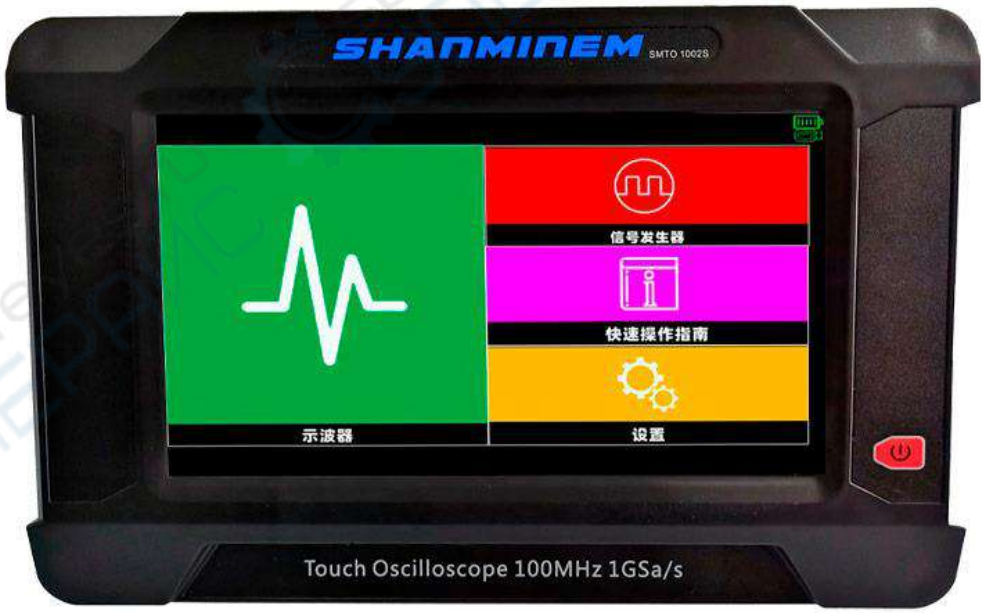
User manual SMTO1002S



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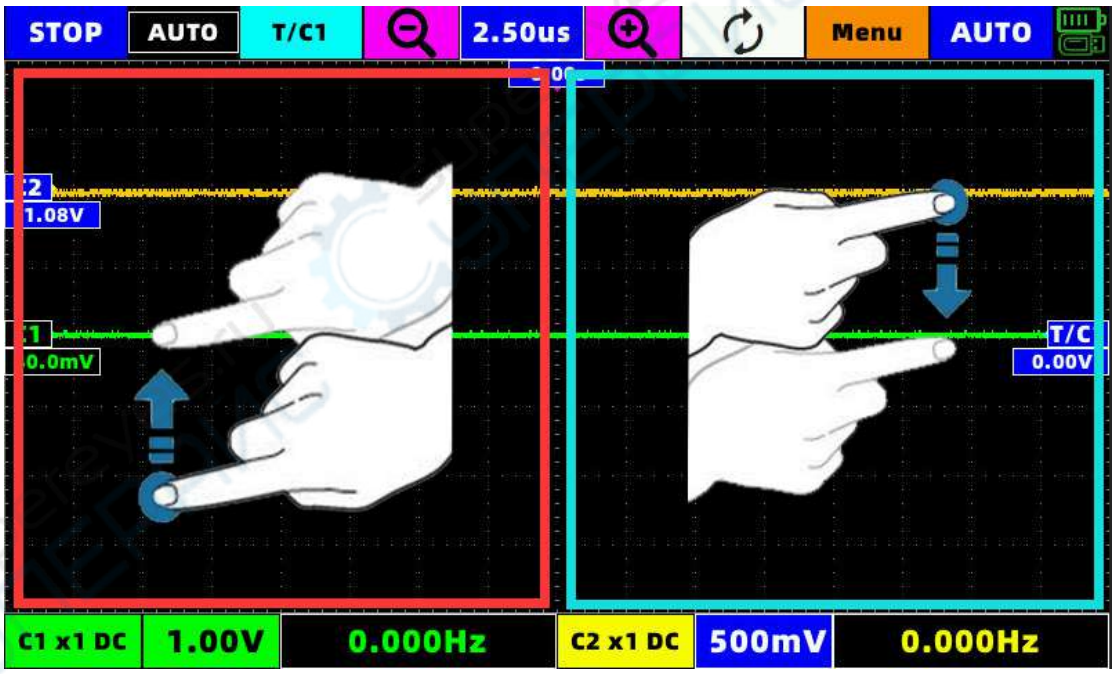
SMTO1002S series manual

1. Operation guide:

1.1 Operating area

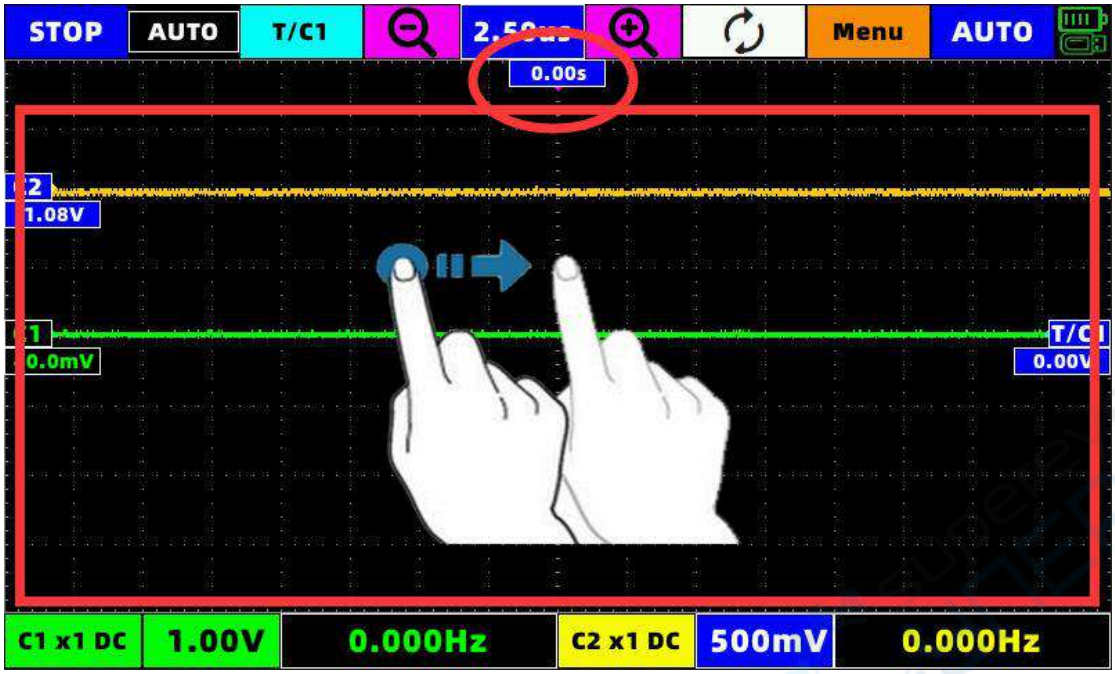


In the red area in the figure, slide up and down with a single finger, and the operability icon is C1, C2, V1

In the blue area in the figure, slide up and down with a single finger, and the operability icon is T/C1, V2

Select the icon you want to slide to turn it blue (active), and slide your finger up and down anywhere in the corresponding operation area to move the icon.

The icon will move with the speed of the finger.



Swipe left and right with one finger in the red area in the picture, and the operability icon is T (Icon in red circle) S1, S2

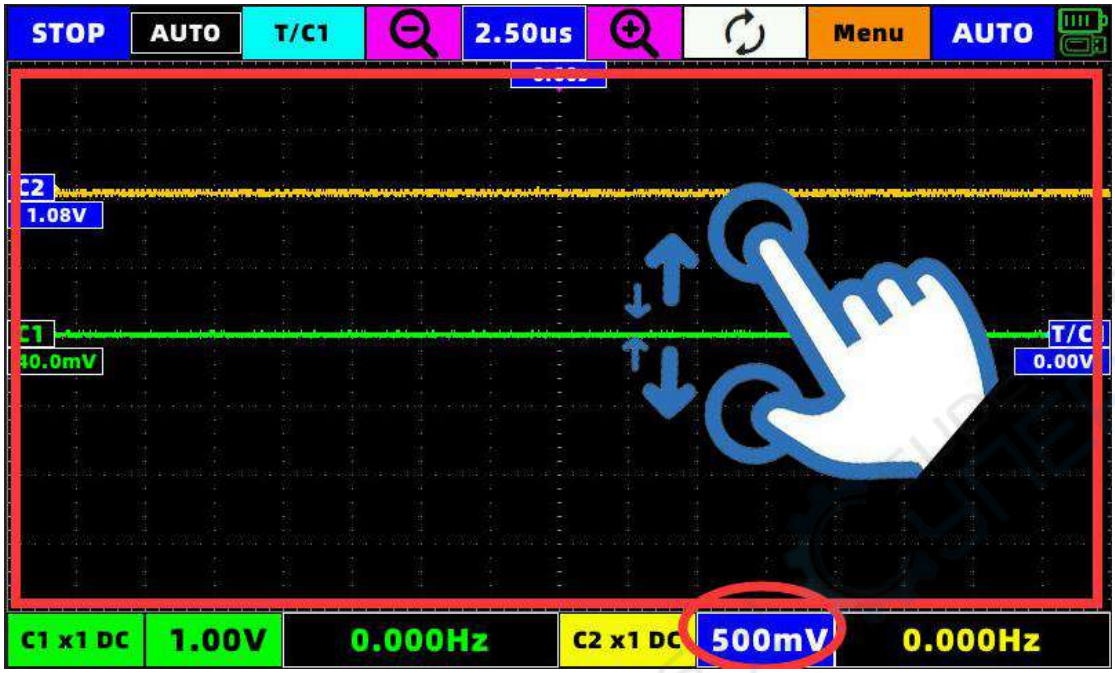
Select the icon you want to slide to turn it blue (active), and slide your finger up and down anywhere in the corresponding operation area to move the icon.

The icon will move with the speed of the finger.

1.2 Multi-point gesture operation

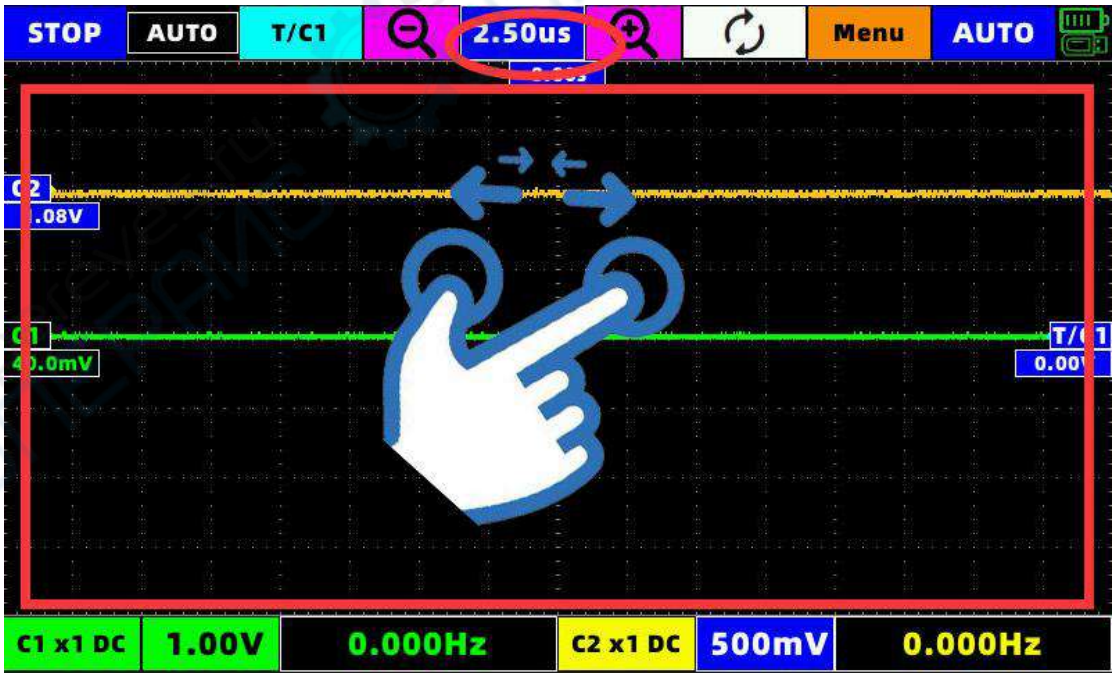
This machine supports 2-point gesture operation and 3-point touch screen capture.

1.2.1 Two-point gesture operation



When the C1 or C2 channel is selected and the red circle turns blue, the two-point touch will take effect for that channel.

(Portrait) Two-point touch you can change the magnification of the waveform (that is, change the voltage gear)



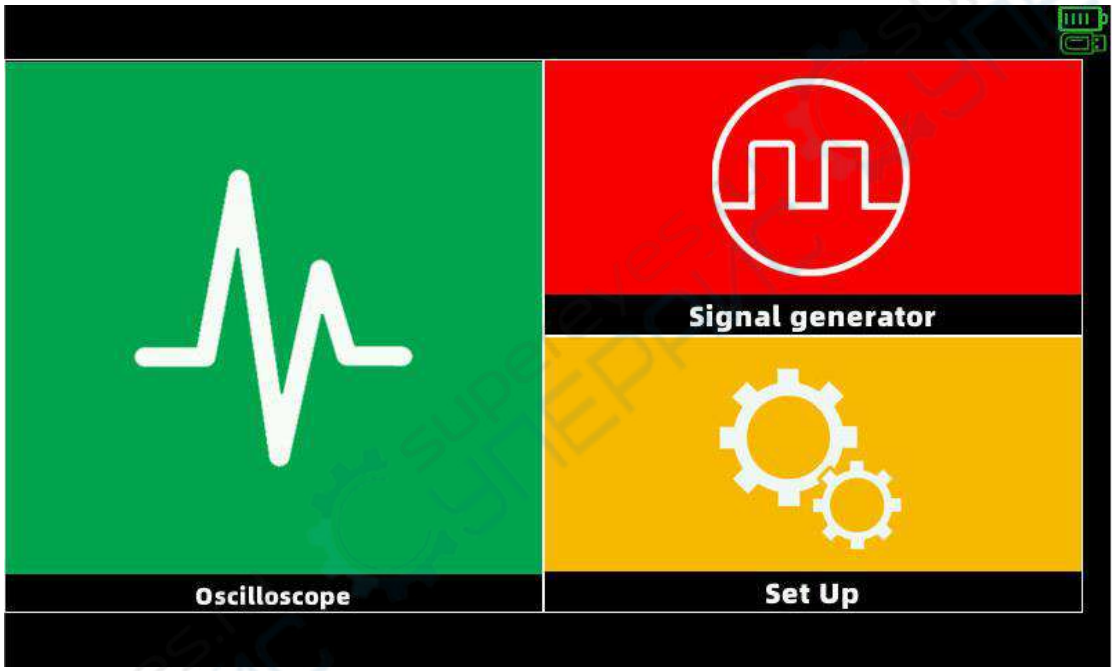
(Horizontal) Two-point touch the time base of the waveform can be changed (the value in the red circle in the figure)

1.2.2 Three-point gesture operation

After inserting the U disk, at any position on the screen, tap three fingers at the same time for 1 second after the buzzer sounds, a progress bar will appear, and the screenshot will be completed after the progress bar runs through the buzzer prompt.

2. Interface description:

Boot into the main interface:

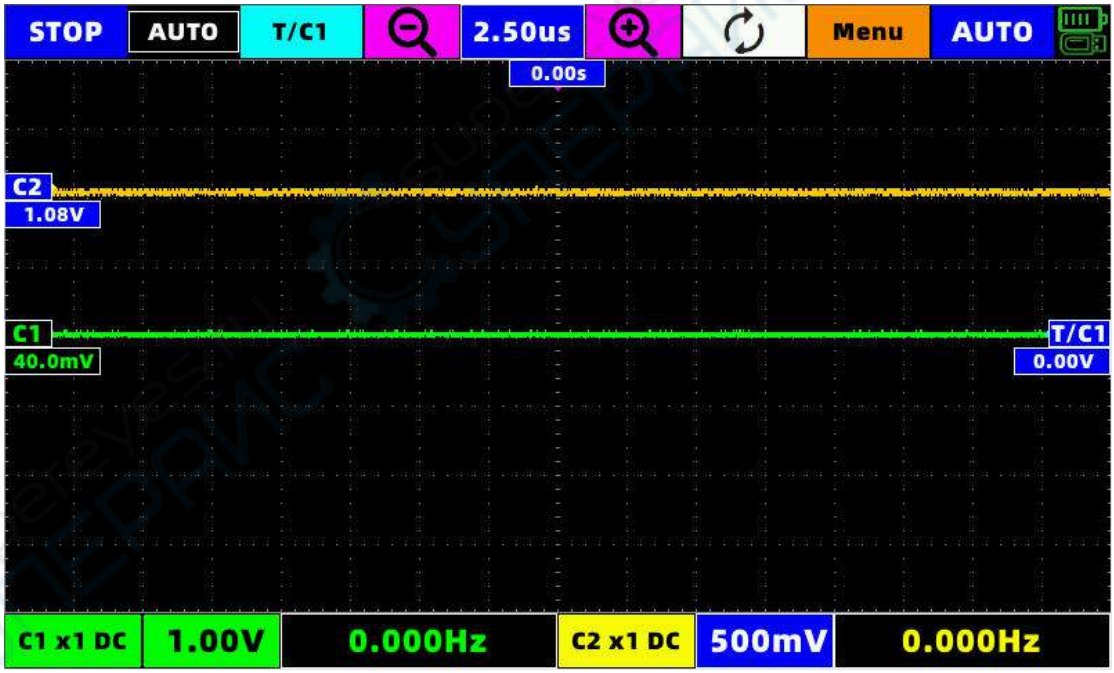


The main interface can choose oscilloscope, signal generator and setting interface.

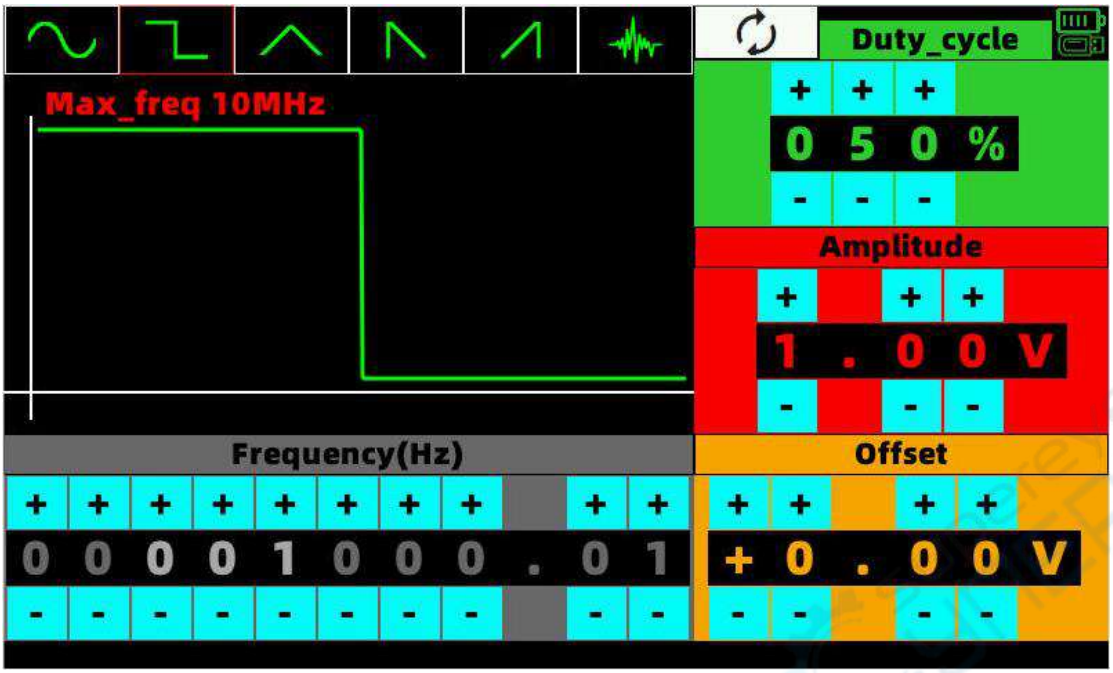
Click settings to see

Language selection, sound switch, brightness adjustment and software and hardware version number. You can modify it as needed.

Click on the oscilloscope to enter the oscilloscope interface:



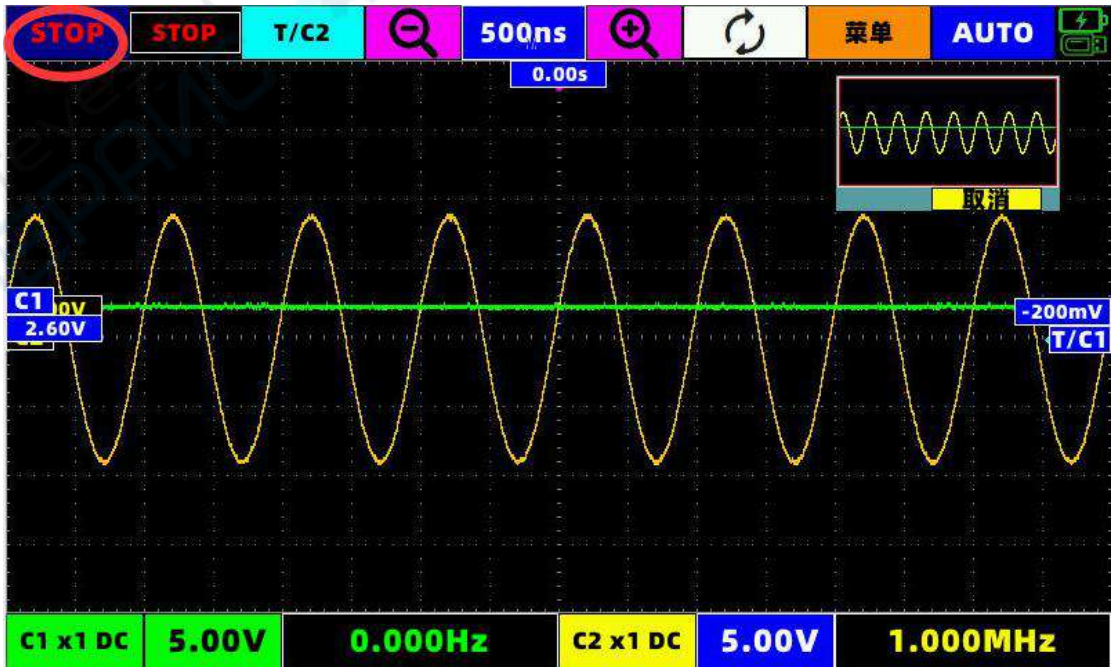
Click on the signal generator to enter the signal generator interface:



3. Oscilloscope instructions:

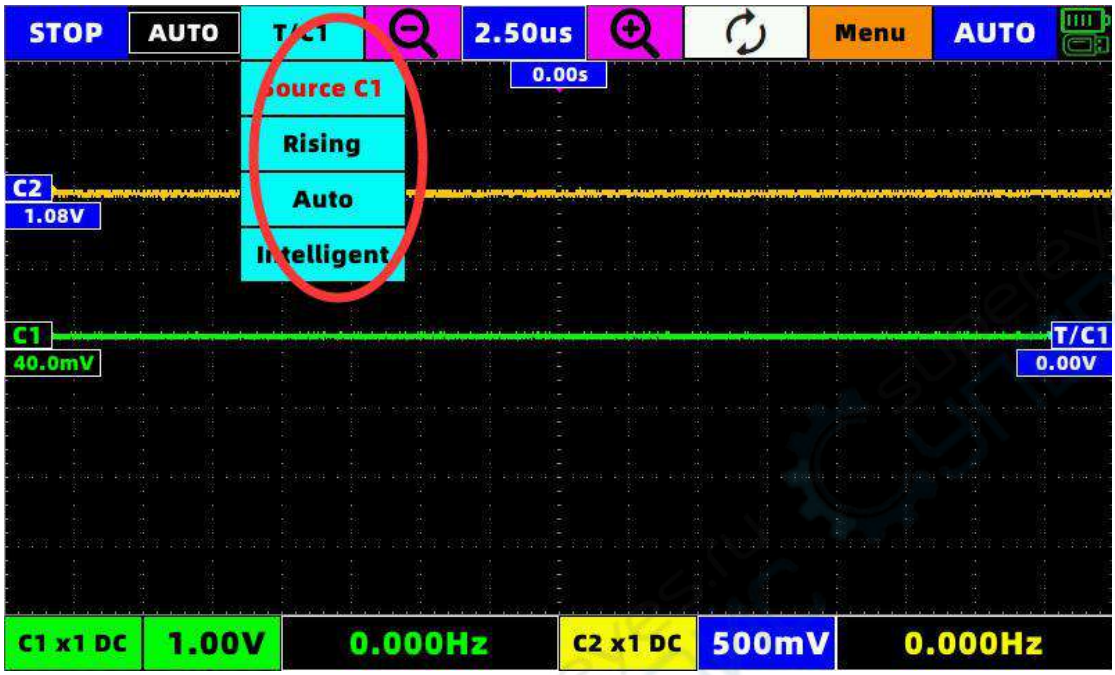
3.1 STOP key:

Press stop to stop the waveform, and the stopped waveform can be zoomed in and out to view the details. There is a small image of the original waveform in the upper left corner.



3.2 Trigger option key:

Click the red circle T/C1 button, and the trigger option will pop up



Can choose

Signal source C1 or C2

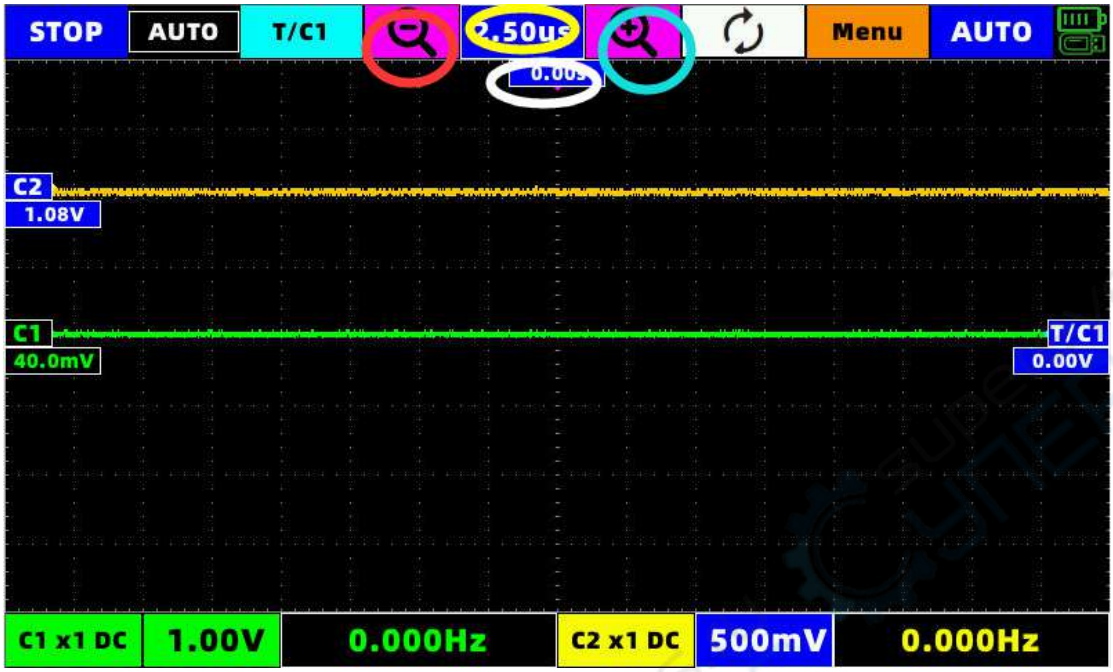
Rising edge or falling edge

Auto trigger, normal trigger and single trigger

Smart trigger or manual trigger

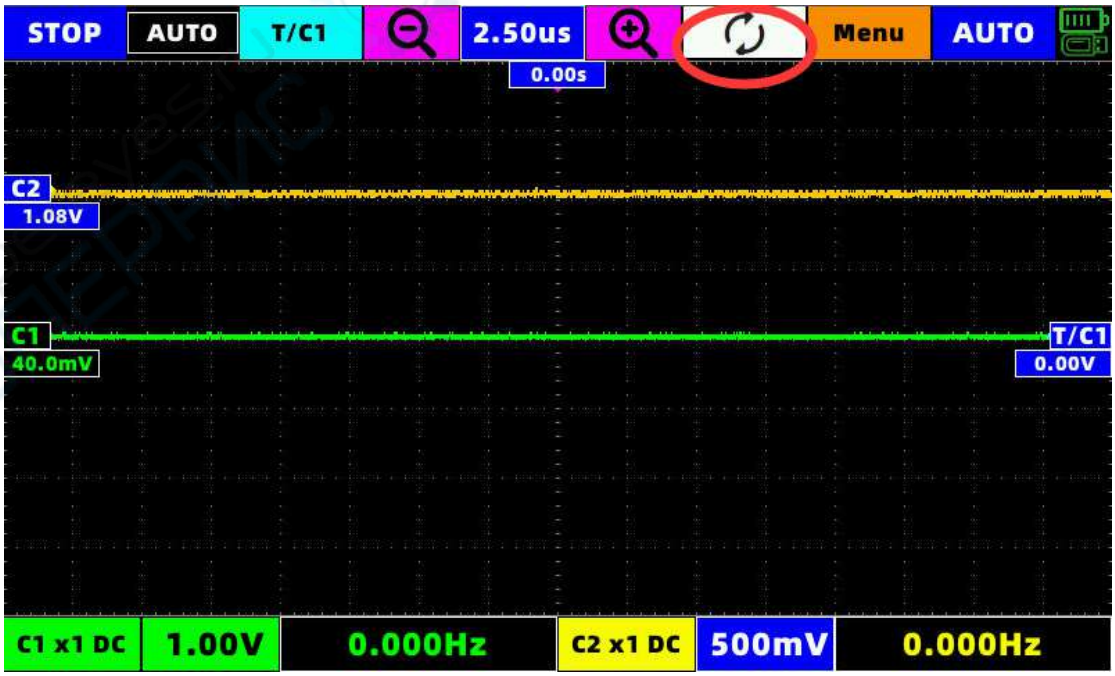
Note: There is no need to manually adjust the trigger position of the waveform under smart trigger, the program will automatically find the appropriate trigger position and trigger the waveform.

3.3 Time base button:



The button in the red circle in the picture is to reduce the time base, and the button in the basket is to zoom in the time base, while the button in the yellow circle displays the current time base value, the time position (that is, the parameter in the white circle) can be returned to zero with one key.

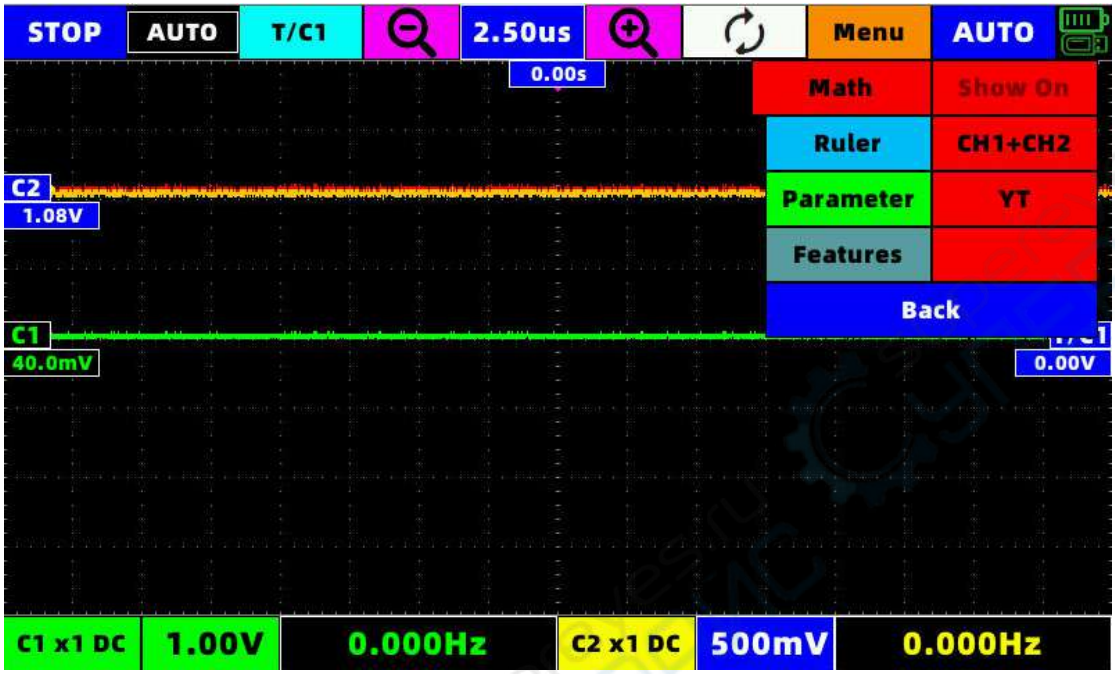
3.4 Oscilloscope-signal generator switch button



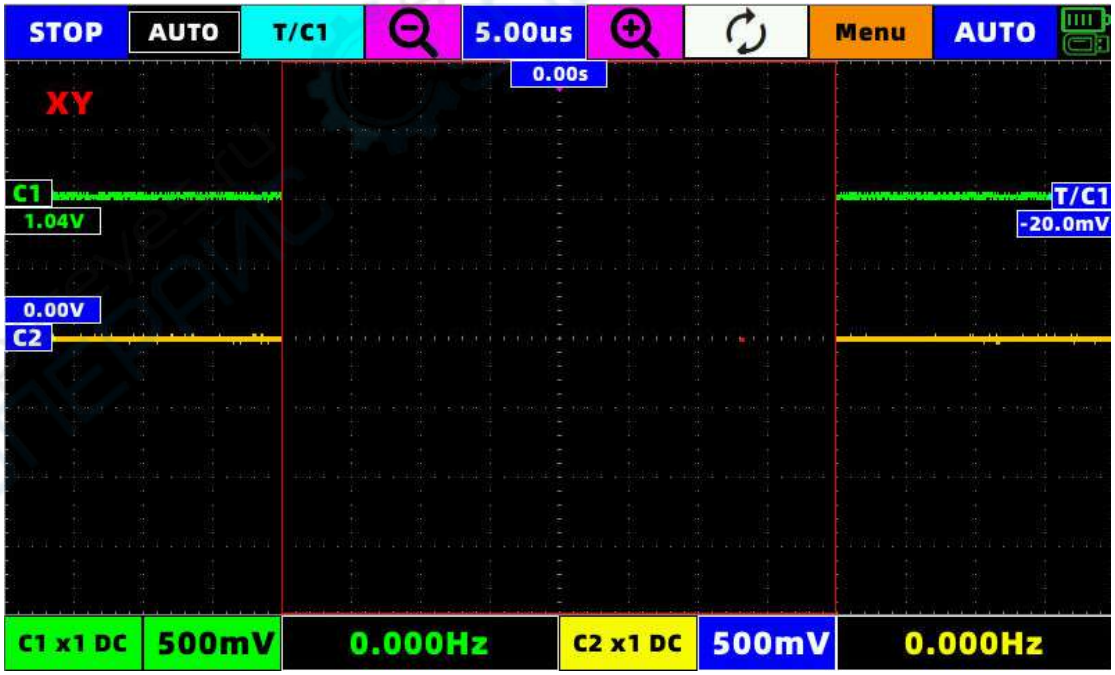
This switch key can switch between oscilloscope and signal generator with one key.

3.5 Menu:

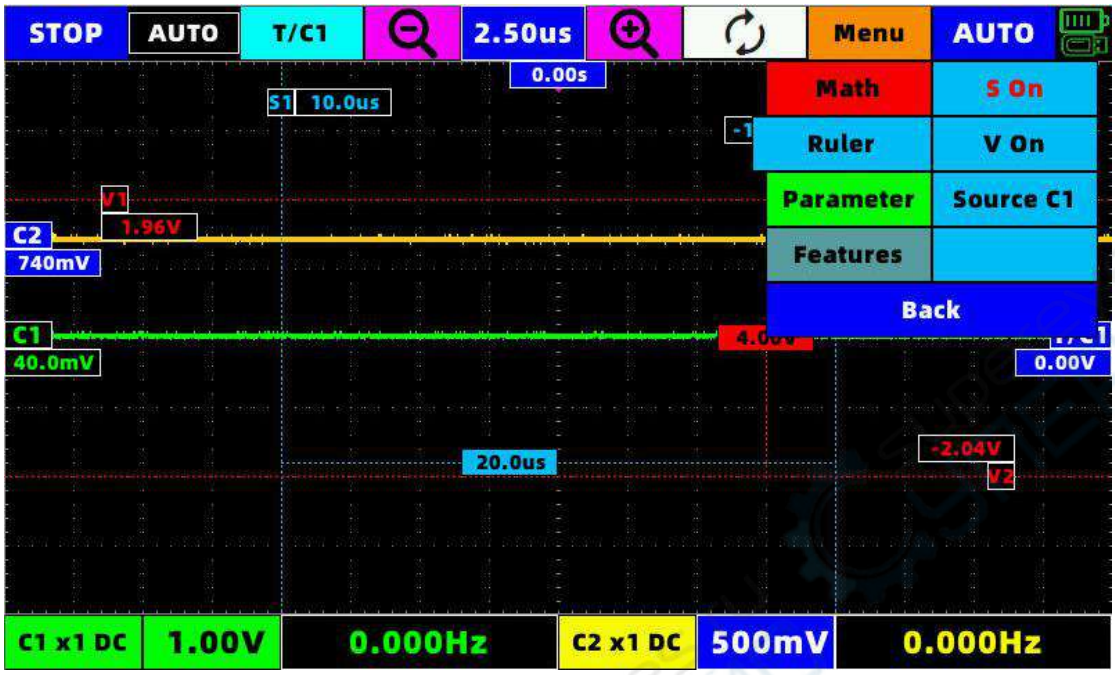
3.5.1 Mathematical calculation



In this interface, you can choose to turn on or off the display of mathematical calculations, and you can choose YT or XY (Li Shayu) display mode



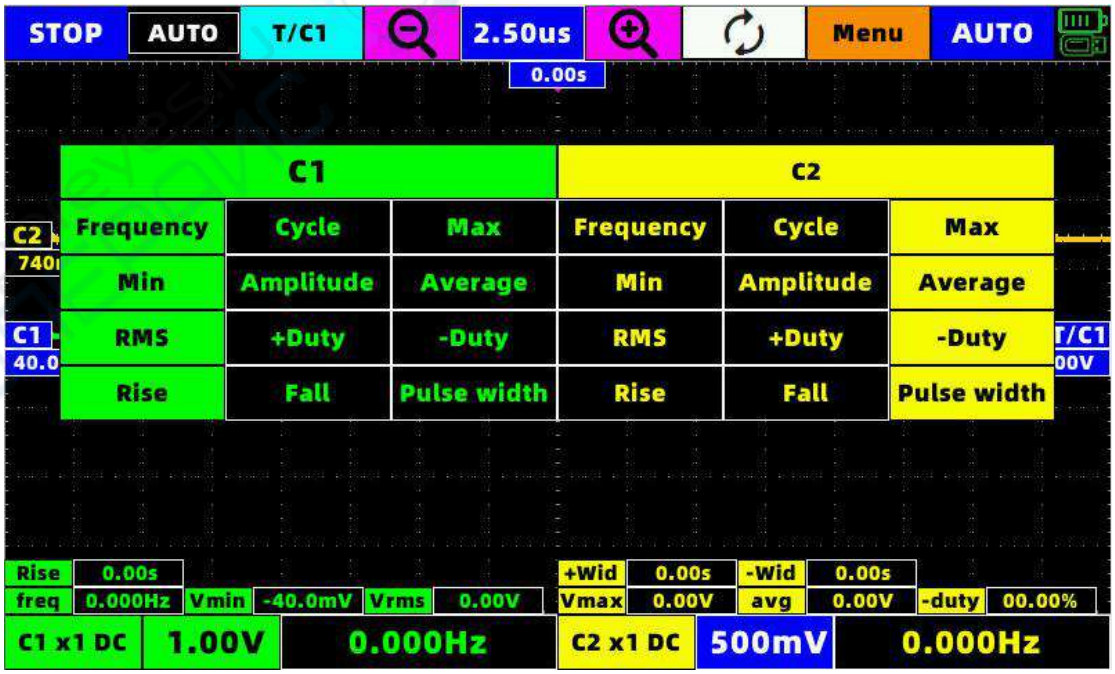
3.5.2 Ruler menu:



The horizontal and vertical rulers can be opened in this interface. As shown in the figure, the movements and selections marked follow the operation guide.

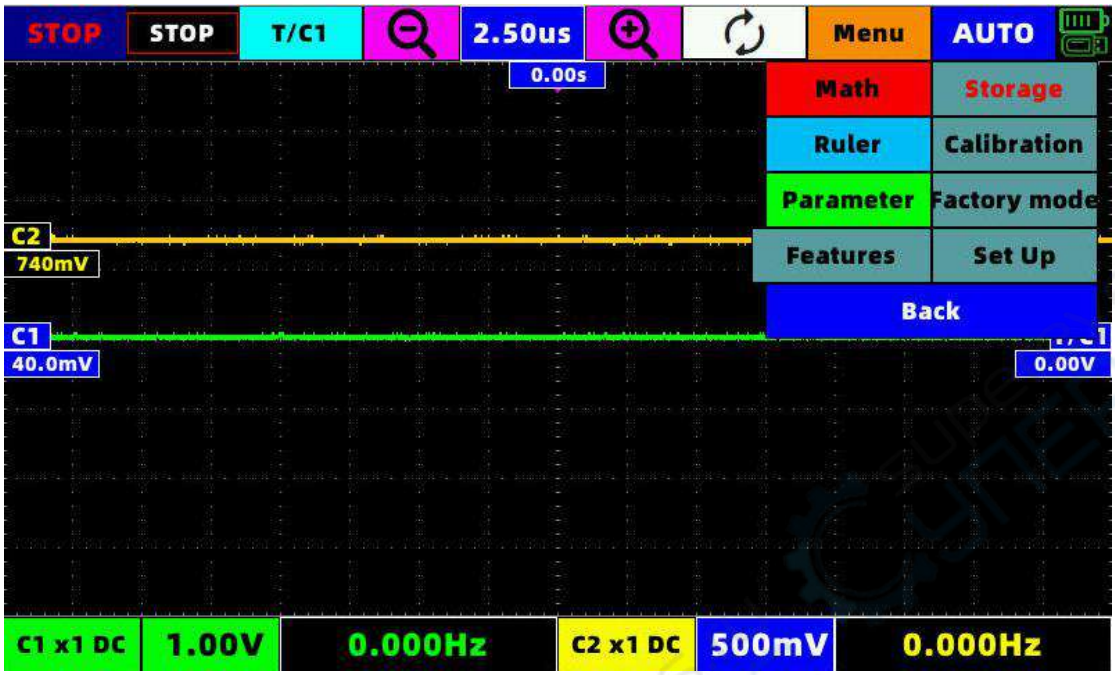
The signal source for simultaneous calculation can be C1 or C2

3.5.3 Parameter display:

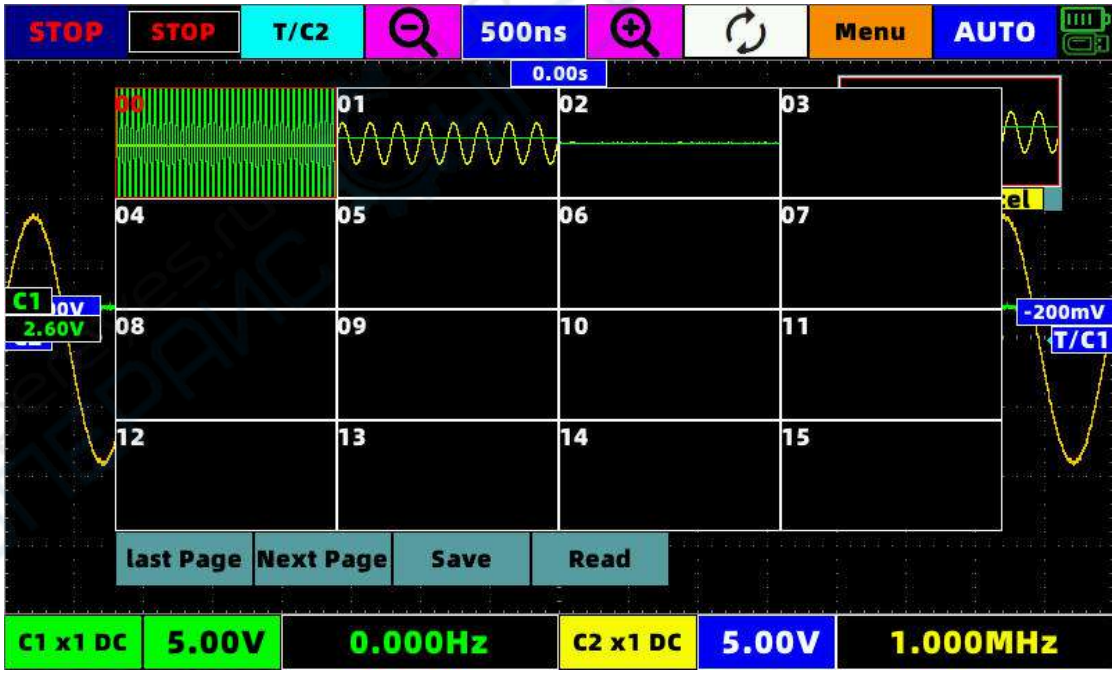


After opening the parameter display, you can select the parameter to be displayed by the corresponding channel, and the parameter will be displayed at the bottom of the screen.

3.5.4 Function options:



3.5.4.1 Store waveform



After clicking to store the waveform, the current waveform will automatically stop and enter the stop state.

In this interface, you can choose to save or read the waveform data of the previous waveform.

The read waveform data can be arbitrarily zoomed in and out to view the details, which is equivalent to the stop state.

3.5.4.2 Automatic calibration

This button will automatically calibrate the oscilloscope parameters.

Warning! Do not operate the device during automatic calibration, and do not connect any external connectors!!!

3.5.4.3 Restore Factory

This button will return the machine's settings and some parameters to the factory state.

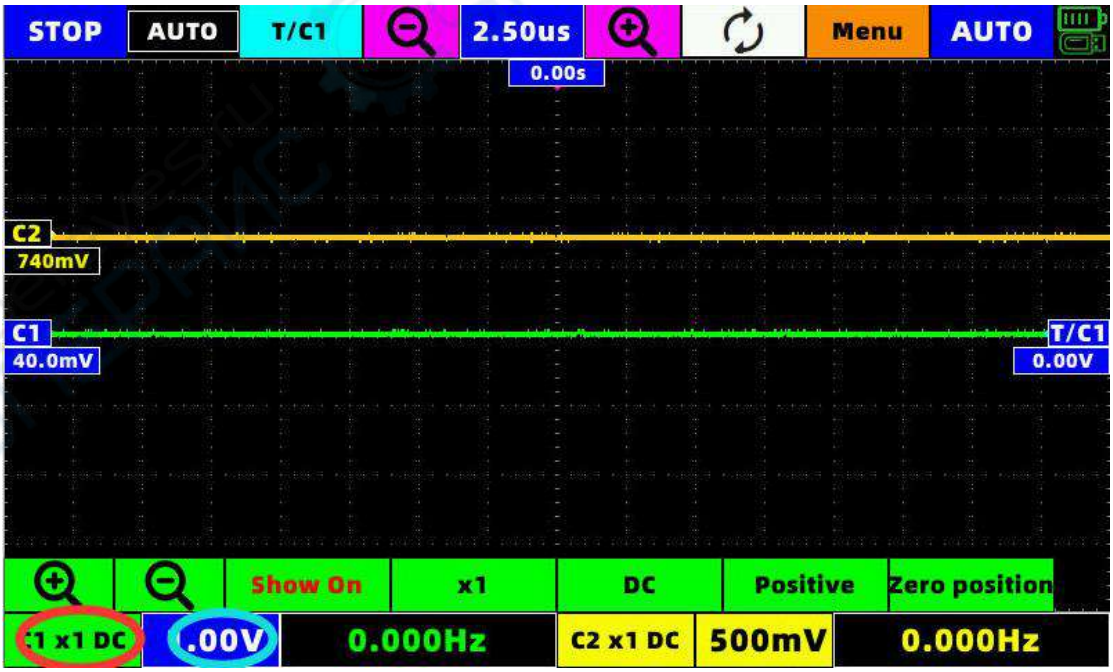
3.5.4.4 Set up

Equivalent to the settings of the main interface

3.5.4.5 Return

Can return to the main interface under the oscilloscope interface.

3.6 C1 channel menu



In this interface, you can zoom in and out the waveform voltage range of C1,

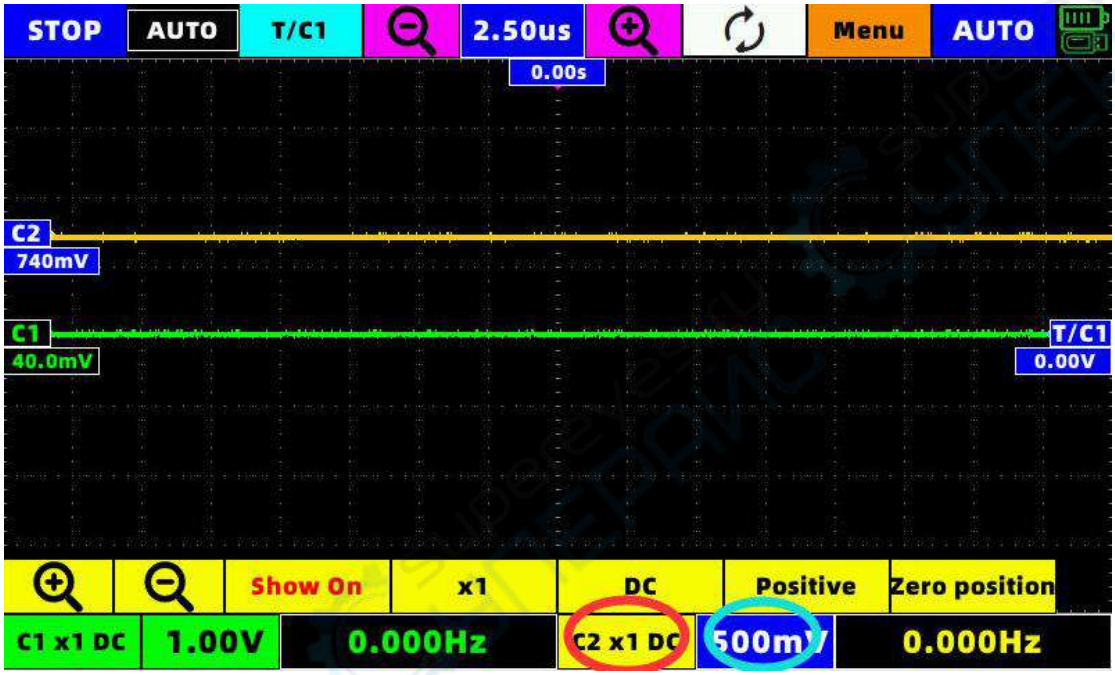
You can choose whether to display the C1 waveform

Select the X multiple of the probe

Choose AC, DC
Select whether the display of C1 waveform is inverted
The vertical position of C1 can be returned to zero with one key

The red circle in the picture can select the C1 channel, and the basket ring can quickly open or close the C1 channel

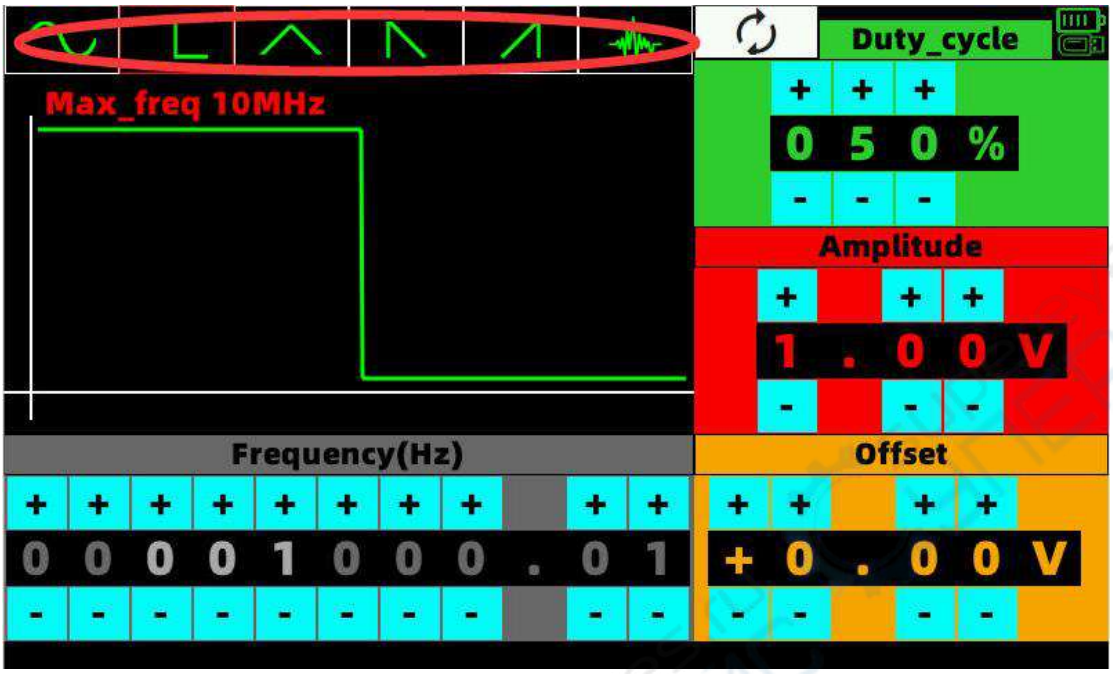
3.7 C2 channel menu



In this interface, you can zoom in and out the waveform voltage range of C2,
You can choose whether to display the C2 waveform
Select the X multiple of the probe
Choose AC, DC
Select whether the display of C2 waveform is inverted
The vertical position of C2 can be returned to zero with one key

The red circle in the picture can select the C2 channel, and the basket ring can quickly open or close the C2 channel

4. Signal generator instructions:



Through the corresponding +,- to modify the frequency, amplitude, offset, duty cycle and other signals, the waveform will be directly changed in real time.
The red circle area can select the waveform to be output.

5. Screenshot

After inserting the U disk, at any position on the screen, tap three fingers at the same time for 1 second after the buzzer sounds, a progress bar will appear, and the screenshot will be completed after the progress bar runs through the buzzer prompt.

6. Program upgrade

When the machine is turned on, insert the U disk containing the upgrade file, and then power on, the device will automatically enter the U disk upgrade program, click the upgrade button in the upgrade program, wait for the upgrade progress to 100% and automatically shut down.

Warning! Make sure that the battery level of the device is in the green mode when upgrading!!

7. Oscilloscope parameters:

Number of channels	2
Maximum sampling rate	1GSa/s for single channel, 500MSa/s for double channel
Bandwidth	100M
Impedance	1MΩ, 25pF
Storage depth	32K per channel
Vertical resolution	8bit
Vertical gear	In the case of probe X1, 10mV - 5V (1, 2.5, 5 step) maximum measuring voltage X1 (40V), X10 (400V). Use high-voltage probes, the maximum voltage is determined by the quality of the probe.
Horizontal gear	5s - 10ns (1, 2.5, 5 step) 5s - 100ms (scan mode)
Automatic measurement parameters	13 kinds (frequency, period, amplitude, maximum, minimum, average, effective value, positive duty cycle, duty cycle negative, positive pulse width, negative pulse width, rise time, fall time)
Trigger mode	Automatic, normal, single
Trigger type	Rising edge, falling edge
Auto range	50Hz - 30MHz
Cursor	Both vertical and horizontal support cursor measurement
Waveform record	32 groups (recording waveform supports zoom in and zoom out to view details)
Screenshot	Support U disk screenshot (picture format jpg)
Mathematical calculation	CH1+CH2, CH1-CH2, CH2-CH1
Display mode	YT mode + XY mode (Li Shayu mode)
Automatic calibration	stand by
Display	7 inch capacitive touch screen
Battery	8000mA large-capacity lithium-ion battery (full charge can be used for more than 7 hours)
Recharge	Maximum support 5V 2.1A DC charging. (the light reflects the charging status in real time)

8. Signal generator parameters:

Amplitude:	0 V – 8 V (minimum resolution 10mV)
Offset:	0 V - (+ - 4 V) (minimum resolution 10mV)
Duty cycle:	0 % - 100 % (minimum resolution 1%)
frequency:	
Sine wave:	0.01 Hz – 30 MHz (minimum resolution 1/1000)
Fang Bo:	0.01 Hz – 10 MHz (minimum resolution 1/1000)
Other waveforms (triangular wave, sawtooth wave, ringing wave):	0.01 Hz – 1 MHz (minimum resolution 1 / 1000)

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