Micsig

Smart Oscilloscope
STO2000C Series

STO2000C Series Smart Oscilloscope

The STO2000C series is a new portable smart oscilloscope released by Micsig. With 300MHz bandwidth, 2GSa/s sample rate, up to 280Mpts memory depth, it also has a newly added segmented memory function, available in 2 analog channels, making the waveform capture rate high up to 270,000 wfm/s.

It adopts high-sensitivity digital trigger system, with abundant trigger and decoding types, multiple measurement and mathematical calculation options, standard digital filter module, supports 256-level intensity grading with colour temperature display; equipped with LAN, Wi-Fi, USB Host, USB Device, HDMI, Trigger out etc. I/O ports.

The 8" 800x600 TFT LCD capacitive touch-screen and the high-level integrated control panel, combined with Micsig's unique patented touch algorithm technology, elevates user experience to a whole new level.

Battery module

- Abundant trigger types to meet different demands
- 8" large touch screen, combined with solid buttons, makes easier operation
- 7500mAh Li-ion battery, support 3.5-hour offline work
- Support video recording and built-in 8G storage capacity
- Standard High/Low pass hardware digital filtering and segmented storage
- Powerful Android system, faster response & more user-friendly interfaces
- Support Mobile APP (iOS & Android) , Windows PC and mouse remote control
- Wi-Fi transmission and HDMI option, perfect for education & training
- 256-level intensity grading with colour temperature display
- Unique soft keyboard, Chinese/English input, no more knob scrolling
- One-click quick save, simultaneous data and screenshot saving on dual channel
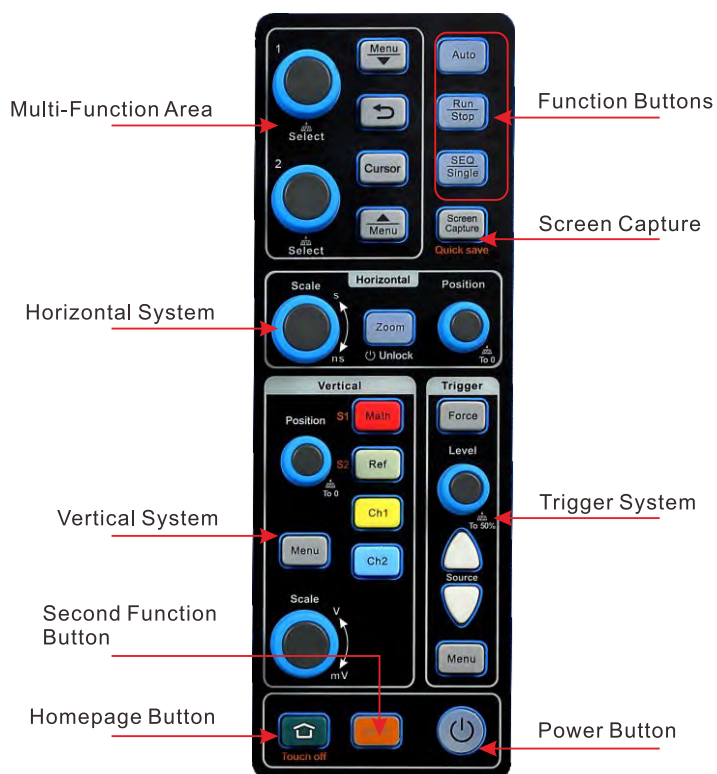
Specifications

	STO2202C	STO2302C
Bandwidth	200MHz	300MHz
Analog Channels	2	2
Rise Time (single channel)	≤1.75ns	≤1.16ns
Max. Waveform Capture Rate	130,000wfm/s (Regular mode), 270,000wfm/s (Segmented memory mode)	
Memory Depth	280Mpts (single channel)	
Real-time Sample Rate	2G Sa/S (single channel)	
Filter	20MHz, High pass, Low pass	
I/O Ports	Wi-Fi, LAN, HDMI, USB Host, USB Device, DC Power, Trigger out	
Display	8-inch TFT LCD, 800*600, 14*10 grids	
Dimension	280*180*50mm	
Weight	1340g (bare mainframe) , 312g (battery)	

Control Panel
Independent of Touch Screen

Various shortcut buttons respond swiftly to various operations. Less than 20% of the entire front area, this physical panel area guarantees the control capability and reserves the largest display area as much as possible for oscilloscope.

Dedicated buttons are applied for more frequently used functions, one press to open, significantly saved setting time.

Making three operation modes: Full touch screen, Physical knobs and buttons, and Mixed operation of both.

Multi-Function Area

Function Buttons

Screen Capture

Horizontal System

Vertical System

Trigger System

Second Function Button

Homepage Button

Power Button

LAN
Probe Calibration
HDMI
USB host
USB device
Power supply
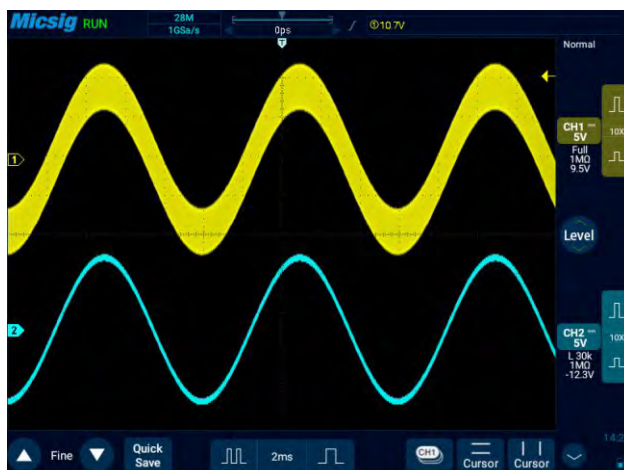
Dimensions

280mm

180mm

50mm

Main Features

Ultra-high Waveform Capture Rate

Up to 270K wfm/s capture rate, able to see more abnormal waveforms that invisible to ordinary oscilloscopes

31 Types of Auto Measurements

STO2000C series can measure 31 types of waveform parameters automatically, and display them all in one screen
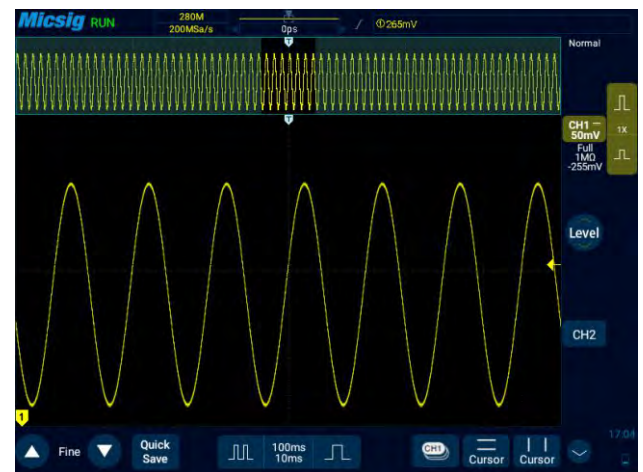

Powerful Trigger Functions

Support Edge, Pulse width, Short pulse (Underthrow), Logic, Video, Overtime, N_Edge, Slope and other triggers. Simple and intuitive settings, swift trigger source switching mode, make the difficult part of oscilloscope application extremely easy.

Super Memory Depth

Up to 280Mpts memory depth ,Zoom into a selected part of the captured waveforms to get more details.

Hardware High-pass / Low-pass Digital Filtering

Most engineers focus on the details of a certain frequency band of a signal. Filtering out insignificant frequency to eliminate interference, achieves a better judgement of the signal

Auto

STO2000C supports automatic measurements. The scope can adjust the amplitude and horizontal time base in real time, ensures the waveform is always displayed with a suitable size on the screen, more convenient and accurate, avoids complicated manual adjustments.

Bus Decoding and Analysis

Support serial triggering and decoding (I2C, SPI, RS232/UART,CAN, LIN)

Convenient Cursor Measurement

One soft touch to initiate horizontal and vertical cursors, each cursor can be moved independently. Simple two-point touch to track down the cursors, efficiency increased by 80%! No more traditional "anti-human" cursor operations!


High-precision Frequency Meter

Supports 6-bit hardware frequency meter, the accuracy is much higher than the soft solution frequency measurement, show more accurate measurement results.
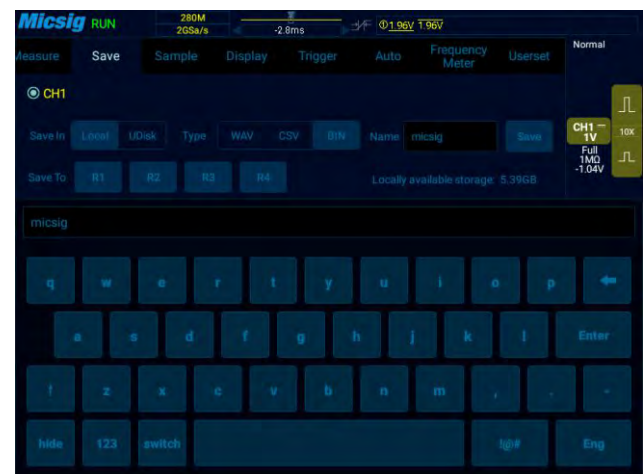
Segmented Memory

Use segmented memory can present waveform details more efficiently, capture multiple waveform events at a sufficient sampling rate for effective analysis. Waveforms can be fitting displayed on multi-screens, also can be viewed frame by frame, helping users to find occasional signals quickly, save and display required data more optimally.
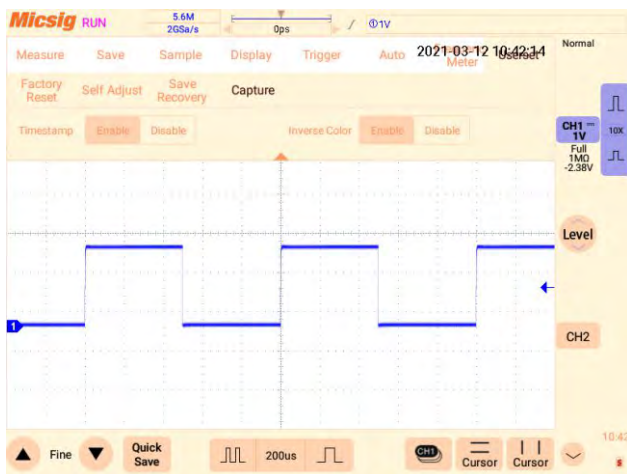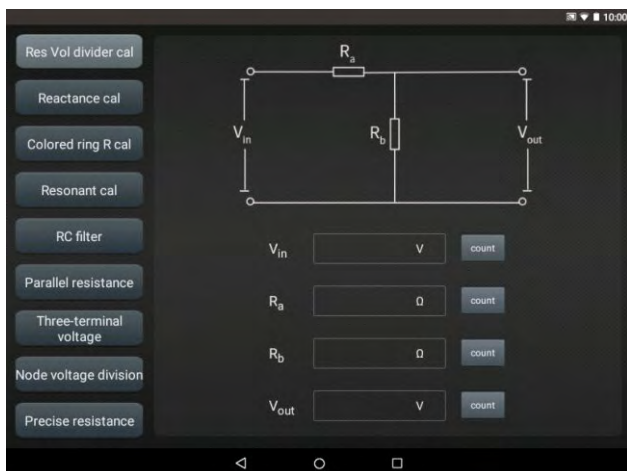
Screenshot inverse and Timestamp

STO2000C supports adding time stamp and inverse color to screenshots, waveform are more concise and prominent, easy to record, meet the demands of our users to collect and organize.

Built-in various practical electronic calculation tools for instant needs

Soft Keyboard Input

When entering the name, IP, and special characters, ordinary oscilloscopes can only be selected one by one through the knobs, while Micsig's can easily Input by clicking on the soft keyboard,increasing efficiency by 90%.

Channel label function allows users to rename the channel in Chinese or English at will, convenient is all.

Unique oscilloscope mobile APP and PC software via Wi-Fi, USB, Wi-Fi LAN and LAN connection. Support transfer data from scope to PC via Wi-Fi and USB. Support Micro HDMI to connect scope and display directly.

Data Sheet

Vertical system	
Input coupling	DC、AC、GND
Input impedances	1MΩ±1%‖17pF、50Ω±1%
Vertical resolution	8 bit
DC gain accuracy (Amplitude accuracy)	2mV/div~10V/div : ≤±2.0%, ≤2mV/div : ≤±3.0%
Vertical scale factor	1mV/div~10V/div(1MΩ input)、1mV/div~1V/div (50Ω input)
CH-to-CH isolation DC to maximum bandwidth	＞40dB(≤100MHz)、＞35dB(＞100MHz)
Vertical offset range	± 2.5V (probe att. rate x1, <500mV/div), ±120V (probe att. rate x1, ≥500mV/div)
Maximum input voltage	CAT Ⅰ300Vrms，400Vpk(1MΩ)，5Vrms(50Ω)

Horizontal system	
Time base range	1ns/div~1ks/div
Time base delay range	-14divisions to 14ks, resolution: 1 pixel
Clock drift	≤±2ppm/year
Time base accuracy	±20ppm

Sample system	
Sample mode	Real time
Real time sample rate(single channel)	2G Sa/S
Real time sample rate (dual channel)	1G Sa/S
Memory Depth (single channel)	280Mpts/28M/2.8M/280K/28K/Auto
Memory Depth (dual channel)	140Mpts/14M/1.4M/140K/14K/Auto
Segmented storage	Support
Segment range	2-10k
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, ∞

Trigger system	
Trigger mode	Normal, Auto, Single
Trigger coupling	DC, AC, HF reject, LF reject,noise reject
Trigger holdoff range	200ns~10s
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 clockto look for the pattern on a clock edge. Pattern (AND, OR, NAND,NOR) specified for all input channels defined as High, Low, or Irrelevant
Runt	By setting high and low thresholds, triggering pulses that span a level that does not cross another level captures positive and negative pulses
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 theset time
Slope	Trigger when the waveform's time from one level to another matches the set time condition
Video	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.
Nth edge	Trigger on the Nth rising/falling edge of the waveform

Power source

Power source voltage	100~240V AC,50/60Hz
Power consumption	＜48W
Adapter output	12V DC，4A
Built-in Battery	7.4V , 7500mAh

Bus setup and decoding

Display model	Graphic mode, list mode
Decoding type	UART,I2C,SPI,CAN,LIN,1553B,429
List mode	The collected data can be decoded continuously and can be saved
UART	RX: Ch1, Ch2
	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
	Clock:Ch1, Ch2
SPI	Clock: rising edge / falling edge Ch1, Ch2
	Data: High/Low Ch1, Ch2
	CS: High/Low Ch1, Ch2
	Bits: 4 ,8 ,16 , 24 , 32
CAN	Source: Ch1, Ch2
	Signal type：CAN_H, CAN_L, H_L, L_H, Rx，Tx
	Baud rate：2.4K~625Kbps
LIN	Source: Ch1, Ch2
	Idle level: high level / low level
	Baud rate：2.4K~625Kbps
1553B	Source: Ch1, Ch2
	Display： binary, hexadecimal
429	Source：Ch1, Ch2
	Format：LABEL_DATA, L+D+SSM, L+SDI+D+SSM
	Display：binary, hexadecimal
	Baud rate：12.5Kbs/100Kbps

Display system

Display type	8"TFT LCD Multi point touchable capacitive screen
Display resolution	800*600
Max touch point on touch screen	5
Operation Method	Touch, button, touch + button
Persistence time	Automatic,10ms~10s,∞
Time base format	YT、XY、Roll、Zoom
Expansion bench mark	Center, Trigger Position
Waveform display	Dot, Line, adjustable brightness
Grid	14*10 grid, adjustable brightness
Grey level	256 levels
Waveform refresh rate	130,000wfm/s (Regular mode), 270,000wfm/s (Segmented memory mode)
Time	Real time, user adjustable
Language	English, Chinese, German, French, Czech, Korean, Spanish, Italian, etc.

Interface

USB2.0 interface	Support 1 x USB mass storage devices, can read and write
Micro USB2.0 interface	1,support read and write
DC interface	1,Oscilloscope power supply
Probe calibration port	1KHz,2Vpp
LAN	Support
HDMI	Support
IOS, Android	Support
Trigger out	Support

Waveform measurements

Cursor	Horizontal, vertical, cross
Auto measurements	23types, 31 types can be displayed simultaneously on the screen.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.
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.

Storage

Storage location	Local,UDisk
Built-in storage	8G
Storage format	csv,wav,bin
Waveform storage number	Unlimited
Waveform storage name	Support
REF waveform displayed	2
Screenshot	Support
Video recording and playback	Support
User setting number storage	Unlimited
User setting rename	Support
Flash format	Standard

Environment

Temperature	
Operational	0℃~45℃
Non-operational	-40℃~60℃
Humidity	
Operational	5% to 85%,25℃
Non-operational	5% to 90%,25℃
Altitude	
Operational	＜3000m
Non-operational	＜12000m

Physical characteristics

Dimensions	280*180*50mm
Weight	
Bare unit	1340g
Battery	132g

Standard Accessories	
Probe	one for each channel (Vol:10X：≤600V pk)
Adaptor	1
Power cable	1
Dedicated battery	High quality Li-ion battery
Bus serial decode	UART、LIN、CAN、SPI、I2C
3-year warranty for main unit	Probes and accessories has different warranty period, please refer to their user manual for more details

Optional Accessories	
CP series DC/AC Current Probe	BD: 300KHz/800KHz/2.5MHz Vertical scale: 10A/100A
ACP1000 AC Current probe	Current range: 0.1A-1000A Frequency: 10Hz-100KHz
DP series High Voltage Differential Probe	BD：50MHz/100MHz Max input differential voltage (DC+AC PK): 700V/1300V/5600V
T3100 High voltage probe	BD:100MHz Input voltage：2000VDC+Peak AC
Dedicated handbag	High density Canvas Handbag

Ordering information

Step 1,Select STO2000C series basic models

STO2000C series	
STO2202C Plus version	200MHz, 2G Sa/s, 280Mpts, 2CH, 7500mAh Battery capacity, 5x Bus serial decodes
STO2302C Plus version	300MHz, 2G Sa/s, 280Mpts, 2CH, 7500mAh Battery capacity, 5x Bus serial decodes

Step 2: Configure your STO2000C by adding instrument options

Instrument option	
All STO2000C series instruments can be pre-configured with the following options at the factory:	
Software option	
1553B bus decoding	Suitable for all models
429 bus decoding	Suitable for all models

The final interpretation right of this manual belongs to Shenzhen Micsig Instrument Co., Ltd

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