FNIRSi 菲尼瑞斯

2C53P

50M双通道平板示波表

50M DUAL-CHANNEL FLAT-PANEL OSCILLOSCOPE

CATALOG

NOTICE TO USERS

●This manual provides detailed instructions on how to use the product and important precautions. Please read this manual carefully and follow the instructions to ensure optimal performance of the product.

●Do not use the instrument in flammable or explosive environments.

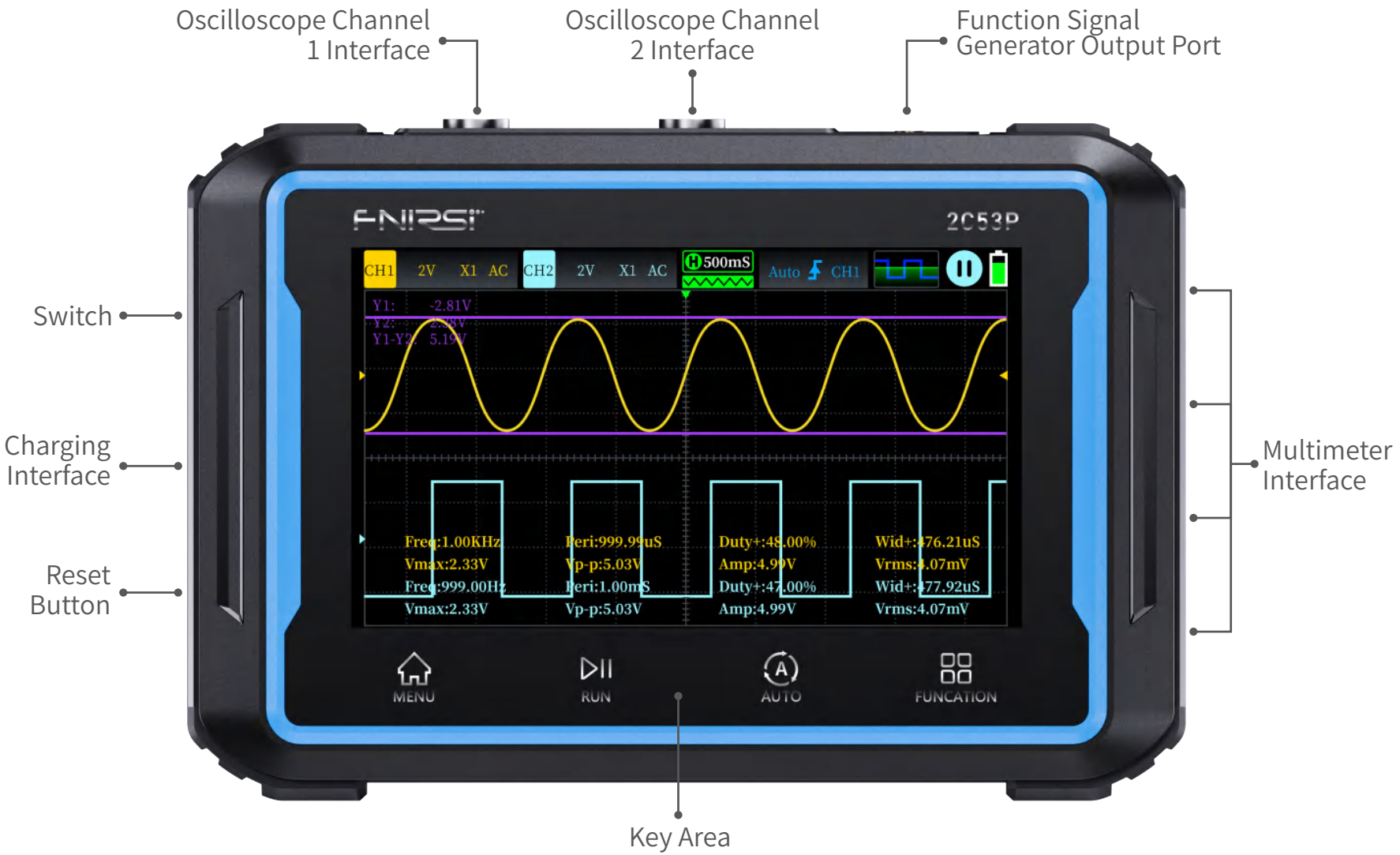
●Disposed batteries and obsolete instruments should not be treated as household waste; please follow the relevant national or local laws for proper disposal.

●If there are any quality issues with the instrument or if you have any questions regarding its use, please contact us promptly, and we will address your concerns in a timely manner.

1.PRODUCT INTRODUCTION

The FNIRSI-2C53P is a three-in-one dual-channel digital oscilloscope launched by FNIRSI, with comprehensive functionality and high practicality, designed for the repair and research industries. The device combines an oscilloscope, multimeter, and signal generator. The oscilloscope features an FPGA+MCU+ADC hardware architecture with a sampling rate of 250MS/s, a 50MHz analog bandwidth, built-in high-voltage protection module, and support for peak voltage measurements up to ±400V. It also supports waveform capture, saving, and viewing for secondary analysis. The multimeter function includes a 4.5 digit 19999-count true RMS measurement, supporting AC/DC voltage and current measurements, as well as capacitance, resistance, diode, continuity, temperature, and other measurements. It is suitable for professionals, factories, schools, enthusiasts, and household use as an ideal multifunctional instrument. The built-in DDS function signal generator can output 12 types of function signals, with a maximum output of 10MHz and adjustable frequency, amplitude, and duty cycle in steps of 1Hz. It features a 4.3-inch 480*272 resolution touchscreen display, built-in 4000mAh rechargeable lithium battery with a standby time of up to 4 hours. Despite its compact size, it offers users more powerful and practical functions while being highly portable.

2.PANEL DESCRIPTION



3.OVERALL MACHINE PARAMETERS

Screen Material	Surface tempered glassSurface tempered glass + touch screen made of glass GLASS + IPS color screen
Backlight	Backlight brightness can be set
Power Supply	TYPE-C (5V/2A)
Battery	4000mAh lithium battery
Language	Chinese, English, Русский, にほんご, español, Português, Deutsch, 한국인
Product Dimensions	≈145x98x35mm
Device Weight	≈360g

4.INTRODUCTION TO KEY FUNCTIONS AND INTERFACE OPERATIONS

1.1 Oscilloscope Interface

①Channel 1 settings: Channel on/off, vertical voltage, probe ratio, coupling type, and 20M bandwidth limit can be set.

②**Channel 2 settings:**Channel on/off, vertical voltage, probe ratio, coupling type, and 20M bandwidth limit can be set.

③**System time base:**Refers to a large grid in the horizontal direction representing the length of time, consisting of sampling Rate determines.

④**Trigger settings:**You can set the trigger mode, trigger edge, and trigger channel.

⑤**Function signal generator indication:**Highlight means the function signal generator is on, grey means it is not on

⑥**Run/Pause:**Click this button to switch between running and pausing.

⑦**Power indicator:** Indicates the system power.

⑧**Channel 1 Waveform:**The waveform signal captured by channel 1.

⑨**Trigger X position indicator arrow:**refers to this as the trigger point

⑩**Channel 2 Waveform:**Waveform signal captured by channel 2

⑪**Trigger voltage indicator icon:**Trigger threshold

⑫**Cursor operations**

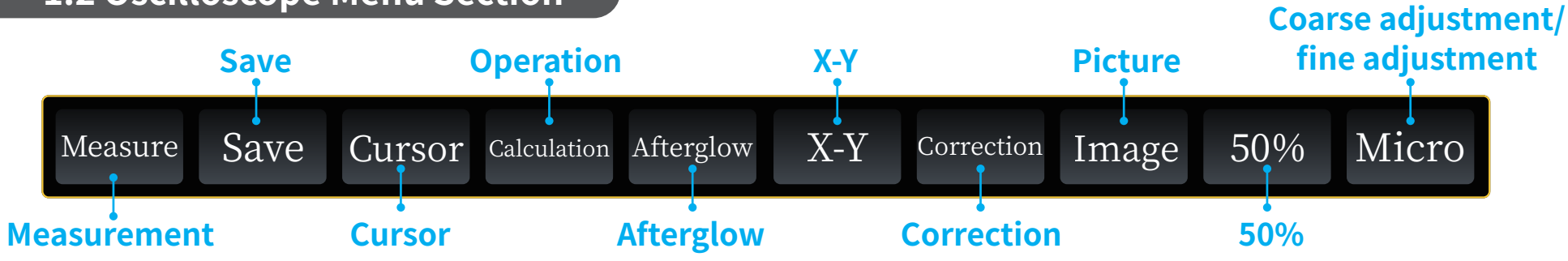
⑬**Home touch button**

⑭**Run/Stop button**

⑮**Auto measure button**

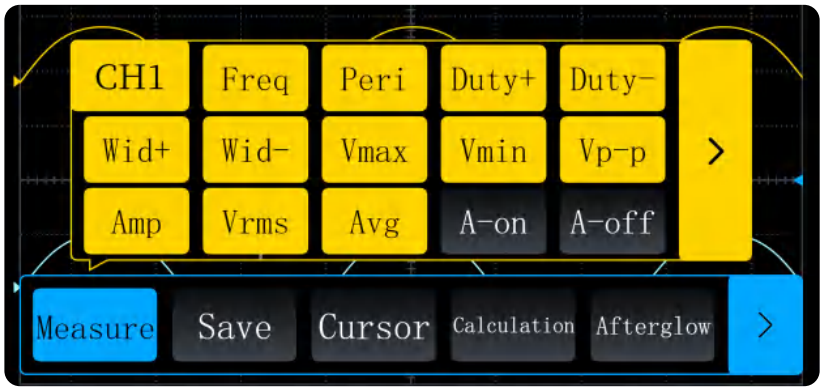
⑯**Menu button**

1.2 Oscilloscope Menu Section



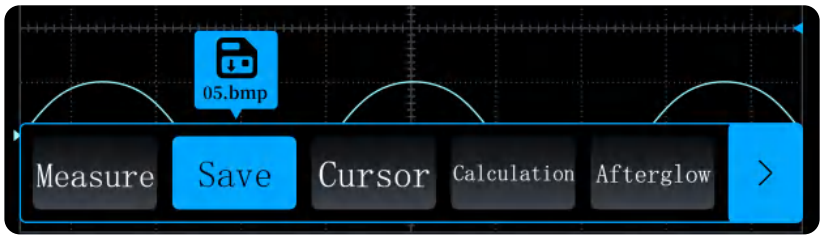
Measure

Click on Measurement to select the value of the measurement parameter to be displayed. This is shown in the shown in the figure.



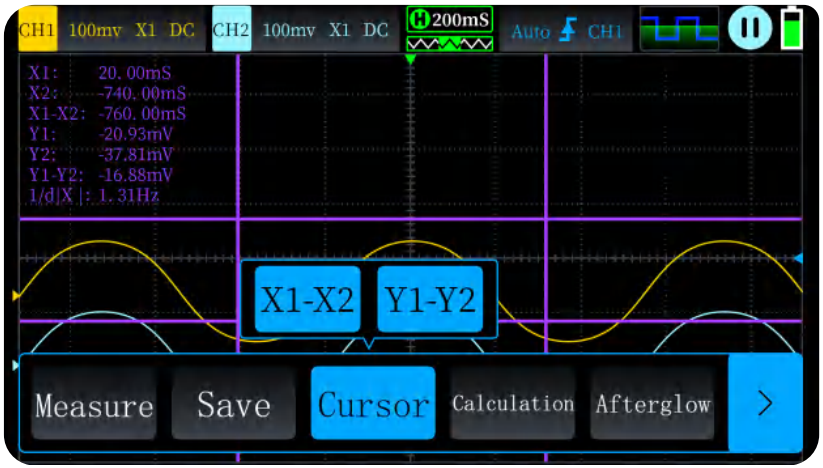
Save

Clicking Save will store the measurement page oscilloscope, as a BMP format in the Screenshot file folder on the USB memory stick of the machine. Screenshot file folder on the machine's USB memory stick.The name of the image will be displayed when saving.



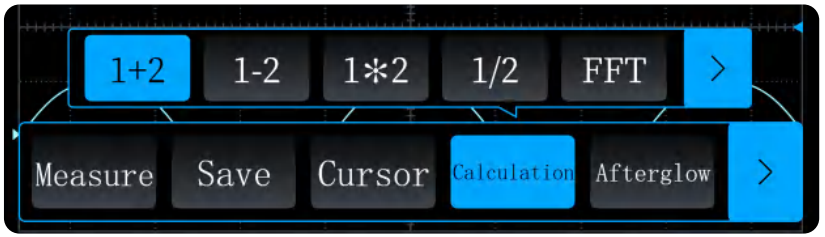
Cursor

Click on the cursor to select X1-X2, Y1-Y2 display



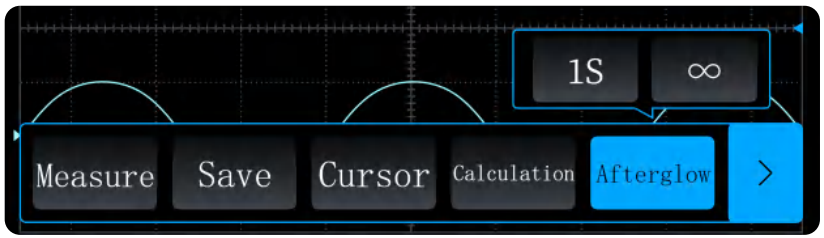
Calculation

Can choose to display 1+2, 1-2, 1*2, 1/2, FFT, -1, -2, |1|, |2|



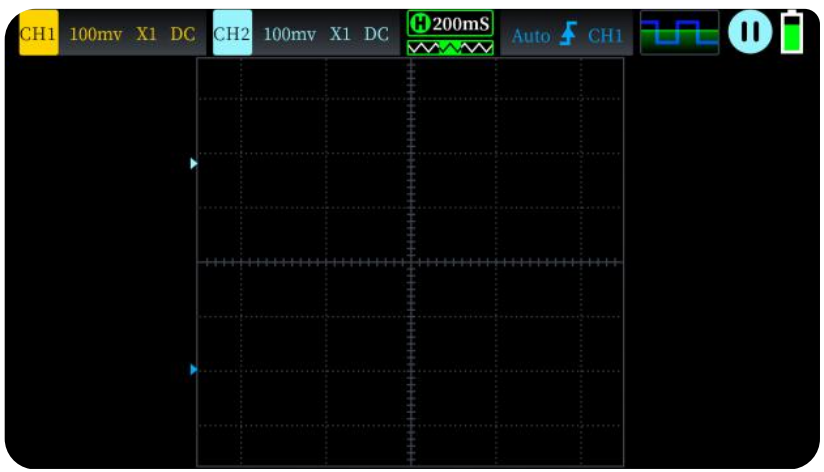
Afterglow

Click Afterglow to select 1S, unlimited display.



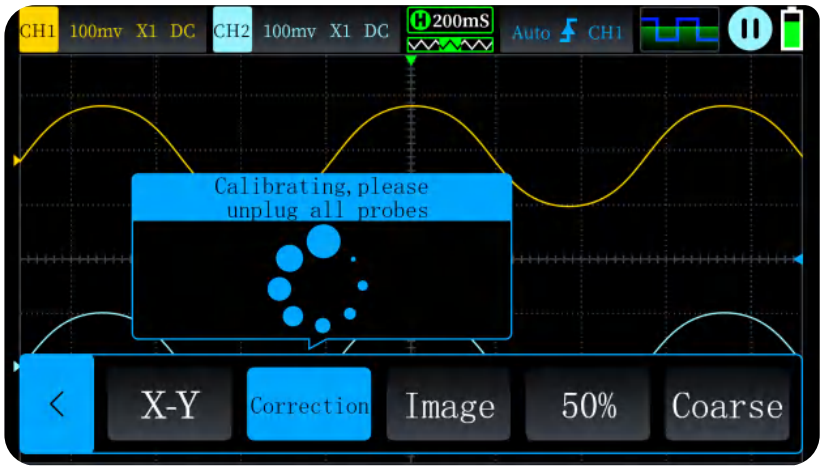
X—Y

Click X-Y to enter the X-Y display. At this time, measurement, cursors, operations, and afterglow are all useless.



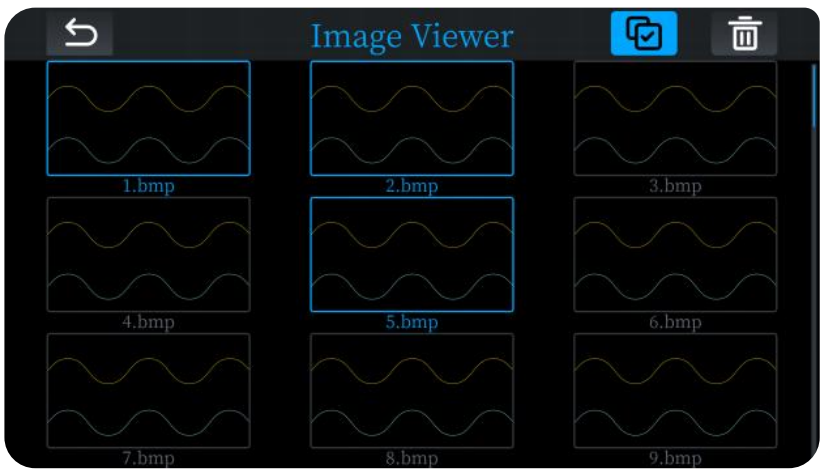
Correction

Click Calibration, remove all probes, and then enter calibration.



Image

Click on the picture to enter the picture viewing interface.



50% Click 50% to automatically adjust the bias voltage, trigger voltage etc. are adjusted to the right position.

Micro Click on fine/coarse adjustment to adjust the speed of moving waveforms.

1.3 Oscilloscope Parameters

Channel	Dual channel	**Band Width**	50MHz
Real-time sampling rate	250MSa/s	**Storage Depth**	Up to 64kByte
Time base range	10ns/div - 10s/div	**Vertical Sensitivity**	10mv/div - 10v/div
Waveform Display Mode	YT/XY/scroll	**Vertical Resolution**	8 bits
Input Impedance	1MΩ	**Bandwidth limit**	Support 20MHz limit
Probe Attenuation Coefficient	1x/10x	**Input Coupling**	AC/DC
Trigger Type	Rising/Falling edge	**Peak Voltage**	±400V
Trigger Level Range	8 cells (positive/negative)	**Trigger Mode**	Auto/Normal/Single
Storage Space	13M	**Measured Data**	Period, frequency, peak-to-peak value, maximum value, minimum value, Average value, effective value, amplitude, duty cycle, pulse width

2.1 Signal Generator Interface Description

①Signal type selection: There are 12 types of waveforms to choose from, including sinusoidal wave, square wave, sawtooth wave, half wave, full wave, positive step wave, negative step wave, DC signal, exponential rise, exponential fall, multi-audio, and sync pulse.

②**Waveform selection paging:** Clicking on【Previous】、【Next】can switch to display other waveforms for selection.
③**Run/Pause:** Clicking on this button can switch between signal running and pausing.
④**Frequency:** Specific parameters can be set by inputting values with the buttons, with a maximum of【10 000 000】. Clicking on【Confirm】is required for the settings to take effect.
⑤**Amplitude:** Clicking on this can set specific parameters by inputting values, with a maximum of【3.0V】, Clicking on【Confirm】is required for the settings to take effect, and adjustment can also be made by sliding on the right.
⑥**Duty cycle:** Clicking on this can set specific parameters by inputting values, with a maximum of【100%】, Clicking on【Confirm】is required for the settings to take effect, and adjustment can also be made by sliding on the right.
⑦**Value input area:** Selecting【Frequency】,【Amplitude】, or [Duty cycle]allows for inputting specific values, which will take effect after clicking on【Confirm】.

2.2 Signal Generator Parameters

Different Waveform Output Frequencies	Sine wave: 10MHz, other waveforms 5MHz
Waveform Frequency	0-10MHz
Waveform Amplitude	0.1V-3.0V
Square Wave Duty Cycle	0-100%

3.1 Digital Multimeter Interface Description

①**Mode switch:** Switch to other modes.

②**DC/AC switch:** If the selected mode is V (voltage), mA (milliampere current), A (current), you can switch between DC and AC by clicking on the DC/AC button.

③**Measurement parameters:** Display the current measurement mode and the measured parameters.

④**Data saving:** Click to save the current measurement parameters. You can save up to five parameters, and exceeding five will replace the earliest saved parameters.

⑤**Max/Min value display:** The maximum and minimum values of the measured parameters will be displayed in a table, and a curve will represent the variation of the measurement values over time.

⑥**Run/Pause:** You can stop or resume the measurement process while using the multimeter.

⑦**Connection guide:** Selection of a mode will provide prompts for the corresponding connection points.

3.2 Gear Introduction

●**High current measurement:** Connect the red probe to the 10A jack, and the black probe to the COM jack.

※Note: Measuring currents greater than 10A will blow the fuse. Please evaluate the current before measurement.

●**Low current measurement:** Connect the red probe to the mA jack, and the black probe to the COM jack.

※Note: Measuring currents greater than 1A will blow the fuse. Please evaluate the current before measurement, and if unsure, measure on the high current setting first.

●**Auto, voltage, resistance, capacitance, temperature, diode/continuity measurement:** Connect the red probe to the first hole , and the black probe to COM. Switch to the appropriate function setting depending on the parameter being measured.

●**Auto range:** Can only automatically detect voltage and resistance. When measuring voltage, it will automatically detect AC/DC voltage.

●**Diode/continuity range:** When measuring continuity, if the resistance value is <50Ω, the buzzer will sound. When measuring a diode, the screen will display forward bias. If the test lead polarity is opposite to the diode polarity, or if the diode is damaged, the screen will display “OL”.

3.3 Multimeter Parameters

Function	Range	Accuracy
DC Voltage	1.9999V/19.999V/199.99V/1000.0V	±(0.5%+3)
AC Voltage	1.9999V/19.999V/199.99V/750.0V	±(1%+3)
DC Current	19.999mA/199.99mA/1.9999A/9.999A	±(1.2%+3)
AC Current	19.999mA/199.99mA/1.9999A/9.999A	±(1.5%+3)
Resistance	19.999MΩ/1.9999MΩ/199.99KΩ/19.999KΩ/	±(1.5%+3)
	1.9999KΩ/199.99Ω	±(0.5%+3)
Capacitance	999.9uF/99.99uF/9.999uF/999.9nF/99.99nF/9.999nF	±(2.0%+5)
	9.999mF/99.99mF	±(5.0%+20)
Temperature	—55~1300°C / —67~2372°F	±(2.5%+5)
Diode/ON-OFF	✓	

4.1 Settings Interface

Language settings: There are 8 languages to switch among, including Chinese, English, Deutsch, Português, にほんご, Español, 한국인, Русский.

Brightness settings: Swipe left or right to adjust the screen display brightness.

Sound settings: Swipe left or right to adjust the device volume.

Theme settings: Switch between device yellow/blue themes.
Startup settings: Automatically jump to the corresponding function interface after the device starts up. Selecting【None】will jump to the main menu after startup.
Auto shutdown: The device will automatically shut down if no operation is performed within the set time. Selecting【OFF】will disable the auto shutdown function.
USB sharing: Enable USB sharing to access the USB drive when connected to a computer. Screenshots can be found in the【Screenshot file】folder.
About: Displays brand information and current version number.
Factory reset: Restoring to factory settings will reset all previous settings.

5.FIRMWARE UPGRADE

In the settings, when connecting to a computer, a USB drive will pop up. Then, place the firmware into the "Upgrade file" folder on the USB drive, disconnect the USB, shut down, and then restart the device. It will automatically enter the upgrade page. After the upgrade is completed, the device will automatically shut down.

6.PRECAUTIONS

- When using both channels simultaneously, the ground clips of the two probes must be connected together. It is strictly prohibited to connect the ground clips of the two probes to different potentials, especially to different potential ends of high-power devices or 220V, as this can cause damage to the oscilloscope mainboard by short-circuiting the internal ground lines of the mainboard, since both channels share a common ground. All oscilloscopes are like this.
- The BNC end of the oscilloscope can tolerate a maximum input of 400V. It is strictly forbidden to input a voltage exceeding 400V when using the 1X probe switch.

- When charging, a separate charging head must be used for charging. It is strictly prohibited to use the power supply of other devices being tested or the USB port, as this may cause a short circuit of the mainboard ground lines during testing, resulting in damage to the mainboard.
- Before using the product, please check whether the insulation near the shell and interfaces is damaged.
- Please hold the protective device behind the test probe with your fingers.
- When measuring a circuit, do not touch any of the input terminal ports.
- Disconnect the test probes and circuit connections before changing the range.
- When the DC voltage of the circuit being measured is higher than 36V or the AC voltage is higher than 25V, users should pay attention to prevent electric shock.
- When the battery power is low, a pop-up window will prompt you to charge in a timely manner to avoid affecting measurement performance.

7.PRODUCTION INFORMATION

Any FNIRSI's users with any questions who comes to contact us will have our promise to get a satisfactory solution +an extra 6 months warranty to thanks for your support!
By the way, we have created an interesting community, welcome to contact FNIRSI staff to join our community.

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