Micsig

www.micsig.com

- Android system, rapid operation respond
- 2/4 channels, 100MHz / 150MHz bandwidth
- 1G Sa / S real-time sample rate,70Mpts memory depth
- Up to 130,000 times/s waveform capture rate
- 8'' industrial LCD, 800 * 600 resolution multi-point capacitive touch screen
- Optional lithium battery, battery life up to 5 hours
- Support LAN, WiFi, USB2.0, USB Device, HDMI, Trigger out, Pass / Fail out ports
- Support Bus trigger and decoding (UART,I2C,SPI,CAN,LIN)
- Support PC software, APP(iOS and Android mobile phone) to remote control oscilloscope
- Built-in 8G storage support various types waveform and video record

STO1000E Series Smart Oscilloscope

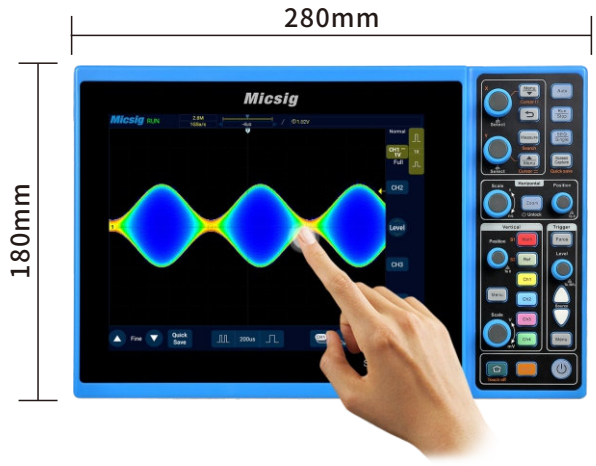
DATA SHEET

Shenzhen Micsig Instruments Co., Ltd.

STO1000E Series Smart Oscilloscope

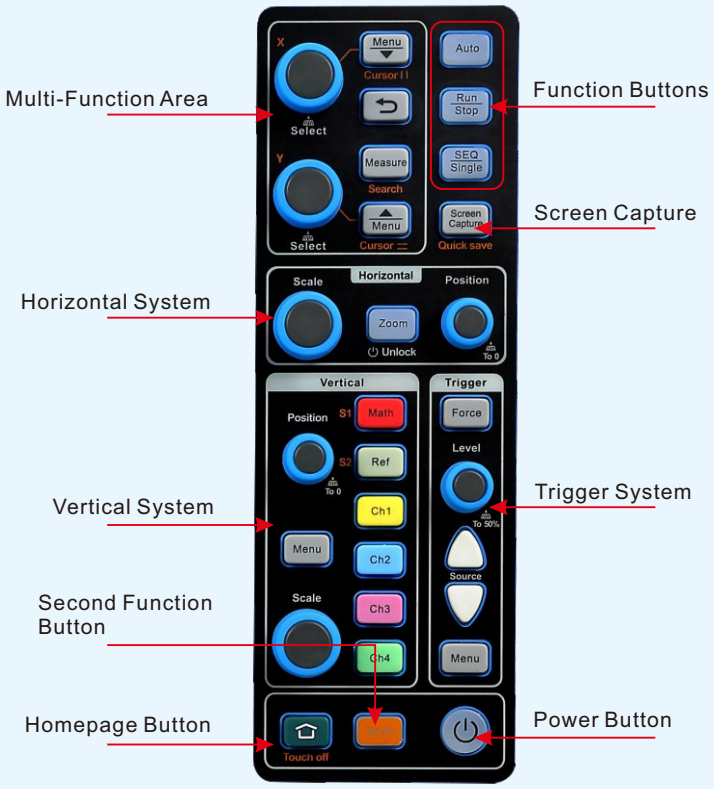
As Micsig's newest portable smart oscilloscope, STO1000E's bandwidth upto 150MHz,1GSa/s sample rate, 70Mpts memory depth, 2 & 4 Channels, and 130,000 wfm/s waveform capture rate.Support serial bus trigger and decoding; it also equipped with various measurements and mathematical functions; 256-level waveform grayscale display and color temperature display; compatible with ports like LAN, Wi-Fi, USB 2.0, USB Device, HDMI, Trigger out; 800 * 600 8-inch capacitive touch screen Support three operation modes: Full screen-touch, Knob panel, and mixed Touch + Panel.

Product appearance



Weight: 4CH Oscilloscope 1425g Battery 320g

Independent Control Panel



Technical Features

Ultra-high Waveform Capture Rate

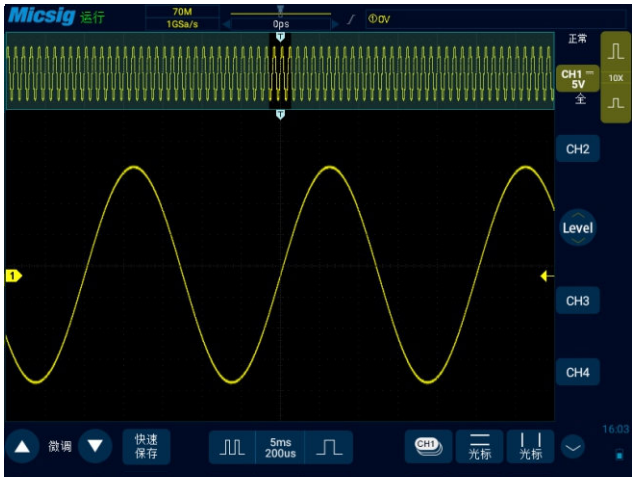
Maximum 130,000wfm/s capture rate.By increasing the waveform capture rate, you see a more complete picture of what is going on with the signal.

31 Types of Auto Measurements

31 automatic measurements. Various automatic measurements can meet different measurement demand. It can be display all in one page.

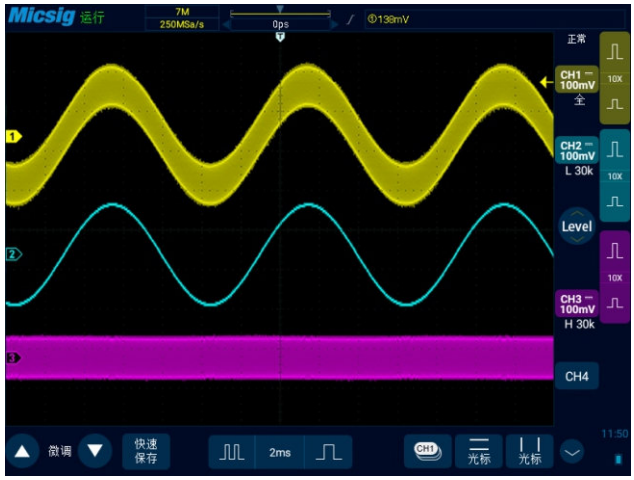
Powerful Trigger Functions

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 70Mpts memory depth ,Zoom into a selected part of the captured waveforms to get more details.



Hardware High-pass / Low-pass Digital Filtering

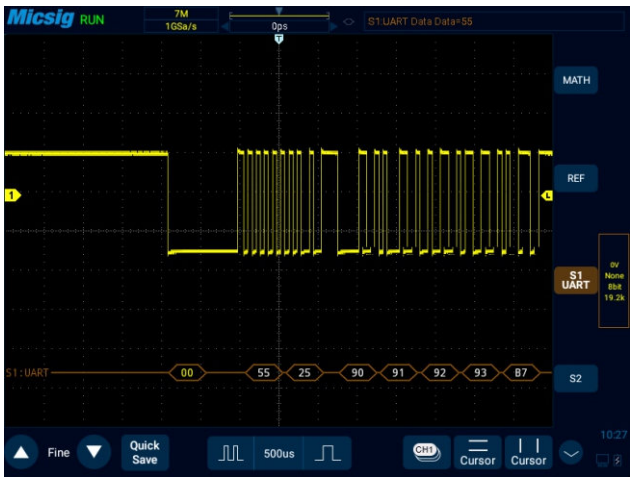
Most engineers focus on the details of a certain frequency band of asignal. Filtering out insignificant frequency to eliminate interfer ence, realizes a better judgement of the signal

Autoranging

STO1000E 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.

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.

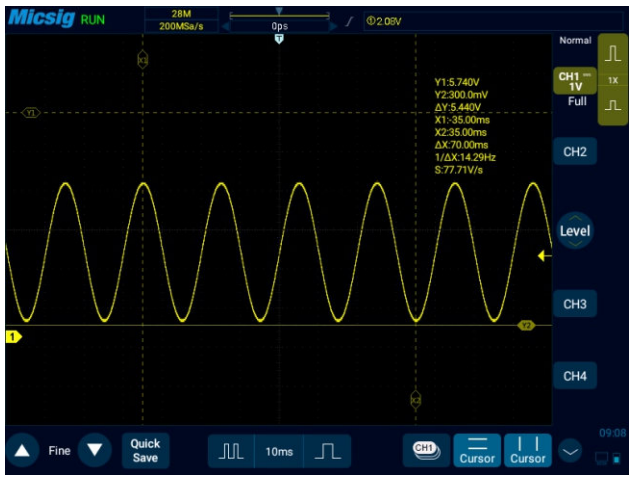


Serial Bus Decoding and Analysis

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

Decode Text Mode

Supports bus text decoding mode, able to store or export data for further analysis.

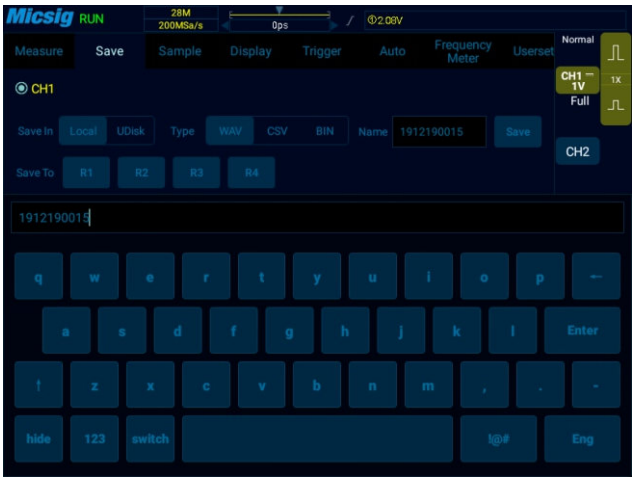


Convenient Cursor Measurement

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!

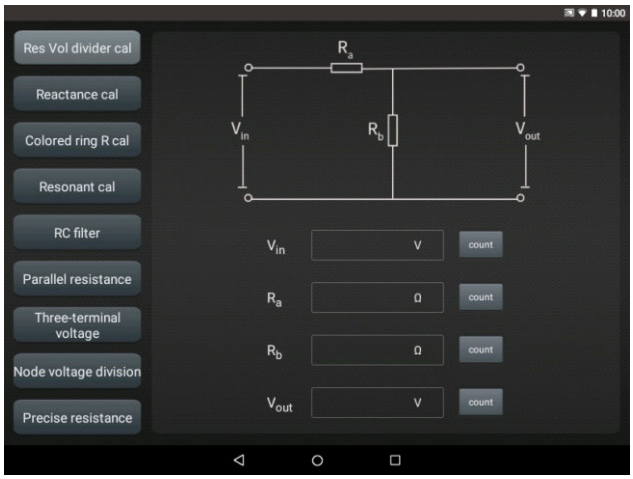
Screenshot inverse and Timestamp

STO1000E 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.

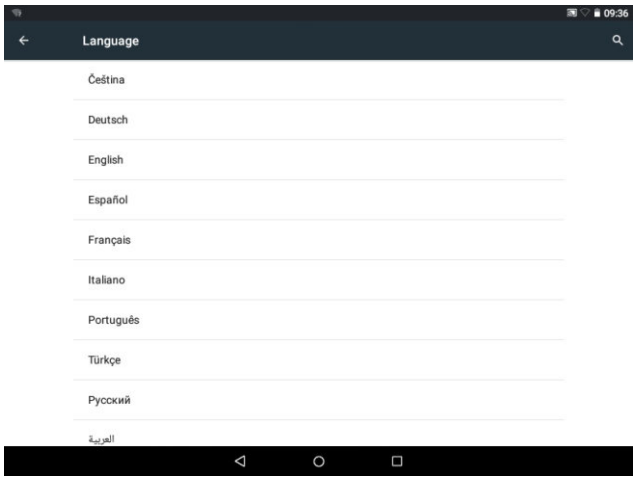


Soft Keyboard Input

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%.



Electronic Calculation Tool Function



Support Simplified / Traditional Chinese, English

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.

Product model

	STO1102E	STO1152E	STO1104E
Bandwidth	100MHz	150MHz	100MHz
Channels	2	2	4
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 depth(1 Ch)	70M	70M	28M
Memory depth(2 Ch)	35M	35M	35M
Memory depth(4 Ch)	/	/	17.5M

Product parameters

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%||14.5pF±3pF
Vertical resolution	8 bit
DC gain accuracy (Amplitude accuracy)	＜±2%（1MΩ input)
Vertical scale factor	⩾40dB（100:1）
Channel-to-channelisolation DC tomaximum bandwidth	1mV/div~10V/div（1MΩ input)
Offset range	± 2.5V (with probe multiple X1, <500mV/div), ±120V (with probemultiple X1, ⩾500mV/div)
Noise	⩽1mV
Maximum input voltage	CAT I 300Vrms（1MΩ input)
Sampling system	
Sampling mode	Real time sample rate
Peak sampling	All the sampling glitches in scanning rate are narrow to single channel
Sample rate 1G Sa/s	1 ns, dual channel 2 ns .four channel 4ns
Maxduration in the max sampling rate	
Sample rate 1G Sa/s	70ms
Sample rate 500M Sa/s	140ms /70ms
Sample rate 250M Sa/s	280ms/140ms/70ms
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 holdoff 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 clockto look for the pattern on a clock edge. Pattern (AND, OR, NAND,NOR) specified for all input channels defined as High, Low, or Don'tCare
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 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.
Nth edge	Trigger on the Nth rising/falling edge of the waveform
Bus	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 **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

Horizontal system

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

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 : 2.4K~625Kbps
LIN	Source :Ch1 , Ch2 , Ch3, Ch4
	Idle level: high level / low level
	Baud rate : 2.4K~625Kbps
1553B(optional)	Source :Ch1 , Ch2 , Ch3, Ch4
	Display:binary, hexadecimal
429(optional)	Source :Ch1 , Ch2 , Ch3, Ch4
	Format:LABEL_DATA , L+D+SSM , L+SDI+D+SSM
	Display : binary, hexadecimal
	Baud rate : 12.5Kbs/100Kbps

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	130,000wfms/s
Time	Real time, user adjustable
Language	English,Chinese(standard),German, French, Czech, Korean, Spanish,Italian(Options)

Storage

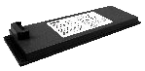
Storage format	Local,UDisk
Built-in storage	8G
Storage format	Csv,wav,Bin
Waveform storage number	Unlimited
Waveform storage name	Support
Display the reference waveform quantity	4 pcs
Screenshot	Support
Video recording and playback	Support
User setting number storage	10
User name setting	Support
Flash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

Power source	
Power source voltage	100~240V AC,50/60Hz
Power consumption	＜60W
Fuse	12V DC，5A
Built-in Battery	7.4V , 7500mAh
Waveform measurements	
Cursor	Horizontal, vertical, cross
Auto measurements	31, 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.
Interface	
USB2.0interface	Support 1 USB mass storage devices, can read and write
Micro USB2.0interface	1,support read and write
DCinterface	1,Oscilloscope power supply
Probe calibration port	1KHz,2Vpp
LAN	Support
HDMI	1.4
WIFI	Support
Android APP	Support
IOS APP	Support
Computer software	Support
Environment	
Temperature	
Operating	0℃~45℃
Npn-operating	-40℃~60℃
Humidity	
Operating	5%to 85%,25℃
Non-operating	5%to 90%,25℃
Altitude	
Operating	＜3000m
Non-operating	＜12000m
Physical characteristics	
Dimensions	280*180*50mm
Weight	
Net	
2CH Bare	1340g
4CH Bare	1425g
Shipment	
2CHBare	2745g
4CHBare	2930g

Accessory

Standard accessories

Model	Product	Parameters
 P130A	Passive probe	Bandwidth:200MHz (One per channel)
	BNC cap	BNC cap (One per channel)
	Dedicated Carry Strap	Leather Carry Strap
	Dedicated protective film	Anti-slip and anti-reflective

Model	Product	Parameters
	Adapter	12V DC，5A
	Power cable	Dedicated Oscilloscope Power cable
	Lithium Ion Battery	7.4V 7500mAh

Optional Accessories

Model	Product	Parameters
	Oscilloscope handbag	Wear-resistant canvas material
	HDMI Cable	1.6m
 T3100	high voltage probe	Test current range: 0.1A-1000A Operation frequency: 10Hz-100KHz
 AC1000	AC current probe	Test current range: 0.1A-1000A Operation frequency: 10Hz-100KHz

Model	Product	Parameters
 DP10013	High-voltage differential probe	Bandwidth :100MHz Maximum input differential voltage(DC+AC PK-PK): 1300V
 DP20003	High-voltage differential probe	Bandwidth :100MHz Maximum input differential voltage(DC+AC PK-PK): 5600V
 CP2100A	AC/DC current probe	Bandwidth : 800KHz Vertical scale: 10A/100A
 CP2100B	AC/DC current probe	Bandwidth : 2.5MHz Vertical scale: 10A/100A

Ordering information

Step 1,Select STO1000E series basic models

STO1000 family	
STO1102E	Tablet touch digital oscilloscope,100MHz 2 analog channels, single channel sampling rate 1G Sa/s,70Mpts
STO1152E	Tablet touch digital oscilloscope,150MHz 2 analog channels, single channel sampling rate 1G Sa/s,70Mpts
STO1104E	Tablet touch digital oscilloscope,100MHz 4 analog channels, single channel sampling rate 1G Sa/s,70Mpts

Step 2: Configure your STO1000E by adding instrument options

Instrument option	
All STO1000E 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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