



## **Smart Oscilloscope**

### **STO1000C series**

Data Sheet

Jan. 2019

Model		STO1102C	STO1152C	STO1104C
Channels		2	2	4
Bandwidth		100M	150M	100M
Rise time(calculated)		3.5ns	2.33ns	3.5ns
Real time sampling rate(1 Ch)		1G Sa/s	1G Sa/s	1G Sa/s
Real time sampling rate (2Ch)		500M Sa/s	500M Sa/s	500M Sa/s
Real time sampling rate (4Ch)		-	-	250M Sa/s
Peak mode(1 Ch)		1ns	1ns	1ns
Peak mode(2 Ch)		2ns	2ns	2ns
Peak mode (4 Ch)		-	-	4ns
Memory	Memory depth (1 Ch)	28M	28M	28M
	Memory depth (2 Ch)	14M	14M	14M
	Memory depth (4 Ch)	-	-	7M

### Vertical system

Bandwidth limitation	20MHz
Hardware Filtering	High pass (30KHz~ maximum bandwidth) Low pass (maximum bandwidth ~30KHz)
Input coupling	DC、 AC、 GND
Input impedances	1MΩ±1%    15pF±3pF
Vertical resolution	8 bit
DC gain accuracy ( Amplitude accuracy )	< ±2%(1MΩ input )
Vertical scale factor	500uV/div~5V/div (1MΩ input, 500uV/div bandwidth 20MHz)
Channel-to-channel isolation DC to maximum bandwidth	≥40dB ( 100:1 )
Offset range	± 2.5V (with probe multiple X1, <500mV/div), ±120V (with probe multiple X1, ≥500mV/div)
Noise	≤1mV
Maximum input voltage	CAT I 300V(1MΩ input )

### Horizontal system

Time base range	2ns/div~1ks/div
Time base delay range	-14divisions to 14ks
Clock drift	≤±5ppm/year
Time base accuracy	±20ppm
Roll mode	200ms/div~1ks/div

### Sampling system

Sampling mode	Real time sample rate
Peak sampling	All the sampling glitches in scanning rate are narrow to single channel 1 ns, dual channel 2 ns .four channel 4ns
Sample rate 1G Sa/s	

Max duration in the max sampling rate

Sample rate 1G Sa/s	28ms
Sample rate 500M Sa/s	56/28ms
Sample rate 250M Sa/s	56/28ms

Average	Average of sampling for N times N is chosen from 2, 4, 8, 16, 32, 64, 128, 256
Envelope	Envelope of sampling for N times N is chosen from 2, 4, 8, 16, 32, 64, 128, 256, ∞

## automatic

Auto setting	Automatically turns on/off channels, threshold level setting, and automatically sets the trigger source
Auto range	Vertical gear automatic, horizontal time base automatic, trigger level automatic

## Trigger system

Trigger mode	Normal, Auto, and Single
Trigger coupling	DC, AC, HF reject (> 50KHz), LF reject (< 50KHz), noise reject
Trigger hold off range	200ns~10s
Trigger level ranges	±10 grids from the center of the screen
Trigger type	
Edge	Positive, negative, or either slope on any channel input. Coupling includes DC, AC, HF reject, LF reject, and noise reject.
Pulse Width	Trigger on width of positive or negative pulses that are >, <, =, ≠, or inside/outside a specified period of time (8ns~10s).
Logic	Trigger when any logical pattern of channels goes false or stays true for specified period of time (8ns~10s). Any input can be used as a clock to look for the pattern on a clock edge. Pattern (AND, OR, NAND, NOR) specified for all input channels defined as High, Low, or Don't Care
Nth edge	Trigger on the Nth rising/falling edge of the waveform
Runt	By setting high and low thresholds, triggering pulses that span a level that does not cross another level captures positive and negative pulses
slope	Trigger when the waveform's time from one level to another matches the set time condition
Time out	Starting from the intersection of the signal and the trigger level, Trigger when the trigger level is above (or below) the duration and reaches the set time
Video trigger	The triggering method for video signals is different depending on the video format. Generally, there are PAL/625, SECAM, NTSC/525, 720P, 1080I, 1080P, etc. Trigger for the set bus, including UART, I2C, SPI, CAN, LIN, 1553B, 429 bus UART: start bit, stop bit, data, 0: data, 1: data, x: data, parity error
Bus	I2C: Start condition, stop condition, acknowledge loss, restart, address field no acknowledgement, frame type 1, frame type 2, EEPROM data read and write, 10-bit write frame SPI: CS, data, X data CAN: frame start, remote frame ID, data frame ID, remote/data frame ID, data frame ID and data, error frame, all errors, acknowledgment errors, overload frames LIN: Synchronous rising edge, frame ID, frame ID and data 1553B: instruction/status word sync header, data word sync header, instruction/status word, remote terminal address, Manchester code error, data word, odd parity error, all errors

429: word start, word end, LABEL, SDI, DATA, SSM, LABEL+SDI, Label+Data, Label+SSM, word error, word gap error, check error, all errors, all 0 bits, all 1 bit

## Bus setup and decoding

Display model	Graphic mode, list mode
Decoding type	UART、I2C、SPI、CAN、LIN、1553B、429
List mode	For uninterrupted decoding of collected data and can be saved
UART	Rx : Ch1、 Ch2、 Ch3、 Ch4 Idle level: high and low Check: no, odd, even Bits: 5, 6, 7, 8, 9 Baud rate: 1.2K~8Mbps Display mode: hexadecimal, binary, ASC II code
I2C	Data : Ch1、 Ch2、 Ch3、 Ch4 Clock : Ch1、 Ch2、 Ch3、 Ch4
SPI	Clock: rising edge / falling edge Ch1, Ch2, Ch3, Ch4 Data: High/Low Ch1, Ch2, Ch3, Ch4 CS: High/Low Ch1, Ch2, Ch3, Ch4 Bits: 4, 8, 16, 24, 32
CAN	Source: Ch1, Ch2, Ch3, Ch4 Signal type: CAN_H, CAN_L, H_L, L_H, Rx, Tx Baud rate: 10K~5Mbps
LIN	Source: Ch1, Ch2, Ch3, Ch4 Idle level: high level / low level Baud rate: 2.4K~625Kbps
1553B	Source: Ch1, Ch2, Ch3, Ch4 Display: binary, hexadecimal
429	Source: Ch1, Ch2, Ch3, Ch4 Format: LABEL+DATA, L+D+SSM, L+SDI+D+SSM Display: binary, hexadecimal Baud rate: 12.5Kbps/100Kbps

## Waveform measurements

Cursor	Horizontal, vertical, cross
Auto measurements	23, of which up to five can be displayed on-screen at any one time. Measurements include: Period, Frequency, Rise Time, Fall Time, Delay, Positive duty Cycle, Negative Duty Cycle, Positive Pulse Width, Negative Pulse Width, Burst Width, Positive Overshoot, Negative Overshoot, Phase, Peak to Peak, Amplitude, High, Low, Max, Min, Mean, Cycle Mean, RMS, Cycle RMS.
Frequency counter	6
Waveform math	
Dual Waveform	+ -* /
FFT	Spectral magnitude. Set FFT Vertical Scale to Linear RMS or dBVRMS, and FFT Window to Rectangular, Hamming, Hanning, or Blackman-Harris.

## Display system

Display type	8" TFT LED Multi point touchable capacitive screen , 24bit
Display resolution	800*600
Max touch point on touch screen	5

Operation way	Touch, button, touch + button
Afterglow time	Automatic、 10ms~10s、 ∞
Time base format	YT、 XY、 Roll、 Zoom
Expansion bench mark	Center, Trigger Position
Color temperature display	Support
Waveform display	Point, line, adjustable brightness
Grid	14*10 grid, adjustable brightness
Grey level	256levels
Waveform refresh rate	80,000wfms/s
Time	Real time, user adjustable
Language	English、 Chinese(standard), German, French, Czech, Korean, Spanish, Italian(Options)

### Storage

Storage media	Local,UDisk
Built-in storage	8G
Storage format	Csv,wav,Bin
Waveform storage number	Unlimited
Waveform storage name	Support
display the reference waveform quantity	4 pcs
Screenshot	Support
Video recording and playback	Support
User setting number storage	10
User name setting	Support
Flash format	Comply with industry standards

### Interface

USB2.0interface	Support 1 USB mass storage devices, can read and write
Micro USB2.0interface	1,support read and write
DC interface	1,Oscilloscope power supply
Probe calibration port	1KHz、 2Vpp
LAN	Support
HDMI	1.4
Wi-Fi	Support
Android APP	Support
IOS APP	Support
Computer software	Support

### Power source

Power source voltage	100~240V AC,50/60Hz
Power consumption	< 60W
Fuse	12V DC,5A
Built-in Battery	7.4V, 7500mAh

### Environment

Temperature	
Operating	0°C~45°C
Non-operating	-40°C~60°C
Humidity	

Operating	5%to 85% , 25°C
Non-operating	5% to 90% , 25°C
Altitude	
Operating	< 3000m
Non-operating	< 12000m

### Physical characteristics

Dimensions	280mm*180mm*50mm
Weight	
Net	
2CH Bare	1340g
4CH Bare	1425g
Shipment	
4CHBare	2745g
2CHBare	2930g
Battery ( optional )	320g

### Ordering information

Step 1 : Select STO1000C series basic models

STO1000C family	
STO1102C	Tablet touch digital oscilloscope,100MHz 2 analog channels, single channel sampling rate 1G Sa/s
STO1152C	Tablet touch digital oscilloscope,150MHz 2 analog channels, single channel sampling rate 1G Sa/s
STO1104C	Tablet touch digital oscilloscope,100MHz 4 analog channels, single channel sampling rate 1G Sa/s

### Standard accessories

Probe type	
Standard	
P130A	200MHz bandwidth, 10X, input capacitance: 14.5pF-17.5p, measurement voltage: <600V DC +Peak AC, line length 130cm±1.5cm
Optional	
High voltage differential probe	DP10013, 100MHz bandwidth, 1300V voltage; DP20003, 100MHz bandwidth, 5600V voltage;
Accessory	
Power Adapter	1
Probe	One probe per channel
Warranty	
Three-year host warranty	Probes and accessories are not covered by the oscilloscope warranty and service. Please refer to the specifications for each probe and accessory for the respective warranty terms.

Step 2: Configure your STO1000C by adding instrument options

### Instrument option

All STO1000C series instruments can be pre-configured with the following options at the factory:

Software option	
HDMI function	Suitable for all models
UART bus decoding	Suitable for all models
SPI bus decoding	Suitable for all models

I2C bus decoding	Suitable for all models
CAN bus decoding	Suitable for all models
LIN bus decoding	Suitable for all models
1553B bus decoding	Suitable for all models
429 bus decoding	Suitable for all models
Hardware option	
Lithium battery	7.4V , 7500mAh
Carry strap	Suitable for all models
Handbag	Black nylon
Protector film	Suitable for all models

---

## Contact us

For service, warranty or technical assistance, please contact us via the following information:

Name: Shenzhen Micsig Instruments Co.,Ltd.

ADD:305BlockA,CLOU Building,Baoshen RD,North Area,Nanshan Science&Technology Park,  
Nanshan District,Shenzhen,Guangdong,China.518000

WEB : [www.micsig.com](http://www.micsig.com)

TEL : 0755-88600880

Email : [sales@micsig.com](mailto:sales@micsig.com)