

Shenzhen DYX Technology Co., Ltd.

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district, ShenZhen, China.

Intelligent Analysis Oscilloscope **Instruction for Usage**

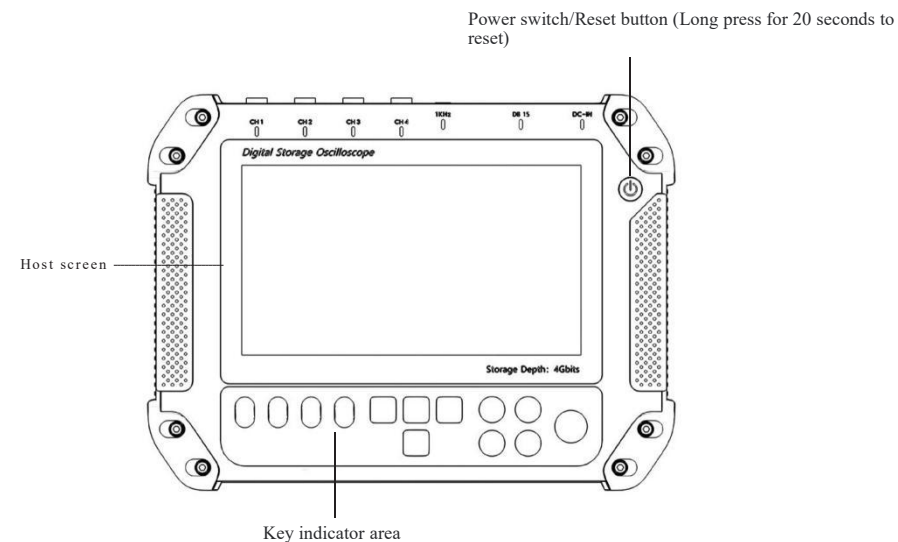
Model: T80

Catalogue

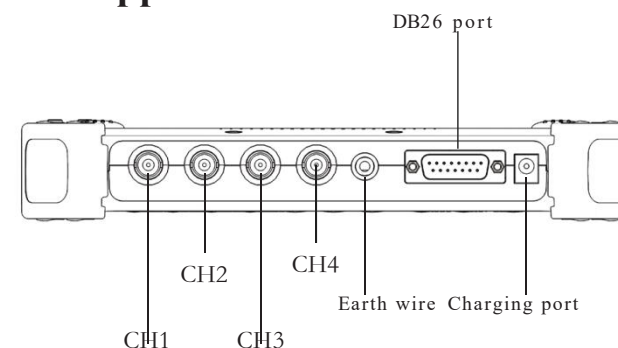
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Product Appearance

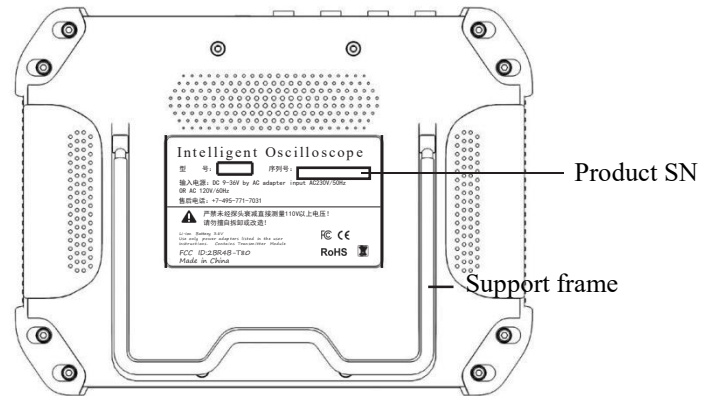
1.Front of machine



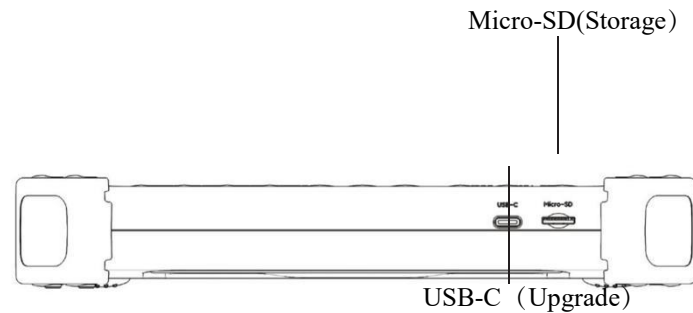
2.Ports on upper surface of machine



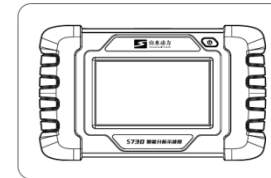
3.Back of machine



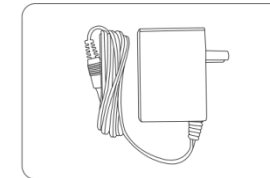
4.Bottom of machine



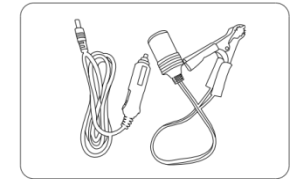
Product Configuration



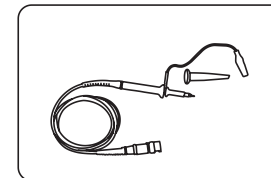
Host machine 1PCS



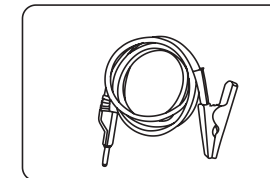
Charger 1PCS



Cigarette lighter (male and female) 1 pair



Oscilloscope probe 4 PCS



Earth wire 1PCS



P-wires 11 PCS

Instruction for Usage

1.Connection approaches for data collection

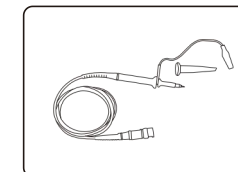
Approach 1

1. Prepare the required accessories: A:

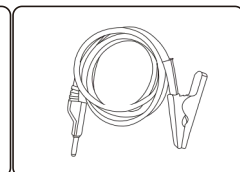
Oscilloscope probes: 2PCS

B: Earth wire:

1PCS As shown on the right:

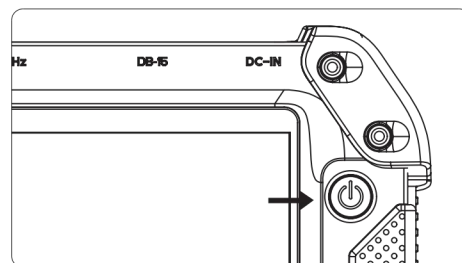


Oscilloscope probe



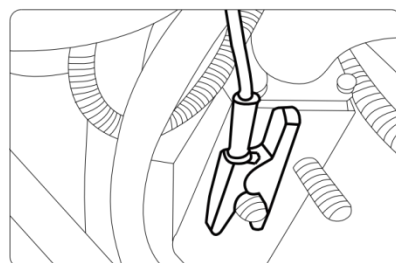
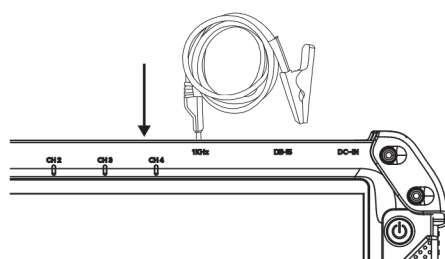
Earth wire

2. Long press the switch button for about 3 seconds, release the button when a drop sound is produced, the host automatically start, as shown on the right:



Switch button

3. Connect one end of the earth wire to the grounding port of the host, and connect the alligator clip to the earth wire of the engine, that is, the engine housing.



4. Connect the oscilloscope probe to the host, as shown in Figure 1 connect the oscilloscope probe to the target circuit, as shown in Figure 2: The oscilloscope probe has 2 gears: X1, X10, please be sure to put the button on the gear of the X1, as shown in Figure 3 (probe has been locked in the position of the X1 when it was manufactured, if you have no special needs, please do not open)

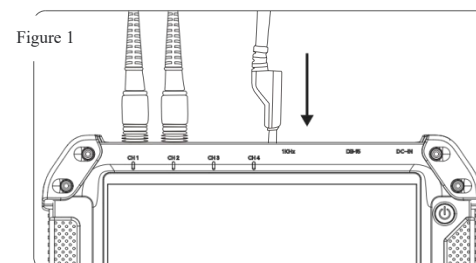


Figure 1

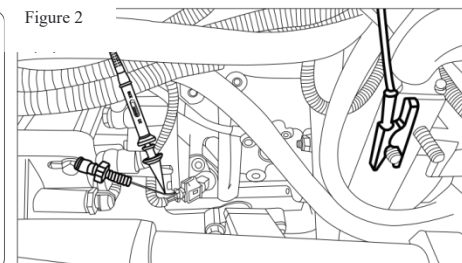


Figure 2

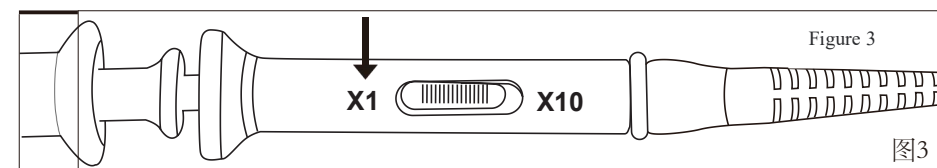
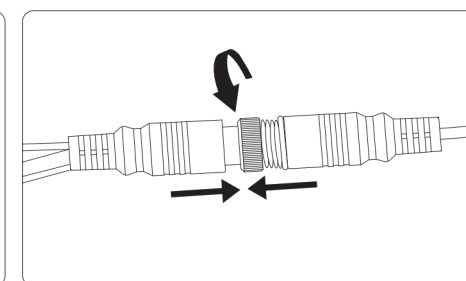
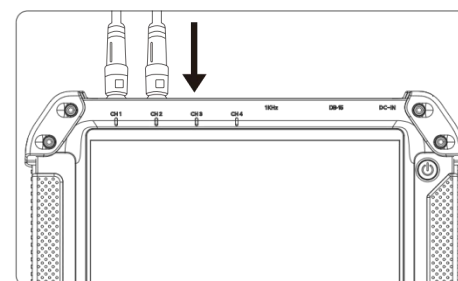


Figure 3

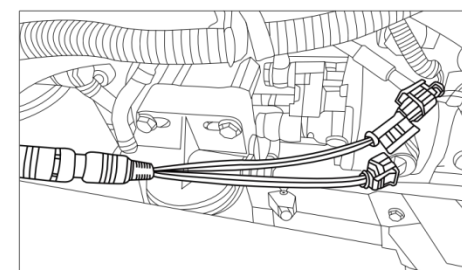
图3

Approach 2

1. Connect quick plug principal line of the oscilloscope to the host, and the quick plug (Y-shaped wire) is connected to the quick plug principal line, as shown in the following figure: 如



2. The Male of quick connector(Y-shaped head) is connected to the camshaft/crankshaft sensor's harness end, and the Female connector is connected to the camshaft/crankshaft sensor. As is shown in the figure on the right:



General Purpose Oscilloscope Function

Click on the general purpose oscilloscope

Enter the interface



Stop

: Enter the interface, waveform is collected in real time. Click the button and the oscilloscope stops collection of signal and shows the oscillogram, and the button change into **Start** button.

Start

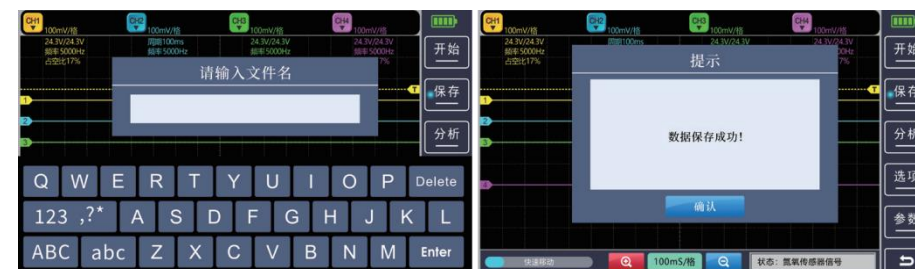
Rapid moving: Waveform acquisition is completed, in order to quickly review waveform, please click the bottom left of the screen to move the progress bar rapidly. The waveform can be temporarily acquired by quickly sliding to the left or right.



Save

: Enter the document name (CapsLk and numeric symbols are available).

Click the "Confirm" button to show that the waveform has been saved successfully.



Trigger

: **Trigger adjustment method:**

The position of the trigger level is adjusted so that the waveform is stably displayed at the trigger point, which is usually set at the obvious feature points of the waveform, such as the rising or falling edge.

Automatic mode: Oscilloscope automatically finds trigger events, suitable for use when the signal features are not clear.

Normal mode: The scan is generated only when the trigger conditions are met, suitable for detailed observation of intricate signals.

One-shot mode: Scan only once when the trigger conditions are met, suitable for capturing a single or non-periodic signal.



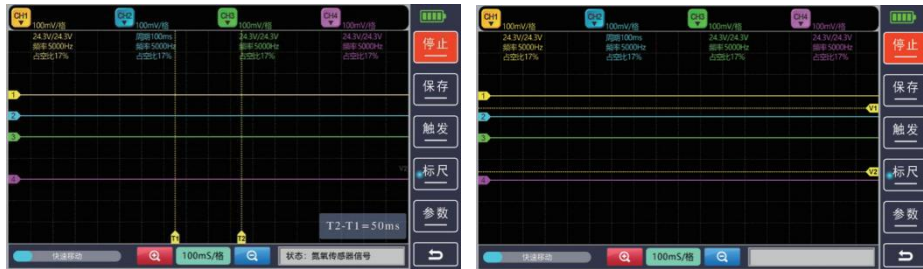
Scale

: The scale is divided into time scale and voltage scale.



Time scale: It is used to measure time-dependent parameters of the waveform, such as cycle, frequency, pulse width, rise time, fall time, etc.

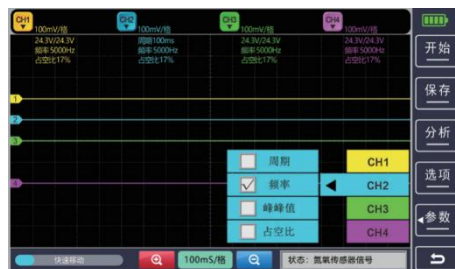
Voltage scale: It is used to measure voltage related parameters of waveform, such as amplitude, peak-to-peak value, RMS value, DC bias, etc.

**Parameters**

: Adjust the cycle, frequency, peak-to-peak value and duty cycle of CH1-4 respectively.

Cycle: It is used to measure the speed of signal change, referring to the time required for the signal to complete a full cycle.

Frequency: It indicates the number of times the signal completes cycle change per unit time, and is reciprocal to the cycle.



Peak-to-peak value: It refers to the voltage difference of the signal waveform from the peak to the trough, which can reflect the voltage variation range of the signal. It plays an important role in the evaluation of signal strength and amplitude modulation.

Duty cycle: It is used to describe the ratio of the duration of a high level in a pulse signal to the entire cycle.

Exit

: Click this button to stop the oscilloscope and exit the oscilloscope interface back to the initial interface.

Default

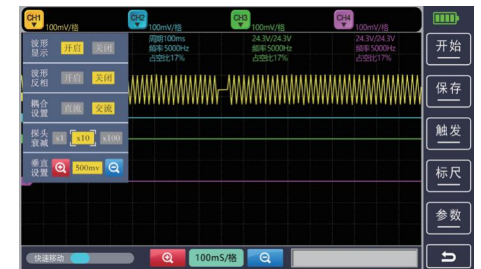
: After the oscilloscope settings are changed, there may be abnormal display or inaccurate measurement, etc., you can quickly restore all the parameters to the known, calibrated initial value to ensure another correct measurement and observation.

Time adjustment:

Change the time length of each scale of the timeline in the horizontal direction, that is, the length of time represented by each scale. For example, change from the defaulted 1 ms per scale to 10 ms per scale.

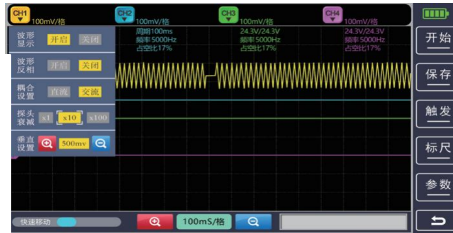
**Waveform adjustment:**

As for CH (1-4) waveform adjustment, click on the button CH (1-4) in the same way. Take CH1 for example, in terms of the rest of the channel, please refer to CH1:



Waveform display: The CH1 waveform can be turned off or displayed.

Waveform inversion: Oscilloscope waveform inversion refers to the phase difference between the displayed waveform and the actual input signal is 180° , that is the waveform inversion.



Coupling settings:

DC coupling (DC) : The oscilloscope will display the DC AND AC of the input signal, truly reflecting the original form of the signal, including the DC bias voltage and AC change , suitable for observing signals with DC.

AC coupling (AC) :The oscilloscope will block the DC of the input signal through the capacitor and only display the AC. It can remove the DC bias in the signal and make the oscilloscope more focused on the AC features of the signal.

Probe attenuation: The oscilloscope probe usually has different attenuation coefficients, such as 1:1, 10:1, 100:1, etc. Taking the 10:1 probe as an example, it will attenuate the amplitude of the input signal to 1/10 of the original, and then send it to the oscilloscope for measurement and display.

Vertical settings: It is used to set the voltage value represented by each scale in the vertical direction of the oscilloscope, which can be adjusted according to the amplitude of the input signal, so that the waveform can be fully displayed in the vertical direction, and it is easy to observe and measure the details of the signal.

Automotive Oscilloscope Function

1.Collection and saving

Click on the general purpose oscilloscope

Enter the interface



Stop

: Enter the interface, waveform is collected in real time. Click the button and the oscilloscope stops collection of signal and shows the oscillogram, and the button change into Start button.

Save

: Enter the document name (CapsLk and numeric symbols are available).It is recommended to name based on the engine model.

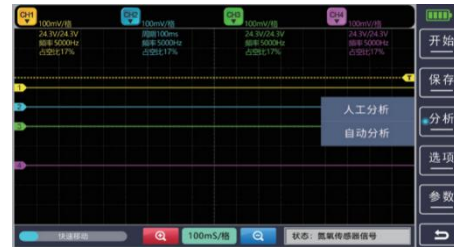
Click the "Confirm" button to show that the waveform has been saved successfully.

Rapid moving : Waveform acquisition is completed, in order to quickly review waveform, please click the bottom left of the screen to move the progress bar rapidly. The waveform can be temporarily collected by quickly sliding to the left or right .

2. Waveform analysis method

Step 1: Click **Analysis** button to show manual comparison and automatic analysis.

Manual comparison: Click this button to enter the waveform comparison function, in which data of SHANSHUI and oscillogram saved by users can be found for comparison with the previous oscillogram.



Step 2:

Click to save data or data of SHANSHUI according to customers' requirements

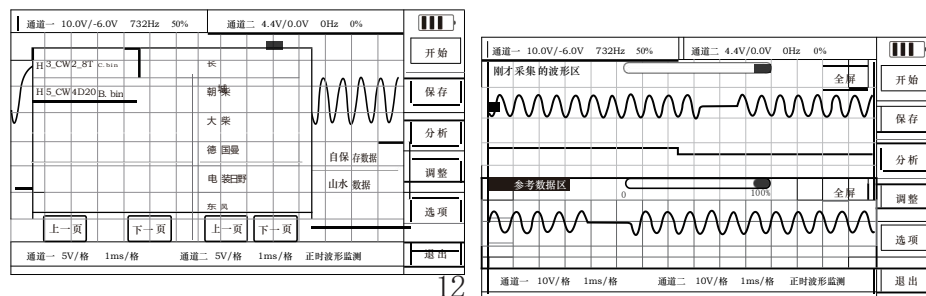
Self-saved data : Waveform collected and saved for the user

Data of SHANSHUI : Image reference data provided for SHANSHUI POWER.



Step 3:

Click on the engine brand, for example click on the "H3CW28TC" menu, and the reference image will be displayed below the current image for comparison with the image above.



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Analysis

: Click this button, and the machine will show the testable sensor or actuator. Choose this menu to perform testing, with no time and voltage adjustments required.


Parameters

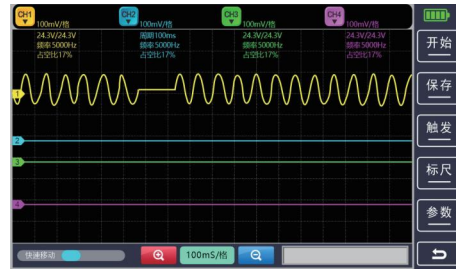
: For cycle, frequency, peak-to-peak value, duty cycle function description, please refer to general purpose oscilloscope.


3.1. Waveform zoom in/zoom out method (Button-based adjustment)

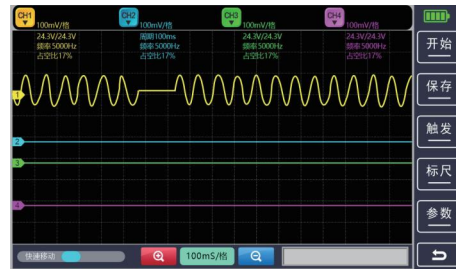



As shown in the above, on the screen of the waveform acquisition, waveform review, click on the up, down, left and right keys of the button, namely **▲ ▼ ◀ ▶** to zoom in or zoom out the waveform time base and vertical voltage for observation acquisition.

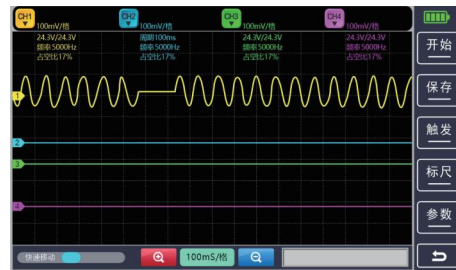
As shown in Figure 1 on the right, click , and waveform is displayed as such.




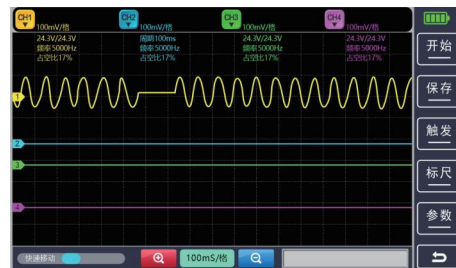
As shown in Figure 2 on the right, click , and the waveform is displayed as such.



As shown in Figure 3 on the right, click , and the waveform is displayed as such.



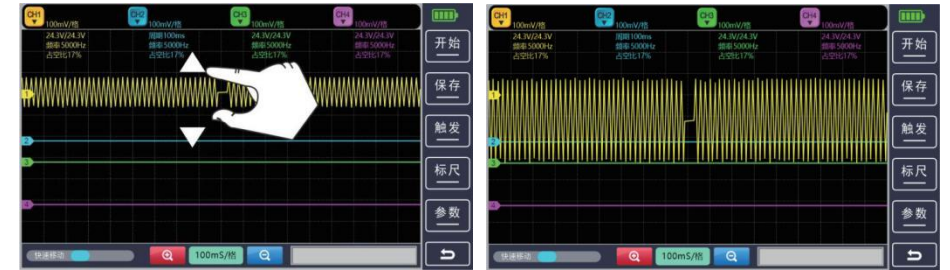
As shown in Figure 3 on the right, click , and the waveform is displayed as such.



3.2 .Waveform zoom in/zoom out method (Gesture adjustment method)

A:Vertically zoom in/zoom out gesture

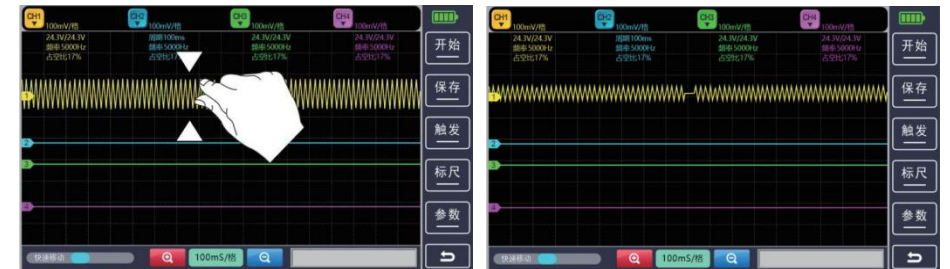
Press and hold the screen with two fingers, and the two fingers are separated up and down to both sides at the same time. Channel 1 and channel 2 will be zoomed in vertically at the same time (**Similar to the zoom-in of the screen of mobile phone**) as shown in the following figure:



Normal display

Channel 1 After vertically zoom in

Press and hold the screen with two fingers, and move the two fingers up and down inward at the same time, and channel 1 and channel 2 will be zoomed out vertically at the same time (**Similar to the zoom-out of the screen of mobile phone**) as shown in the following figure:

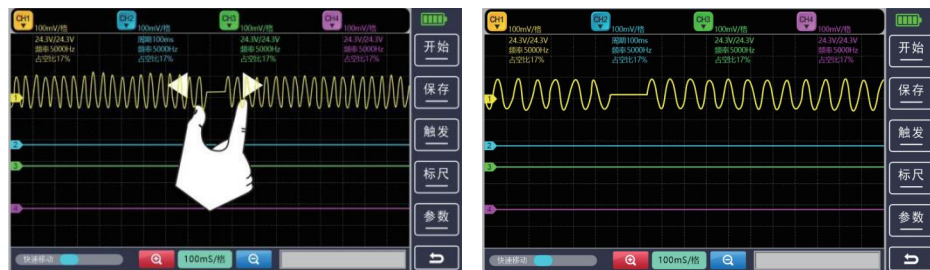


Normal display

Channel 1 After vertically zoom out

B:Horizontally zoom in/zoom out gesture

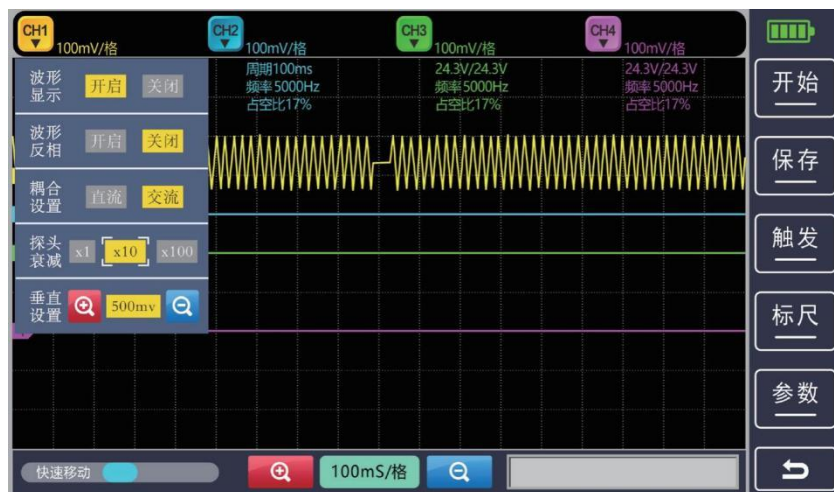
Press and hold the screen with two fingers, move the two fingers left and right at the same time, and channel 1 and channel 2 will be zoomed in/out horizontally at the same time (**Similar to the zoom-in/out of the screen of mobile phone**) as shown in the following figure:



Normal display

Channel 1 After horizontally zoom in

4. Waveform adjustment: Click the CH (1-4) button to adjust the CH (1-4) waveform. The methods for CH (1-4) are the same. CH1 can be used as a reference for the remaining channels.



Waveform display, waveform inversion, coupling settings, probe attenuation, vertical settings function, please refer to the general purpose oscilloscope.

Waveform Data Review

Step 1:



Figure 1

Step 2:



These data are general purpose oscilloscope menu, and images saved by users. The waveform can be reviewed or deleted.



Figure 2

Step 3:

In figure 2, click , and the manufacturers data image and the image collected by users will be displayed.



Figure 3

“Images collected by users” This data is the waveform collected and saved by users in the automatic oscilloscope. You can open to review or delete the saved files, as shown in the figure:

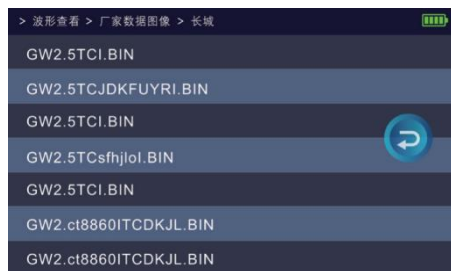


Step 4: Automotive oscilloscope data review select engine brand manufacturers, such as Changcheng

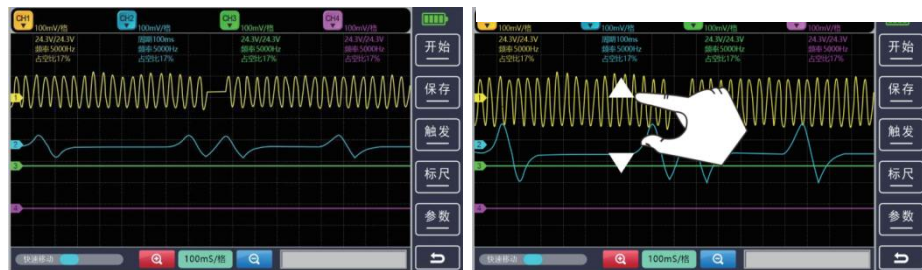


Step 5

Select: H3-CW2-8TC.bin



Step 6: Click and enter to review



The voltage can be adjusted by moving the two fingers up and down at the same time (Similar to the zoom-in of the screen of mobile phone) as shown in the following figure:

Time can be adjusted by moving the two fingers left and right at the same time, (Similar to the zoom-in of the screen of mobile phone) as shown in the right figure:

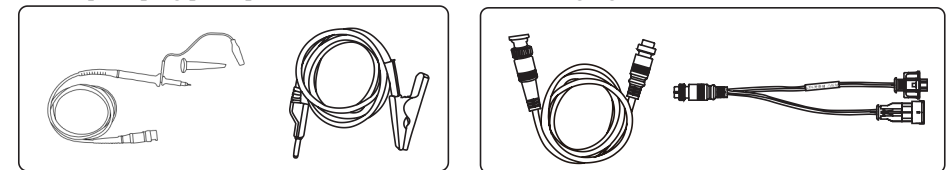


Waveform Transmission

This function is designed to provide a timing signal for the ECU of the engine, so that the ECU can work normally to check whether the engine timing signal is normal. The timing signal transmitted by this product is not the real timing position of the engine, but only an analog signal, so it is strictly prohibited to start the vehicle when using this function. Please follow the instruction for usage strictly.

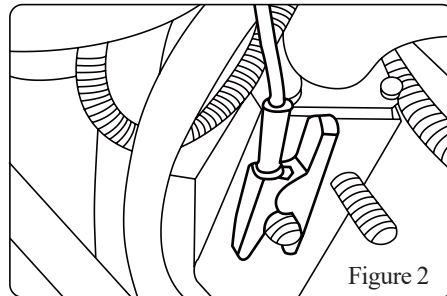
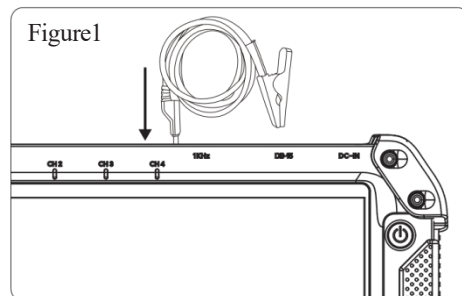
I. Connection methods for Hall and Magnetoelectric sensor

Prepare the required accessories: 2 oscilloscope probes, 1 earth wire; Or 2 quick plug cables and 2 quick plug principal lines, as shown in the following figure:



1.Hall sensor connection

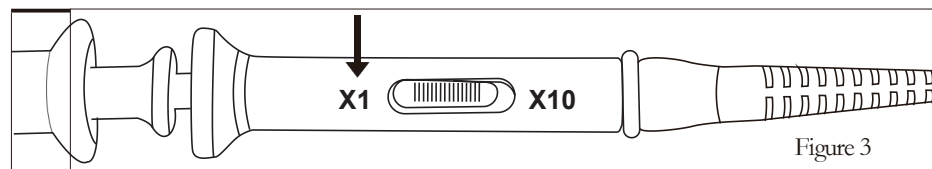
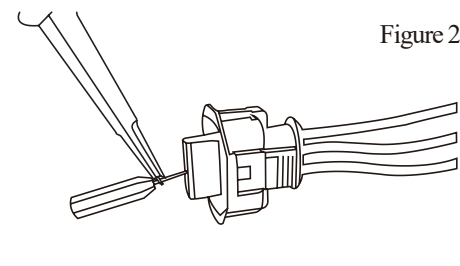
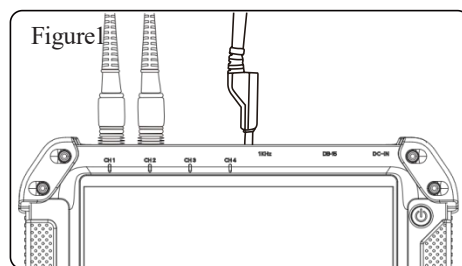
Step 1: Please connect one end of the earth wire to the ground port of the host machine, and connect the alligator clamp to the ground wire of the engine, that is, the engine housing.



Step 2:

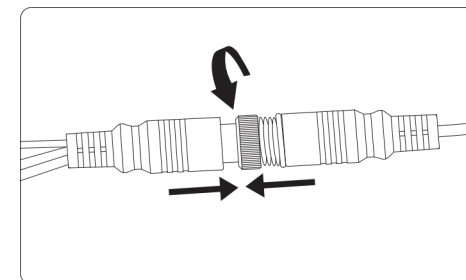
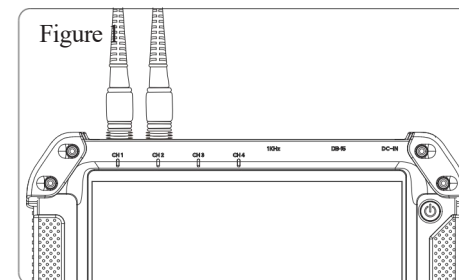
Connect the oscilloscope probe to the host, as shown in Figure 1 Connect the oscilloscope probe to the signal line of the Female connector of the timing sensor, as shown in Figure 2

The oscilloscope probe has 2 gears: X1, X10, please be sure to put the button on the gear of the X1, as shown in Figure 3 (probe has been locked in the position of the X1 when it was manufactured, if you have no special needs, please do not open)



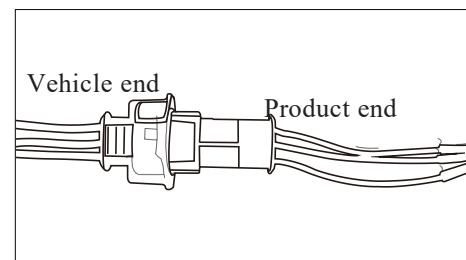
2.Hall sensor quick plug connection

Step 1: Connect the quick plug principal line of the oscilloscope to the host, and the quick connector is connected to the quick plug principal line.



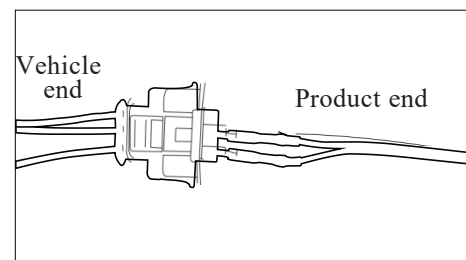
Step 2:

Connect the Male of the quick connector (Y-shaped wire) to the harness end of the camshaft sensor. The Female connector is vacant and does not need to be connected.



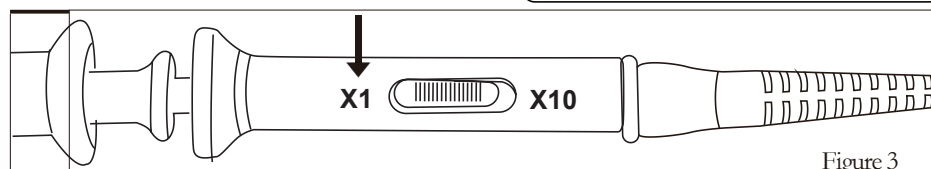
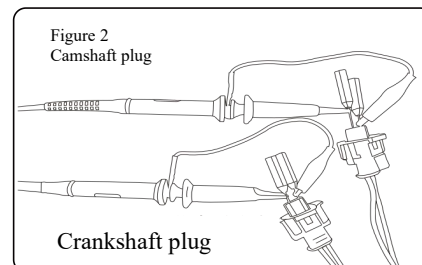
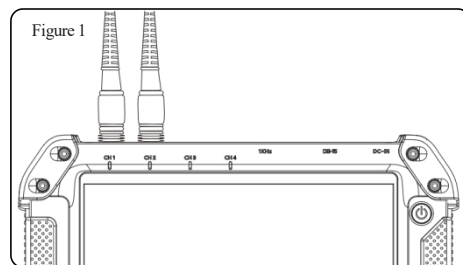
Line 6 is a universal jumper wire, which is used when all connectors do not match.

The black line of the jumper wire with is connected to the ground wire of the Female connector of the harness end, while the red line is connected to the signal line of the Female connector of the harness end. (Please avoid reverse connection.)



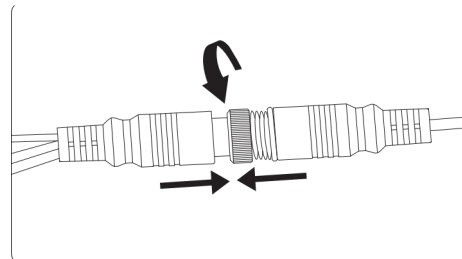
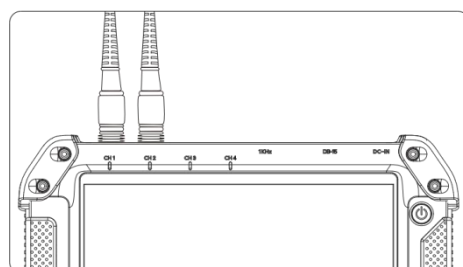
3、Method for Magnetolectric sensor connection when signal is transmitted

1. Connect the oscilloscope probe to the host, as shown in Figure 1.
2. Connect the oscilloscope probe to one line of the Female connector of the timing sensor, and connect the earth wire to the other line (No distinction between left and right), as shown in Figure 2.
3. The oscilloscope probe has two gears: X1 and X10, please be sure to put the button on the gear of X1, as shown in Figure 3 (The probe has been locked in the position of X1 when it was manufactured. If you have no special needs, please do not open).



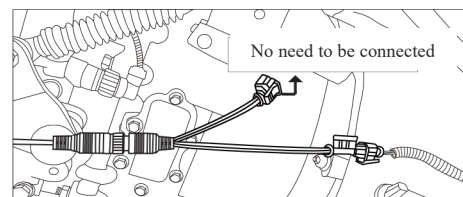
4.Quick plug connection method for Magnetolectric sensor

Step 1: Connect the oscilloscope quick plug principal line to the host machine, and the quick connector is connected to the quick plug principal line.



Step 2:

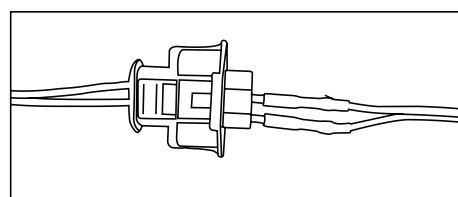
Connect the Male of the quick connector (Y-shaped wire) to the harness end of the camshaft sensor. The Female connector is vacant and does not need to be connected.



Actual connection method

Line 6 is a universal jumper wire, which is used when all plugs do not match.

The black line of the jumper wire with is connected to one of the lines of the Female connector of the harness end, while the red line is connected to another line of the Female connector of the harness end. (No distinction between left and right)



How to use Line 6 plug

II.Signal transmission method

Step 1: Click



Step 2: Click



Transmission is not available in general purpose oscilloscope.

Step 3:

Click



(Standard data collected by SHANSHUI POWER)

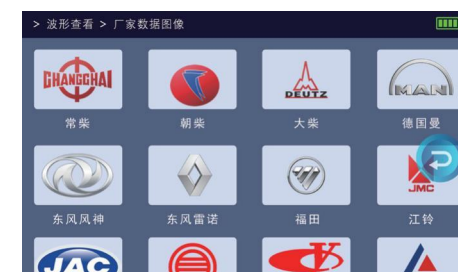
Or



(Oscillogram collected and saved by users from oscilloscope)

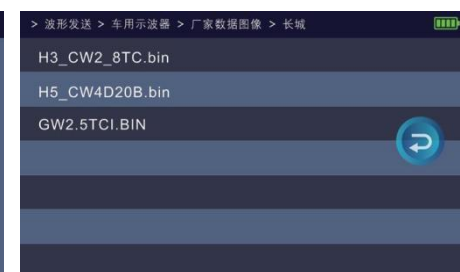
Step 4:

Select engine brand manufacturers, such as Changcheng



Step 4

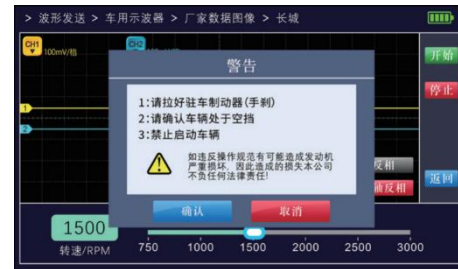
Select: H3-CW2-8TC.bin



Step 5:

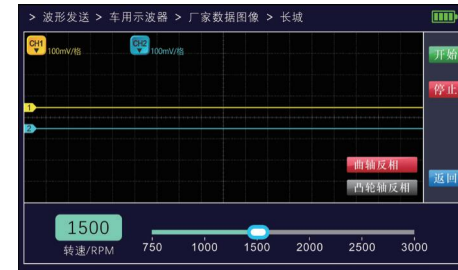
Please read the prompts carefully and click “Confirm”.

Note: Violation of this operation may cause engine to be seriously damaged. Our company shall not bear any legal responsibility for the damage caused by this.

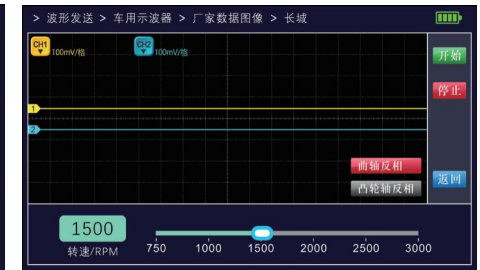


Crankshaft inversion

Adjust inverting voltage of crankshaft



Pre-inversion

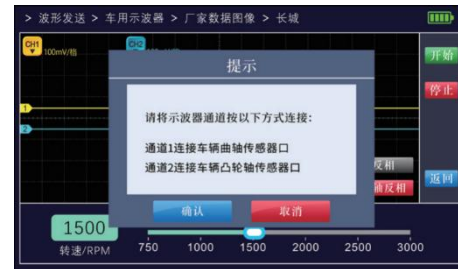


Post-inversion

Step 6:

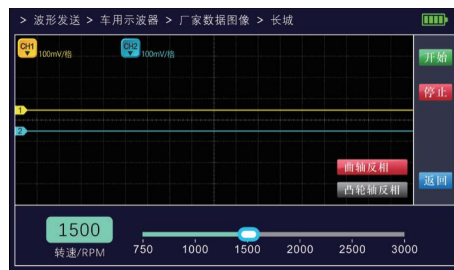
Click Prompt:

The channel 1 is connected with the camshaft, and channel 2 is connected to crankshaft, click .

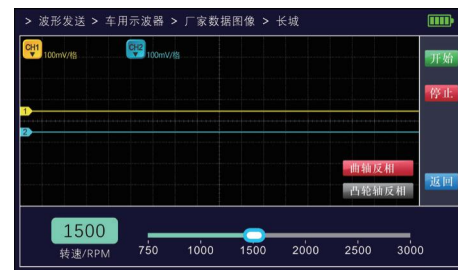


Step 7:

Start to transmit the waveform, you can select different engine speed, if the crankshaft or camshaft sensor harness is reversely connected, and it is failed to be identified by the vehicle, you can adjust the camshaft inverting voltage through the lower right camshaft inversion.



Pre-inversion



Post-inversion

CAN Analysis Function


Step 1:

Prepare the CAN analysis harness and connect the OBD connector of the vehicle. The terminal core ground cable, CAN+, and CAN- are respectively connected to the OBD port.

Step 2:


Connect the cable harness to the DB15 port on the host, connect the CH1 cable harness to the CH1 port on the host machine, and connect the CH2 cable harness to the CH2 port on the host.


Step 2:


Click  CAN Analysis to enter the data collection interface.



CAN Analysis data collection interface

1. Baud rate: According to the data transmission rate of the vehicle CAN bus, select the unused baud rate of 250K, 500K or the customized rate.
2. DBC: Select J1939 or ISO15765
3.  can be used for zoom-in/out of the time base of the waveform, and for the convenience of observation.

4. Click  Button, CAN data collection is stopped.

5. Click the bottom right  and enter the full-screen data display Interface, as shown in the right figure.



6. Click



to pop up dialog box "please enter the serial number", click "Confirm" to search. The serial number must be within the range of the current settings, otherwise the data may be failed to be queried.



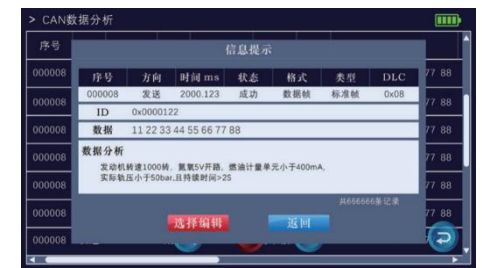
7. Click



to pop up and save dialog box, enter the document name and click "Confirm" to save the data in the machine



8. Click data information to display all the frame details and the frame data can be edited.
For example, click 0x18FD2000 as shown in the following figure.



9. Click to select “edit” and enter the “edit” interface, then the frame ID, type, data, interval can be modified.

可以对该帧的ID、类型、数

据、间隔进行修改。

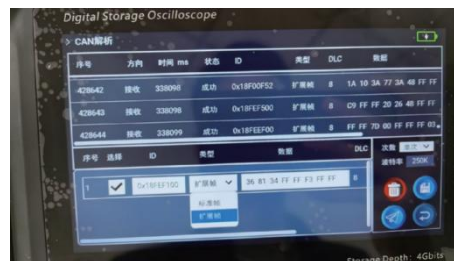
Editing interface



10. Click the ID option to edit the current ID. For example, enter 0x18FD2111 and click “Confirm” to modify the ID address.



11. Click Category option, and the current frame "category" can be edited, with standard frame or extend frame for options




12. Click on the Data option to edit the current data. For example, enter FO 24 FF 3C 24 FF FF FF, and click “Confirm” to modify the ID address.




13. Click Time option to edit the current time




14. Click Number of Times to select single or circular transmission of data.

15. Click  to delete the selected data, reselect data or add data to be transmitted.



16. Click  button, and enter the document name to save the data in the machine.

17. Click  button to transmit selected data.

18. Click  to return to previous menu.



CAN Data Review Function


1. Click  to review the saved CAN data file name.





2. Click one of the file names to delete or open the file. For example, Open the “1234” file, the data frame information is displayed.



3. Under the CAN data review file screen, there are    3 buttons.

 can be used to query data, the serial number entered must be within the range of the current settings, otherwise the data may be failed to be queried.

 Click this button to select the number of times and baud rate, you can open the entire file to send out.

 Here you can save the open file with another file name.




4. You can also select data or modify the data for transmission.



System Upgrade

Step 1:

Connect the machine to the charger to prevent power outage during upgrade.

Click  to enter upgrade interface.



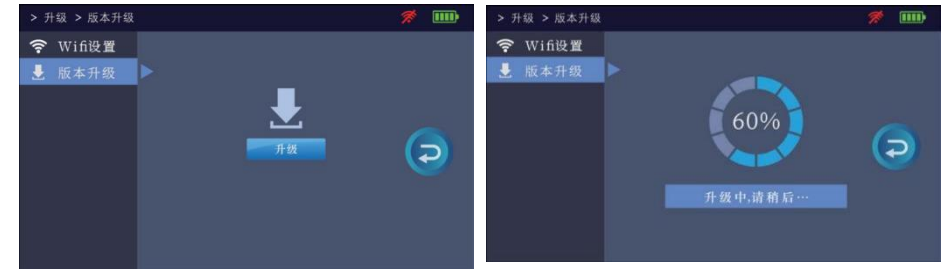
Step 2:

Click the WIFI settings to connect to the network. For example, enter the password of the WIFI "CMCC - ZQRX" to connect to the network.



Step 3:

Click version upgrade and version update. Wait patiently until the version is successfully upgraded, and the machine will automatically restart. About (3-5 minutes).



Settings Function

1. System information

Click "System Information" to view the software version, hardware version, serial number, activation code, and release time.



2. Shut-down time

You can set the automatic shutdown time. If no operation is performed, the host machine will automatically shut down.



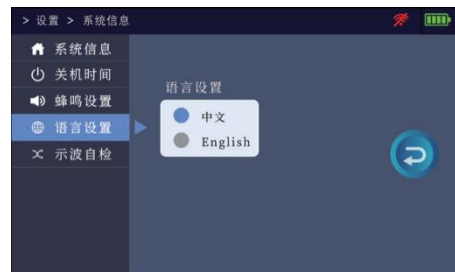
3. Buzzer settings

Click "Buzzer Settings" to open the buzzer.
Click the screen to produce a "drip" sound.



4. Language settings

This product interface menu can be switched between Chinese and English.

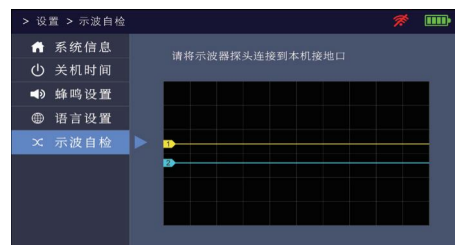


5. Oscilloscope self-inspection

This function is mainly used to check whether the oscilloscope is in normal service:

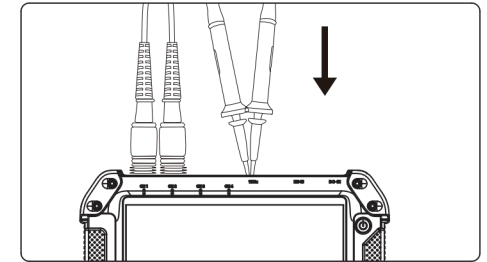
1. Check whether the test pin of oscilloscope is damaged.
2. Check whether the four channels of the oscilloscope host are intact.

Step 1: Click "Oscilloscope self-inspection"



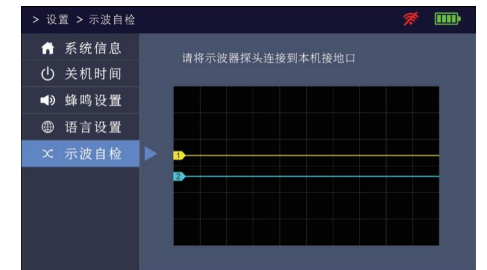
Step 2:

Connect a test pin at channel 1 (CH1), and then insert the test pin into the ground port, then the screen displays "Channel 1 is successfully inspected" indicating that channel 1 is normal. The inspections for Channel (CH2), (CH3), the above (CH4) are same as above.



Step 3:

If the host and the test pin of the oscilloscope are not damaged, the machine screen will indicate that the self-inspections of channel 1, channel 2, channel 3, and channel 4 are successful.



FCC WARNING

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception,

which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The device has been evaluated to meet general RF exposure requirement.
The device can be used in portable exposure condition without restriction