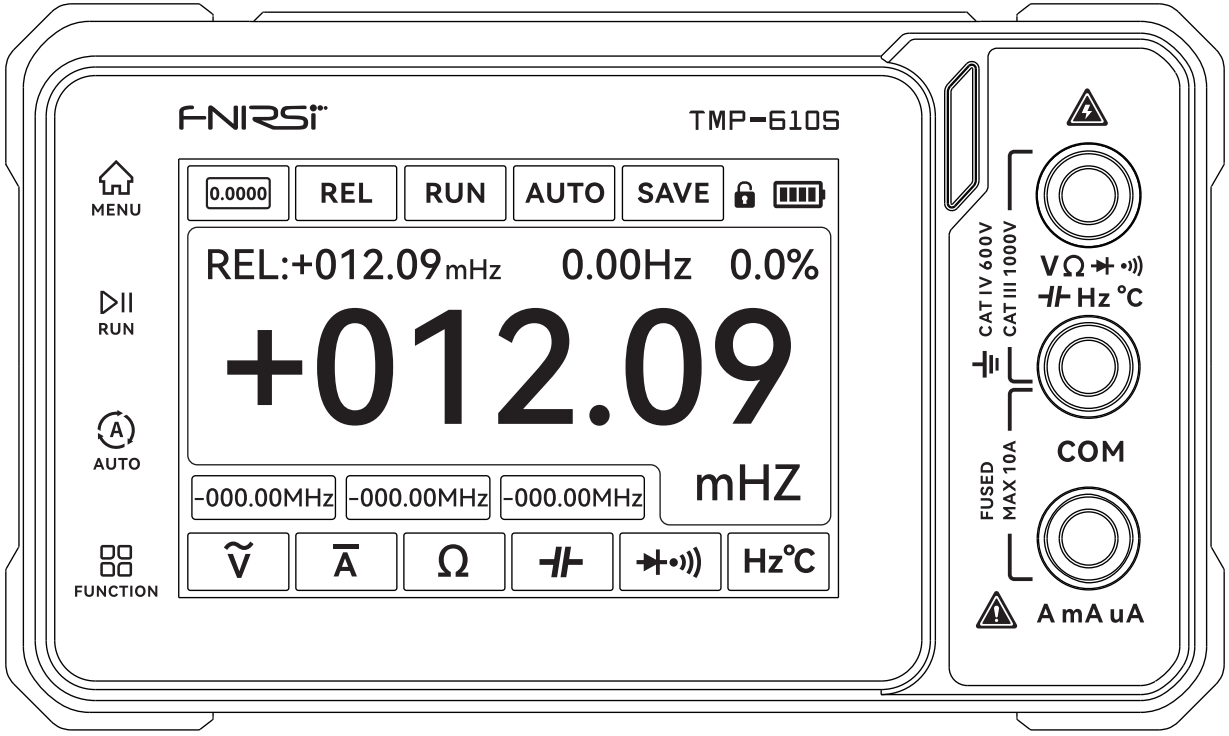
FNIRSi 菲尼瑞斯

TMP-600/TMP-610S产品说明书 V1.0

TMP-600/TMP-610S User Manual



※使用产品前请仔细阅读本说明书，并妥善保管。

※Please read this instruction manual carefully before using the product and keep it properly.

CONTENTS

1.Safety Statement

Please read this user manual carefully before using the product. The manual contains important safety information and should be kept properly for future reference. Users can visit our company website to check for updates to the user manual.

1.1 User Notice

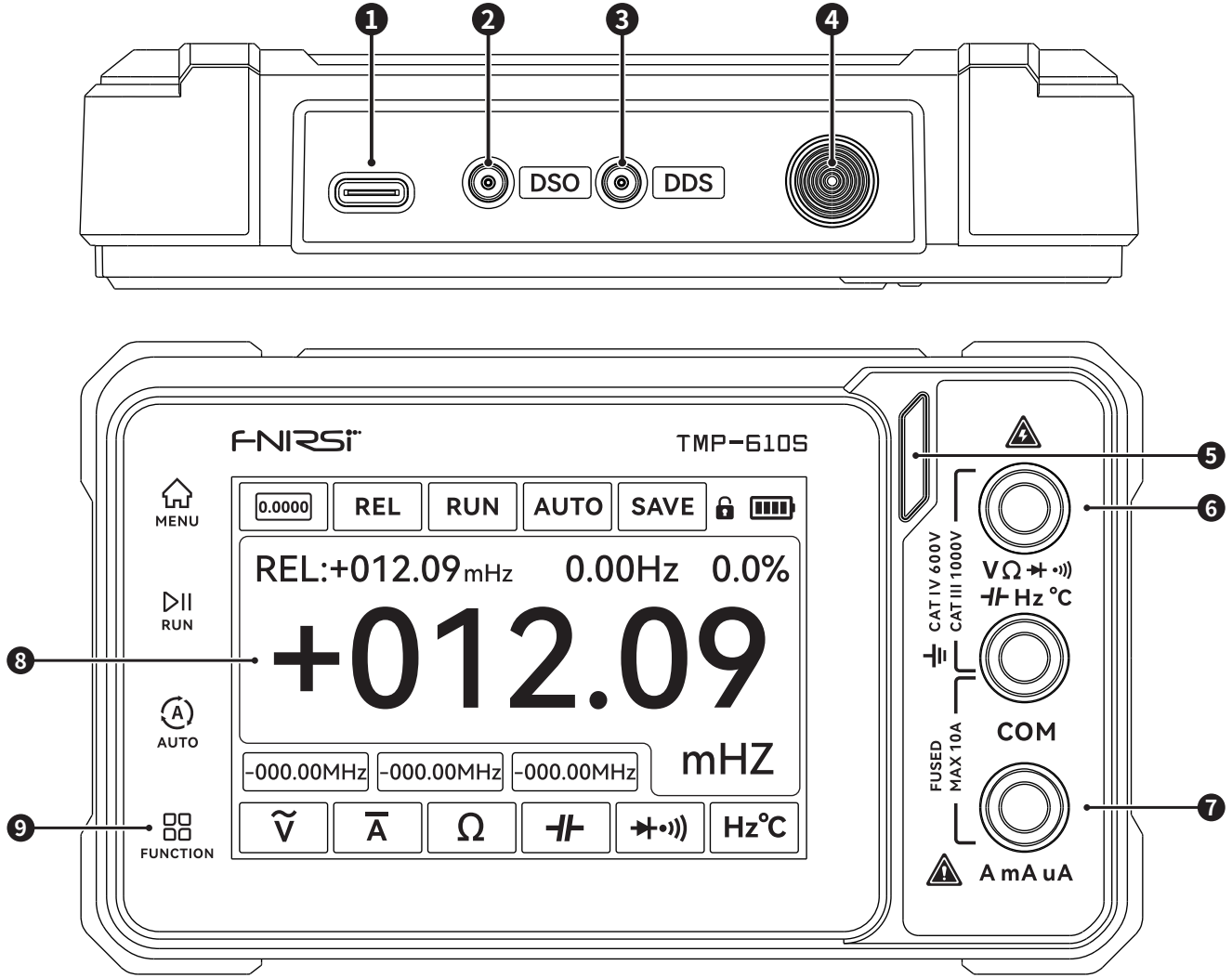
- Before using the TMP-600/TMP-610S, please carefully check the casing for any cracks or defects, and ensure the measurement ports and accessories are in normal condition.
- The TMP-600/TMP-610S is equipped with a rechargeable battery. For safety and measurement stability, do not perform measurements while charging. When the low battery warning appears, measurement accuracy may be affected; please recharge promptly.
- Please select the correct measurement ports, functions, and ranges to avoid damage to the instrument or personal injury.
- Hold the test leads or probes only by the insulated parts; do not hold the metal parts during measurement.
- Do not disassemble the casing arbitrarily, and do not operate measurements when the casing is open.
- Do not use the device in environments with flammable or explosive gases/materials, or in damp conditions.

2.Product Overview

2.1 Product Overview

The TMP-610S innovatively integrates three core functions: high-precision multimeter, oscilloscope, and multifunction signal generator. Its compact design meets the comprehensive measurement needs of engineers, researchers, and field technicians. The multimeter function features a 4½-digit display (maximum count 60,000), supports full-range auto-ranging and True RMS AC measurement for accurate reproduction of complex waveform energy, and offers 4 customized UI interfaces to suit different usage scenarios. With 50 MS/s sampling rate and 10 MHz bandwidth, the oscilloscope function enables precise capture of transient signal details. Additionally, the persistence feature dynamically overlays waveform traces, clearly displaying jitter, noise distribution, and abnormal events, providing strong support for in-depth fault analysis. The signal generator function can produce 13 standard waveform types with a maximum output frequency of up to 50 kHz.

2.2 Appearance Description



①Type-C port (for charging and USB communication)

②DSO oscilloscope input port

③DDS signal generator output port

④Power button (long press to power on/off, double-tap to lock/unlock the screen)

⑤Charging indicator light (red while charging, green when fully charged; works in both power-on and power-off states)

⑥Measurement port for voltage, resistance, capacitance, continuity, diode, frequency, and temperature (black COM is the common terminal)

⑦Current measurement port (black COM is the common terminal)

⑧3.5-inch (480 × 320) touchscreen

⑨Multifunction touch buttons

- Menu: opens the main menu
- Run: controls run/pause
- Auto: auto range (multimeter) / auto measurement (oscilloscope)
- Function: function settings

3.Quick Start

3.1 Description of the Multimeter Measurement Interface

Press【MENU】on the panel, select “Multimeter” to enter the measurement interface.

①**Measurement mode:** tap the icon to switch between standard mode, dial mode, curve mode, and monitoring mode.

②**Relative measurement:** tap to enable relative mode and display the relative value; tap again to exit relative mode.

③**Run status:** displays RUN when the device is operating; displays HOLD when data hold is active.

④**Range indication:** AUTO indicates auto range; manual range displays the specific range value (applicable to voltage, current, and resistance only). Voltage and current modes support both auto and manual ranging.

⑤**Data save setting:** tap the icon to display saved data in the data log area.

⑥**Touch status:** double-tap the power button to lock or unlock the touch function.

⑦**Battery status:** displays battery level when not charging; shows charging progress during charging (measurement results are unreliable while charging, and there is a risk of electric leakage).

⑧**Main display:** shows the measurement value according to the selected measurement mode.

⑨**Data log area:** displays saved data records where users can review historical measurement data.

⑩**Unit:** displays the unit of the current measurement value.

⑪**Measurement mode area:** allows selection of different measurement modes.

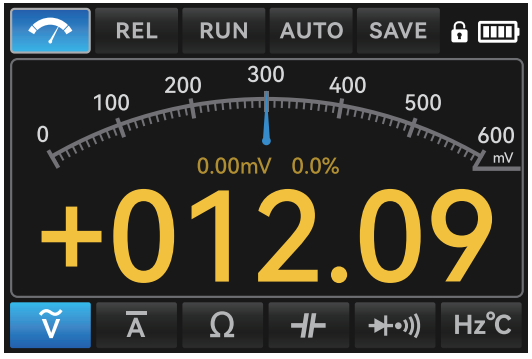
▶3.1.1 Measurement Mode Functions

※Users can freely set the minimum and maximum values in monitoring mode.

※If the current value exceeds the set range, the interface will display a “FAIL” message, and the buzzer will sound continuously.

※If the current value is within the set range, the interface will display a “PASS” message.

Standard Mode



Dial Mode

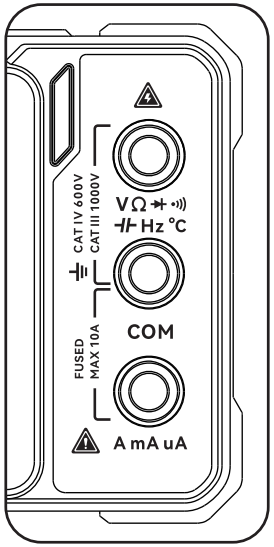
Curve Mode

Monitoring Mode

▶3.1.2 Data Recording Function

The TMP-610S supports on-screen data recording and updates the data each time, with a short buzzer beep. The most recently updated data is highlighted with a blue box, while other data entries are not. The device supports up to 3 data records; when the limit is exceeded, the oldest data will be overwritten.

▶3.1.3 万用表测量端口说明



Icon	Name	Description
VΩ Hz °C	Red terminal	1. AC/DC voltage measurement 2. Resistance measurement 3. Continuity test 4. Diode test 5. Capacitance measurement (discharge before measuring) 6. Frequency measurement 7. Temperature measurement
COM	Black terminal	Common terminal for all measurements
A mA uA	Red terminal	Dedicated current measurement port, maximum 10A (not to be used for other measurement modes). The device has a built-in 10A fuse. If it blows, open the back cover and replace it with the same type of fuse.

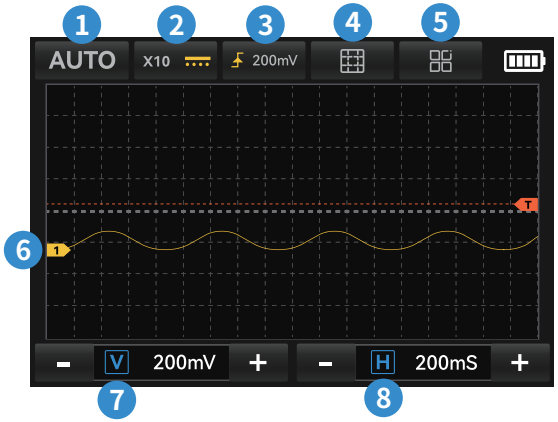
▶3.1.4 Multimeter Specifications

Multimeter Technical Specifications		
Function	**Range**	**Accuracy**
DC voltage	600mV/6V/60V/600V/1000V	± (0.03%+5d)
AC voltage	600mV/6V/60V /600V/750V	± (0.3%+15d)
DC current	600uA/6000uA/60mA/600mA	± (0.15%+5d)
	6A/10A	± (0.2%+5d)
AC current	600uA/6000uA/60mA/600mA	± (0.5%+15d)
	6A/10A	±(0.75%+15d)
Resistance	600Ω/6KΩ/60KΩ/600KΩ/6MΩ	± (0.1%+5d)
	60MΩ	± (0.2%+10d)
Capacitance	60nF/600nF/6uF/60uF	± (2.5%+30d)
	600uF/6mF/60mF	± (3.5%+30d)

Frequency	10Hz~60MHz	± (0.01%+5d)
Temperature	-40°C~1000°C (standard probe temperature measurement range: -20°C~300°C) -40°F~1832°F	± (1.0%+5°C) ± (1.5%+5°F)
Continuity	0Ω~1K Ω	± (0.2%+5d)
Diode	0V~3.0V, 0Ω~1K Ω	± (1%+5d)
AC frequency response	10KHz	/

3.2 Oscilloscope Measurement Interface Description (Feature Available on TMP-610S)

Press the【MENU】button and select “Oscilloscope” to enter the measurement interface.



①**Trigger Status Display:** Status includes Trig`d, Auto, Ready, ROLL, STOP, and Wait.

②**Channel Settings:** Allows settings such as probe attenuation ratio (X1, X10) and coupling type (DC, AC).

③**Trigger Settings:** Allows settings such as trigger mode (Auto, Normal, Single) and trigger edge (Rising, Falling, 50%).

④**Cursor Measurement**

⑤**Function Settings**

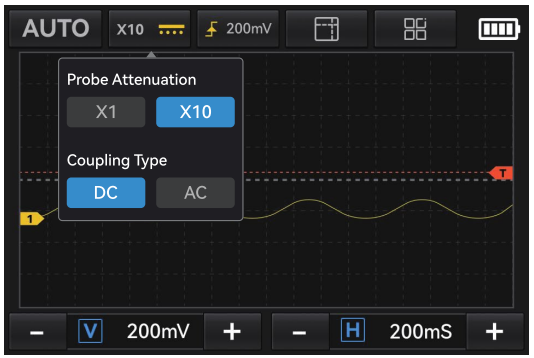
⑥**Channel Waveform:** Waveform signal collected by the channel.

⑦**Vertical Scale Display:** Use the “–” and “+” keys to decrease or increase the vertical scale, adjusting the voltage scale in the vertical direction. Adjustable range: 10 mV~10 V.

⑧**Horizontal Time Base Display:** Use the “–” and “+” keys to decrease or increase the horizontal time base, adjusting the time scale in the horizontal direction. Adjustable range: 50 ns~20 s.

▶3.2.1 Vertical System

(1)Channel Settings

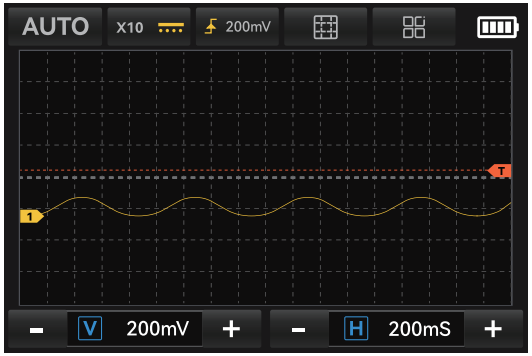


- Press the【Channel Settings】button, and the main interface will display options for ‘Probe Attenuation’ and ‘Coupling Type’.
- Select the appropriate probe attenuation (e.g., X1, X10) according to the signal voltage range.
- The user can choose different coupling modes as needed:

Coupling Mode	Description
DC	DC Coupling
AC	AC Coupling

(2)Vertical Scale

Vertical scale refers to the voltage value represented by each division in the vertical direction on the display. Use the "–" and "+" keys to decrease or increase the vertical scale, adjusting the voltage scale in the vertical direction. Adjustable range: 10 mV~10 V. At the same time, the scale information on the label at the top of the screen changes in real time. As shown in the right figure:



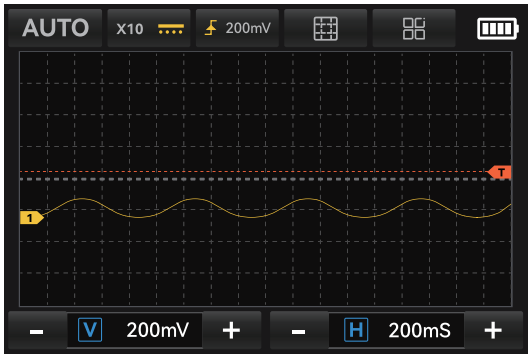
(3)Vertical Offset

Vertical offset refers to the displacement of the channel signal zero position of the waveform in the vertical direction relative to the center of the screen. When adjusting vertical offset, the corresponding channel waveform moves up or down. Click the vertical offset cursor to select vertical offset, then slide with one finger up or down in the waveform area to set the corresponding offset.

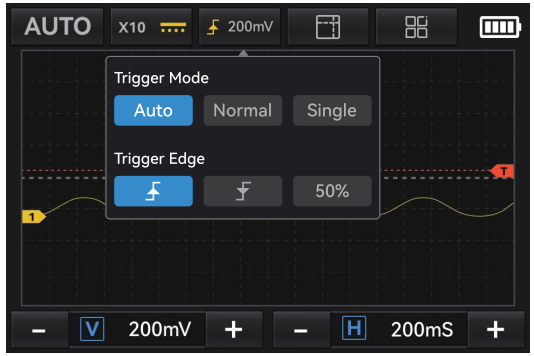
▶3.2.2 Horizontal System

Time scale refers to the time value represented by each division in the horizontal direction on the display. Use the "–" and "+" keys to decrease or increase the horizontal time base, adjusting the time scale in the horizontal direction. Adjustable range: 50 ns~20 s.

As shown in the right figure:



▶3.2.3 Trigger Settings



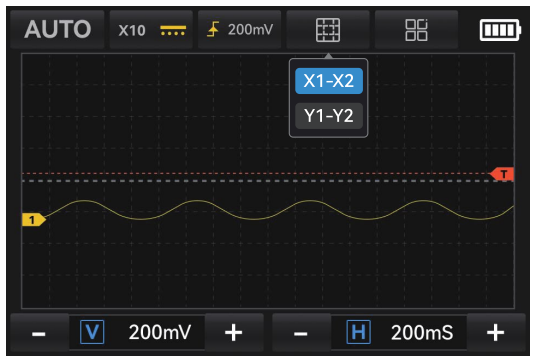
(1)**Trigger Mode:** Affects the waveform length that the oscilloscope can display in continuous acquisition mode.

- Auto: The oscilloscope refreshes the waveform whether or not a trigger signal is detected.
- Normal: The oscilloscope refreshes the waveform only when a trigger signal is detected.
- Single: The oscilloscope stops data acquisition after the next trigger event. Used for capturing transient events.

(2)**Trigger Edge:**

- Rising Edge: The oscilloscope triggers when it detects a transition from low to high.
- Falling Edge: The oscilloscope triggers when it detects a transition from high to low.
- 50%: The oscilloscope triggers when it detects the signal crossing 50% of its amplitude.

▶3.2.4 Cursor Measurement



Displays cursor lines on the waveform for measurement. Users can precisely locate specific points on the waveform using the cursors. When the cursor function is enabled, slide the screen to move the cursors on the waveform:

・Slide the screen to move Cursor 1/2 (X1–X2) left or right.

・Slide the screen to move Cursor 1/2 (Y1–Y2) up or down.

▶3.2.5 Function Settings

(1) Measurement Parameters

The oscilloscope's measurement function can accurately measure various parameters of the input signal, providing key data for signal analysis. Press the ‘FUNCTION’ button on the panel, or tap the function option on the screen to operate. After operation, the oscilloscope will enter the measurement settings interface.

・All: Tap to display all measurement parameters on the main interface.

・Clear: Tap to remove all measurement parameters from the main interface.

・Frequency: Indicates the number of signal cycles per second.

・Period: Time for one complete signal cycle.

・+Duty (Positive Duty Cycle): Ratio of high-level duration to total period.

・–Duty (Negative Duty Cycle): Ratio of low-level duration to total period.

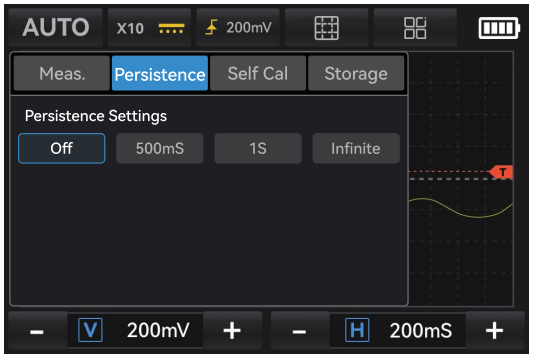
・+Width (Positive Pulse Width): Duration of the high-level signal.

・–Width (Negative Pulse Width): Duration of the low-level signal.

- Max: Maximum voltage of the signal.
- Min: Minimum voltage of the signal.
- P-P (Peak-to-Peak): Voltage between the highest and lowest points.
- Amplitude: Voltage difference between waveform top and bottom.
- RMS: Root mean square value of the signal.
- Average: Arithmetic average of the full waveform or the gated area.

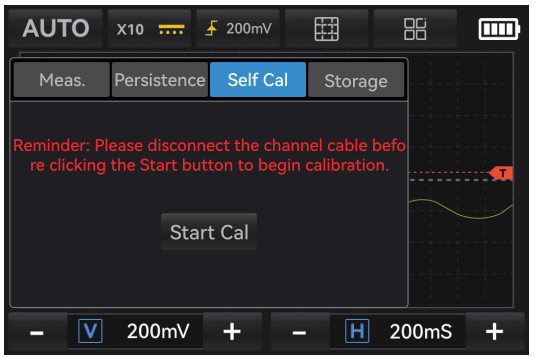
(2) Persistence

The user can configure the persistence time.

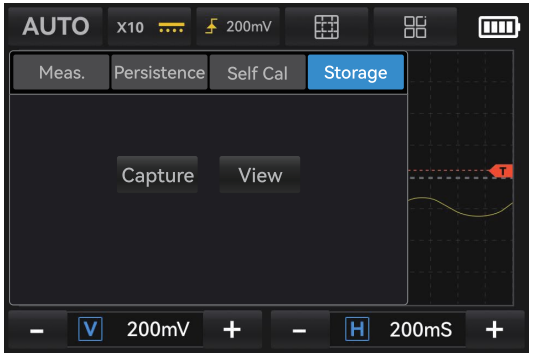


(3) Self Calibration

- Disconnect the channel cables to avoid external signal interference during calibration.
- Tap “Start Calibration” to initiate the internal calibration process. The oscilloscope will automatically calibrate key parameters such as vertical gain and horizontal time base.
- Upon successful calibration, the oscilloscope will automatically save the calibration data and notify the user that calibration is complete.



⑷ Storage



- Tap the【Screenshot】button on the screen to capture and save only the currently displayed content.
- Select the【View】option to browse saved waveform images. Users can use the Select All, Edit, or Delete buttons to view or delete one or more images.

▶3.2.6 Oscilloscope Parameters

Parameter	Specification	Remarks
Real-time Sampling Rate	48MSa/s	/
Analog Bandwidth	10MHz	/
Input Impedance	1MΩ	/
Coupling Mode	AC/DC	/
Test Voltage Range	1:1 Probe:80Vpp (±40V) /10:1 Probe:800Vpp (±400V)	Oscilloscope set to X1 / X10
Vertical Sensitivity	10mV/div~10V/div	X1 range

Vertical Displacement	Adjustable with indication	/
Horizontal Time Base Range	50 ns ~ 20 s	/
Trigger Mode	Auto, Normal, Single	/
Trigger Type	Rising, Falling, 50%	/
Trigger Level	Adjustable with indication	/
Measurement Parameters	Freq, Period, +Duty, –Duty, +Width, –Width, Max, Min, P–P, Amp, RMS, Avg	/
Persistence	Off / 500ms / 1s / ∞	/
Cursor Measurement	√	/
Waveform Screenshot Saving	√	/

3.3 Signal Generator Main Interface Description (Feature Available on TMP-610S)

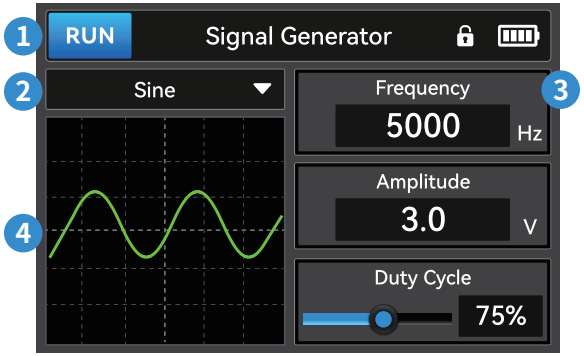
Press【MENU】and select “Signal Source” to enter the signal generator interface.

①**Run Status:** Tap the【RUN】button on the panel or screen to switch between Run and Stop states.

②**Output Waveform Selection:** A total of 13 waveform types are available: Sine, Square, Sawtooth, Half Wave, Full Wave, Positive Step, Negative Step, DC Signal, Exponential Rise, Exponential Fall, Multi-tone, Sync Pulse, Lorentz Wave.

③**Waveform Parameter Adjustment:** Select a parameter, then enter a value within the allowed range in the pop-up window.

④**Waveform Diagram**

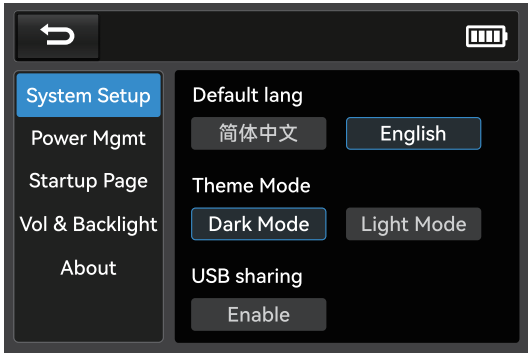


▶3.3.1 Signal Generator Specifications

Parameter	Specification
Output Waveform	Supports 13 waveform types
Frequency	0~50kHz
Amplitude	0.0V~3.0V
Duty Cycle	0~100%, adjustable for Square and Sawtooth waves

3.4 Other Settings

Press the【MENU】button on the panel and select “Settings” to enter the system settings interface.



Settings	Content	Description
Languages	Simplified Chinese, English	Currently supports 2 languages
Theme	Dark, Light	Switch device interface theme
USB Sharing	USB Connection	For firmware update and image upload
Power Management	Screen Timeout: 5min, 10min, 30min, Never	Dims to minimum brightness after timeout
	Power Off Time: 10min, 30min, 1h, Never	Auto power-off after set time
Startup Page	Multimeter, Oscilloscope, Signal Generator, Main Interface	Quick access to selected startup interface
Volume & Backlight	Volume: 0%~100%	0% disables the buzzer
	Brightness: 0%~100%	Min brightness: 0%

About	Restore Factory Settings	Restore Factory Settings
	Displays device basic info and manufacturer	/

3.5 Firmware Upgrade

①While the device is powered off, briefly press the【Power】button and then press the【MENU】button within 1 second to enter the firmware upgrade mode.

②Connect the device to your computer using a USB Type-C data cable.

③The computer will automatically recognize the device as a USB drive. Drag and drop the firmware file into the drive.

④Once the upgrade is complete, restart the device to finish the process.

4. Troubleshooting

If no waveform appears on the screen after signal acquisition:

- Check if the probe is correctly connected to the signal cable.
- Check if the signal cable is properly connected to the DSO (channel connector).
- Check if the probe is properly connected to the device under test.
- Check if the device under test is generating a signal.
- Reacquire the signal.

If the measured voltage amplitude is larger or smaller than the actual value (note: this usually occurs when using probes):

・Check if the channel attenuation factor matches the probe’ s actual attenuation ratio.

5. Maintenance

Cleaning the device exterior

・Regularly clean dust around the device and connectors to maintain good condition.

・Ensure no liquids, dust, or debris enter the device connectors.

・Dirty or damp jacks may affect measurement accuracy.

Check Battery and Power

・For oscilloscopes with built-in batteries, regularly check battery health. Avoid complete discharge; it is recommended to charge periodically and avoid long-term disuse.

・Use the official charger for charging to prevent overcharge or over-discharge, ensuring the battery stays within the proper operating voltage range.

Storage and Transport

・Storage environment: Store the instrument in a dry, well-ventilated place. Avoid high temperature, high humidity, or drastic temperature changes. Avoid direct sunlight exposure.

・Transport: Handle with care to prevent drops, especially during transport.

Software Updates

・Regularly check for new firmware updates. The latest firmware can fix known bugs and improve device performance.

- Follow correct procedures when updating, use official firmware files, and avoid power interruptions or other disturbances.

Restore Factory Settings

- If the device malfunctions or cannot operate normally, try restoring factory settings. This will erase all custom configurations and return the device to its initial state.
- Refer to the user manual or contact customer service for instructions on how to restore factory settings.

6.Contact Us

Product Name: 3 IN 1 Tablet Oscilloscope (10 MHz)

Model: TMP-600/TMP-610S

Manufacturer: Shenzhen FNIRSI Technology Co., Ltd.

Address：8th Floor, West Side, Building C, Weihua Da Industrial Park, Dalang Street, Longhua District, Shenzhen, Guangdong, China

Tel: 0755-28020752

Service Email: support@fnirsi.com

Business Email: business@fnirsi.com

Website: www.fnirsi.com

Standard Implemented: GB/T 13978-2008

http://www.fnirsi.com/

7. Warranty Information

※This page is the basic warranty card. Please keep it.

Thank you for choosing our company's products. The warranty period of this product starts from the date of sale. During the product warranty period, if the product is installed and used in accordance with the product manual and used in normal environment and conditions, and the fault is caused by defects in the original materials and processing, you can enjoy free repair services according to the content of this warranty clause. Please keep this warranty card properly as a warranty certificate. No reissue will be issued if it is lost.

The following situations will incur paid repair services:

- Failure to present a valid original warranty card;
- Damage caused by improper installation not complying with product requirements, standards, or related regulations;
- Damage caused by accessories in the installation environment that do not meet product requirements, standards, or related regulations;
- Damage caused by improper use, poor maintenance, unauthorized disassembly, or unauthorized repairs;
- Warranty period has expired.

Warranty Card

Product Model	TMP-600/TMP-610S	**Qty.**	
Distributor Name (where to buy)		**Contact**	
Address		**Invoice Number** (Order Number)	
Purchase Date (as per invoice)	**Year** **Month** **Day**		
User Name:		**Address:**	
Contact:		**Fault Description:**	

下载用户手册&应用软件

Download User manual&APP&Software