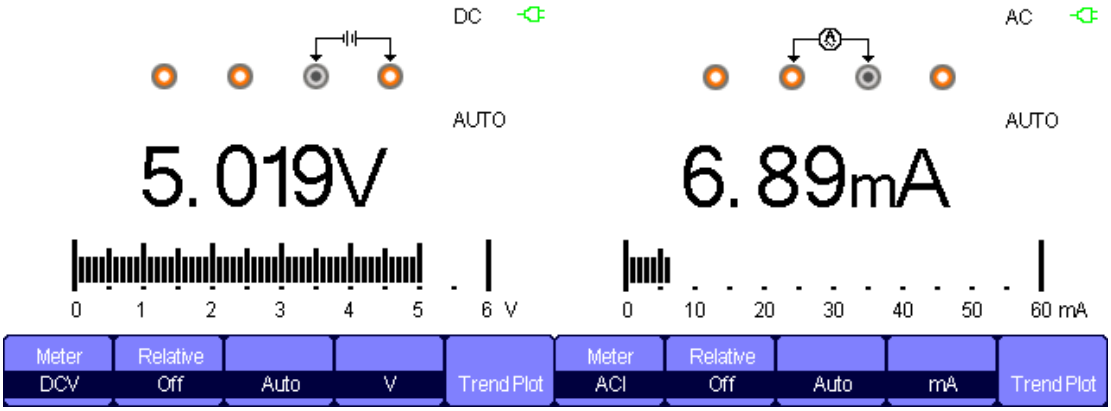
Scope TrendPlot Meter TrendPlot

Scope Recorder

- Recording scope waveform continually in scan mode
- Support recording, replay and zoom function
- 7M points memory depth,18 hours recording time
- 4GB in USB storage mode, 3000hours recording time

Multimeter

- 6000 counts high performance Multimeter
- Providing measurements of DCV, ACV, DCI, ACI, Resistance, Diode, Capacitance, Continuity



DCV measurement ACI measurement

Specification

Scope			
Type	SHS1062		SHS1102
Bandwidth	60MHz		100MHz
Rise Time	≤5.8ns		≤3.5ns
Real Time Sampling Rate	Single Channel: 1GSa/s, Double Channels: 500MSa/s		Single Channel: 1GSa/s, Double Channels: 500MSa/s
Equivalent Sampling Rate	50GSa/s		50GSa/s
Memory Depth	2Mpts		2Mpts
Time Base Range	5 ns/ div – 50s/ div		2.5ns/ div – 50s/ div
Scan Range	100ms/ div ～ 50s/ div		100ms/ div ～ 50s/ div
Vertical Sensitivity	5mV/div – 100V/div(1-2-5 order)		5mV/div – 100V/div(1-2-5 order)
Vertical Resolution	8 bits		8 bits
Trigger Types	Edge, Pulse, Video, Slope, Alternative		Edge, Pulse, Video, Slope, Alternative
Frequency Counter	6 bits		6 bits
Connection	USB Device, USB Host		USB Device, USB Host
Math	+, -, * , /, FFT		+, -, * , /, FFT
Oscilloscope Trend Plot	800K points		
Meter			
Maximum Resolution	6000		
Function	Range	Resolution	accuracy
DC Voltage	60.00 mV	10uV	(±1%±15digit)
	600.0mV	100uV	(±1%±5digit)
	6.000V	1mV	
	60.00V	10mV	
	600.0V	100mV	
	1000 V	1V	
AC Voltage （20Hz～400Hz）	60.00 mV	10uV	(±1%±15digit)
	600.0mV	100uV	(±1%±5digit)
	6.000V	1mV	
	60.00V	10mV	
	600.0V	100mV	
	750 V	1V	(±1.5%±5digit)
DC Current[1]	60.00 mA	10uA	(±4%±5digit)
	600.0mA	100uA	
	6.000 A	1mA	(±5%±5digit)
	10.00 A	10mA	
AC Current[2] （20Hz～400Hz）	60.00 mA	10uA	(±4%±5digit)
	600.0mA	100uA	(±4%±5digit)
	6.000 A	1mA	(±5%±5digit)
	10.00 A	10mA	

Note: [1],[2] For rank A range, the measurement time should be less than 10s, the interval time should be more than 15 minutes.

Resistance	600.0Ω	0.1Ω	(±1%±5digit)
	6.000KΩ	1Ω	
	60.00KΩ	10Ω	
	600.0KΩ	100Ω	
	6.000MΩ	1kΩ	
	60.00MΩ	10kΩ	(±4%±5digit)
Capacitance	40.00nF	0.01nF	(±4%±10digit)
	400.0nF	0.1nF	(±5%±5digit)
	4.000uF	1nF	
	40.00uF	10nF	
	400.0uF	100nF	
Diode	0～2V		
Continuity	<50Ω Buzzer sounds		

Technical Specifications

Oscilloscope

Acquisition System	
Sampling Types	Real time, Equivalent
Sampling Mode	Sampling, Peak detection, Average
Average Times	4, 16, 32, 64, 128, 256

Input System		
Input Coupling	AC, DC, GND	
Input Impedance	1MΩ±2％, 18pf±3pf	
Probe Attenuation Factor	10X	
Probe Attenuation Factors Set(V)	1X, 5X , 10X, 50X , 100X, 500X , 1000X	
channels from earth ground, between two channels references	Overvoltage Category	Maximum Voltage
	CAT I&CAT II	1000Vrms
	CAT III	600Vrms
between Multimeter input reference and the ground	Overvoltage Category	Maximum Voltage
	CAT I&CAT II	600Vrms
	CAT III	300Vrms
Max. input Voltage for BNC	Overvoltage Category	Maximum Voltage
	1x CAT I&CAT II	300Vrms
	1x CAT III	150Vrms
	10x CAT I&CAT II	1000Vrms
	10x CAT III	600Vrms
Max. input Voltage for Multimeter input port	Voltage port	DC 1000V, AC 750V
	Current port(mA)	AC 250V/10A

	Current port(A)	AC 250V/600mA
Single Channel Common Mode Rejection, typical	>100:1 50MHz	
Channel-to-Channel Isolation	>35dB	

Horizontal System				
Real time Sample Rate	Single Channel :50Sa/s～1GSa/s Double Channels: 500MSa/s			
Equivalent Sample Rate	50GSa/s			
Interaction Mode	Line, (Sinx)/x			
Memory Depth	Channel Mode	Sample Rate	Normal	Deep
	Single Channel	1Gsa/s	40kpts	nonsupport
	Single Channel	≤ 500MSa/s	20kpts	2Mpts
	Double Channels	≤ 500MSa/s	20kpts	1Mpts
Display Mode	MAIN, WINDOW, ZOOM, SCAN, X-Y			
Time Base Accuracy	±50ppm (measured over 1ms interval)			
Horizontal Scan Range	2.5ns/div – 50s/div(SHS1000) Scan mode: 100ms/div ～ 50s/div (1-2.5-5 order)			

Vertical System	
Vertical Sensitivity	5mV/div – 100V/div(1-2-5 order)
Channel Voltage Offset Range	5mV-200mV: ±1.6V 206mV-10V: ±40V 10.2V-100V: ±400V
Vertical Resolution	8 bit
Channels	2
Analog Bandwidth	100MHz (SHS1102) 60MHz(SHS1062)
Single Bandwidth	100MHz (SHS1102) 60MHz(SHS1062)
Lower Frequency(AC-3dB)	≤10Hz (at input BNC)
DC Gain Accuracy	5mv/div-100v/div:≤±3%
DC Measurement Accuracy≤100mv/div	±[3.0%X(| reading |+| offset |)+1% X |offset|+0.2div+2mV]
DC Measurement Accuracy ＞100mv/div	±[3.0%X(| reading |+| offset |)+1% X |offset|+0.2div+100mV]
Rise Time	<3.5ns (SHS1102) <5.8ns (SHS1062)
Vertical Input Coupling	AC, DC, GND
Math Operation	+, -, * , /, FFT
FFT	Window Mode: Hanning, Hamming, Blackman, Rectangular
	Sampling: 1024 points
Bandwidth Limiter	20MHz (-3dB)

Trigger System	
Trigger Types	Edge, Pulse Width, Video, Slope, Alternative
Trigger Source	CH1, CH2
Trigger Modes	Auto, Normal, Single
Trigger Coupling	AC, DC, LF rej, HF rej
Trigger Level Range	CH1, CH2: ±6 divisions from center of screen
Trigger Displacement	Pre-trigger: (Memory depth/(2*sampling)), Delay Trigger: 268.04div
Holdoff Range	100ns – 1.5s
Edge Trigger	Edge Type: Rising, Falling, Rising and Falling
Pulse Width Trigger	Trigger Modes: (>, <, =) Positive Pulse Width, (>, <, =)Negative Pulse Width
	Pulse Width Range: 20ns – 10s
Video Trigger	Support Signal Formats: PAL/SECAM, NTSC
	Trigger Condition : Odd Field, Even Field, All Lines, Line Num
Slope Trigger	(>, <, =) Positive slope, (>, <, =) Negative slope
	Time: 20ns-10s
Alternative Trigger	CH1 Trigger Type: Edge, Pulse, Video, Slope
	CH2 Trigger Type: Edge, Pulse, Video, Slope

X-Y Mode	
X-Pole Input /Y-Pole Input	Channel 1 (CH1) / Channel 2 (CH2)
Sample Frequency	XY mode has a breakthrough that trad oscilloscopes restrict sampling rate at 1MSa/s and supports 5KSa/s～500MSa/s:

Measure System	
Auto Measure (32 Types)	Vpp, Vmax, Vmin, Vamp, Vtop, Vbase, Vavg, Mean, Crms, Vrms, ROVShoot, FOVShoot, RPREShoot, FPREShoot, Rise time, Fall time, Freq, Period, + Wid, －Wid, ＋Dut, －Dut, BWid, Phase, FRR, FRF, FFR, FFF, LRR, LRF, LFR, LFF
Cursor Measure	Manual mode, Track mode and Auto mode

Control Panel Function	
Auto Set	Auto adjusting the Vertical, Horizontal system and Trigger Position
Save/Recall	Support 2 group referenced waveforms, 20 group setups,10 group captured waveforms internal storage/recall function and USB flash driver storage function.

Hard Ware Frequency Counter	
Reading Resolution	1Hz
Range	DC Couple, 10Hz to MAX Bandwidth
Signal Types	Satisfying all Trigger signals(Except Pulse width trigger and Video Trigger)

Multimeter

Maximum Resolution	6000 counts
Measure Function	DCV, ACV, DCI, ACI, Resistance, Diode, Capacitance, Continuity
Max Input Voltage	AC(Vrms): 750V (AC frequency :20Hz~400Hz)DC :1000V
Max Input Current	AC (Vrms) : 10A (AC frequency :20Hz~400Hz)DC : 10A
Impedance	10MΩ

Recorder

Scope TrendPlot	
Display	All, Normal
Record Size	800K points, more than 24 hours
Record Channel	2 channels
Cursor, Zoom	Yes
Manual Mode	Yes

Meter TrendPlot	
Display	All, Normal
Record Size	1.2M points
Record Channel	1 channel
Cursor, Zoom	Yes
Manual Mode	Yes

Scope Record	
Function	Record scope waveforms, Replay recorded waveforms
Acquisition Mode	Scan Mode
Time	Record mode: recording time Replay mode: replay time
Sets	Viewer: full screen, split screen Record mode: continuous, single Replay mode: point, frame Save mode: Internal memory
Default	Viewer: split screen Record mode: continuous Replay mode: point Save mode: Internal memory
Record Size	Total: 7M points Single channel: 7M points single channel Double channels: 3.5M points per channel At different time base, get max record time , e.g. time base 100ms, each point counts 0.04ms, Total Time = 7000000*0.04ms = 4.6min
Record Manual	Start, Pause, Stop, Continue
Replay Manual	Start, Pause, Stop, Continue, Previous, Next,

Generic Specification

Display System	
Display Mode	5.7 inch TFT color LCD
Resolution	320 horizontal by 234 vertical pixels
Display Color	24 bit
Display Contrast	150:1
Backlight Intensity	300nit
Waveform Display Range	8 x 12 div
Waveform Display Mode	Point, Vector
Persist	Off, 1 sec, 2 sec, 5 sec, Infinite
Menu Display	2 sec, 5 sec, 10 sec, 20 sec, Infinite
Screen-Saver	Off, 1min, 2min, 5min, 10min, 15min, 30min, 1hour, 2hour, 5hour
Skin	Classical, Modern, Tradition, Succinct
Waveform Interpolation	Sinx, X
Color model	Normal , Invert
Language	Simplified Chinese, Traditional Chinese, English, Arabic, French, German, Russian, Spanish, Portuguese,Japanese, Korean, Italian

Power		
Line Power Adapter	Input voltage	100V-240V 50/60Hz
	Output voltage	9V 4A
Battery	7.4VDC, 5000mAh, persisting about 4 hours	
Charge time	About 4 hours	

Environments		
Temperature	Operating	0～45℃
	Storage	－20℃～70℃
Cooling	Internal fan used	
Humidity	85％RH, 40℃	
Height	3000m	
Electromagnetic Compatibility	2004/108/EC Directive	
	Applicable standards EN 61326-1:2006	
	EN 61000-3-2:2006 + A2:2009/ EN 61000-3-3:2008	
Safety	2006/95/EC Low Voltage Directive	
	EN 61010-1:2010/EN 61010-031:2002+A1:2008	

Mechanical		
Size	length	259.5mm
	width	163.2mm
	height	53.3mm
Weight	1.5Kg	

About SIGLENT

SIGLENT is an international high-tech company, concentrating on R&D, sales, production and services of test & measurement instruments.

SIGLENT began to research and develop the Digital Oscilloscope independently in 2002. After a decade of development products have included digital oscilloscopes, isolated handheld oscilloscopes, function/arbitrary waveform generators, digital multimeters, DC power supplies, spectrum analyzers, and other general purpose test instrumentation. Since SIGLENTs first oscilloscope, the ADS 7000 series produced in 2005, SIGLENT has maintained the highest annual growth rate and has been the fastest developing DSO manufacturer over the past 10 years. Nowadays, SIGLENT Technologies is the leading manufacturer of oscilloscopes by shipments in China.

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