FNIRSI 菲尼瑞斯

DST-210

多功能示波器万用表说明书 V1.2

MULTIFUNCTIONAL OSCILLOSCOPE MULTIMETER 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 Requirements

1.1 Environmental Requirements

Precautions

- Avoid high temperatures, open flames, corrosive gases, humid or dusty environments to prevent equipment failure.
- Follow the safety regulations to prevent incorrect use of the meter. To ensure your personal safety, please use the test pens provided with the meter. Before use, check and make sure they are intact.
- The correct input terminal, function, and range must be used for measurement. The input value must not exceed the input limit value specified for each range to prevent damage to the meter.

Keep away from the following items

- Heaters: Avoid overheating or fire risks.
- Water, chemicals: Solvents: Leakage may damage the device or cause a fire.
- Strong magnetic devices: Prevent magnetic fields from interfering with the normal operation of the device.

Do not discard used batteries or devices with household waste. Dispose of in accordance with national or local regulations.

2. Product Overview

2.1 Product Introduction

DST-210 is a multifunctional oscilloscope multimeter launched by FNIRSI, which is comprehensive and practical, and is designed for the maintenance and R&D industries. It integrates oscilloscope, signal generator and multimeter in one, and has the following features.

The main features of the product are:

Oscilloscope functions:

- Sampling rate: 48MSa/s
- Analog bandwidth: 10MHz
- Voltage protection: ±400V
- Waveform storage: supports screenshot saving and viewing, which is convenient for data analysis

Signal generator function:

- Supports 13 types of waveform output, frequency range 0-50kHz, with adjustable output voltage up to 3V.
- Output parameters (frequency, amplitude, duty cycle) are adjustable, providing flexibility to meet various needs.

Multimeter functions:

- Full functions: with recording mode, automatic measurement, AC / DC voltage, AC / DC current, resistance, capacitance, diode/on/off, frequency, temperature, data retention, live detection of neutral and live wires, overload protection and battery undervoltage indication.

Portable design:

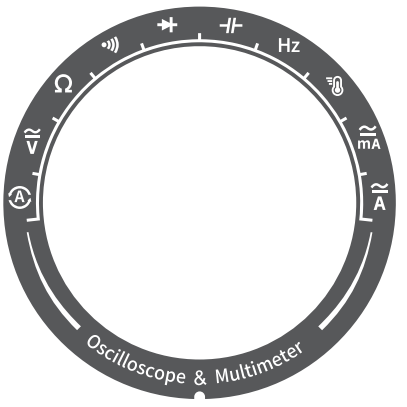
- Equipped with a 2.8-inch TFT color screen, the picture is clear and intuitive
- Built-in high-capacity rechargeable lithium battery (1500mAh), supports long standby time (4 hours)
- Small and light, suitable for mobile use.

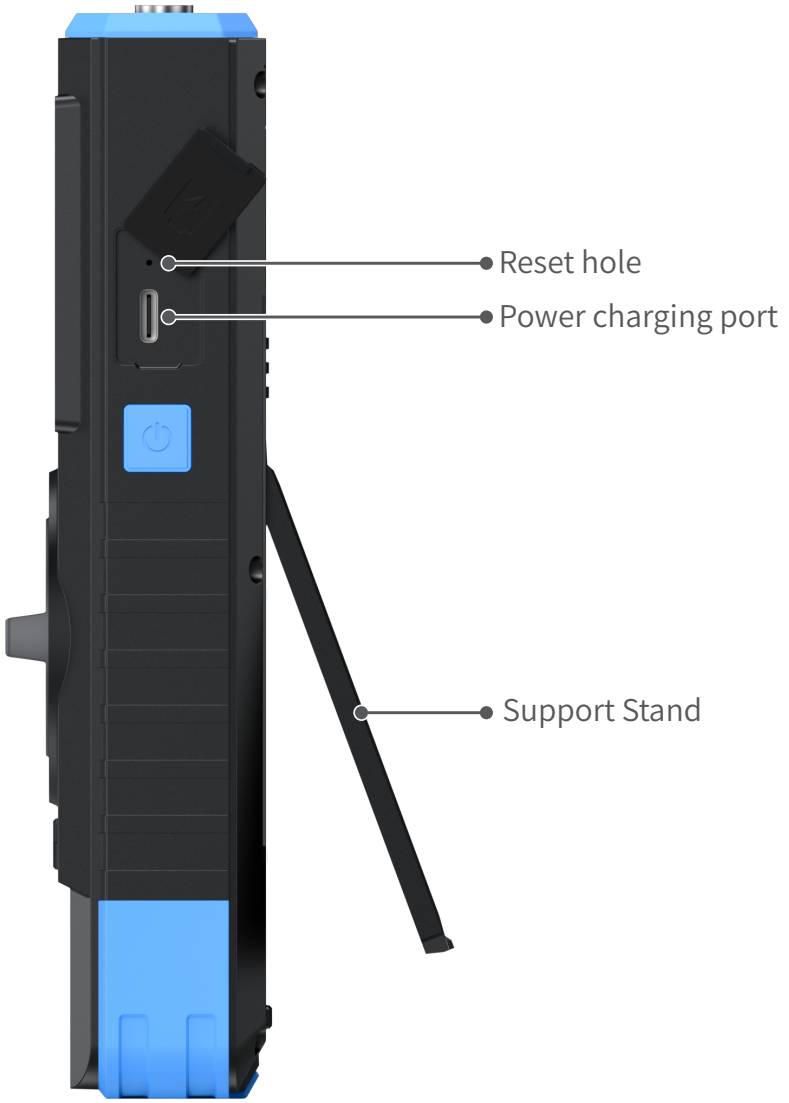
FNIRSI-DST-210 is committed to providing users with powerful, flexible functions and portable operation experience. It is an ideal multi-functional instrument for professionals, factories, schools, enthusiasts or families.

2.2 Operating Instructions

Knob gear button

- Ⓐ :Auto Range
- Ω :Resistance
- ⊣⊢ :Diode
- Hz :Frequency
- ≂ mA :AC/DC mA current
- ≂ V :AC / DC voltage
- •)) :Buzzer mode
- ⊣⊢ :Capacitance
- :Temperature
- ≂ A :AC / DC current



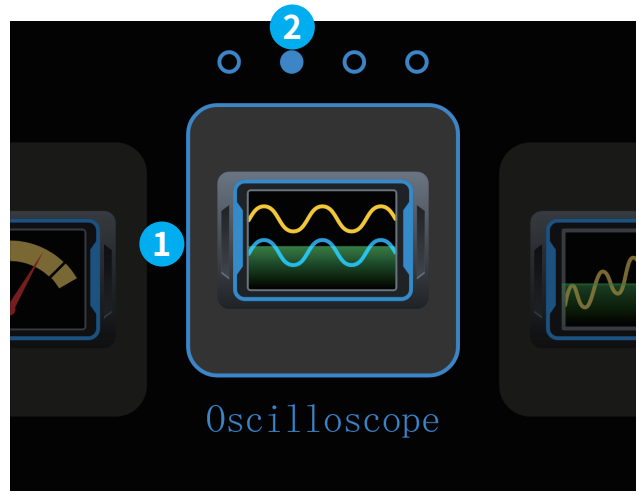


2.3 Function mode

①**Function menu:**This area displays the function name selected at the moment.

②**Mode switch:**Click the left and right buttons or the up and down buttons to select the function. There are 4 sections:

- **multimeter**
- **oscilloscope**
- **signal generator**
- **settings**

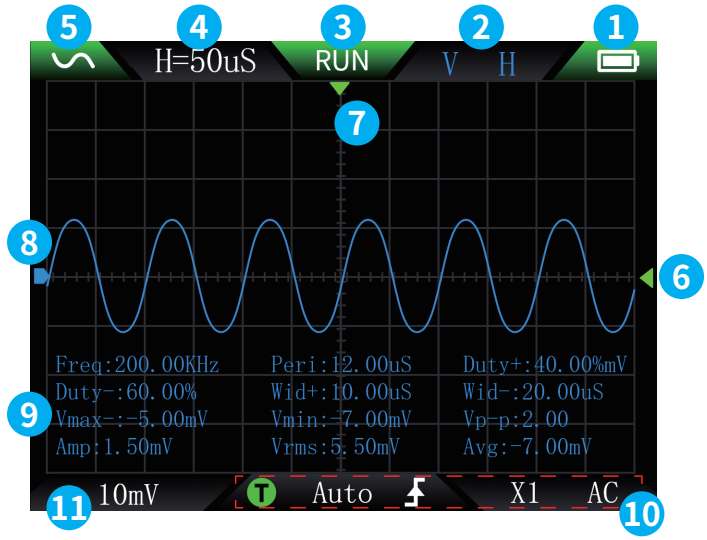


Button	Operation	Function
⏻	Long Press	Switch on/off
	Short Press	Menu button
◀ ▶ / ▲ ▼	Short Press	Enter the function panel page of the switching mode and select the mode
ENTER ⇋ 50%	Short Press	ENTER confirmation button, confirm to enter the currently selected mode
MODE	Short Press	MODE switch button, quickly switch modes
Knob Selector	Flip	Quickly jump to the corresponding multimeter function and measure the gear

2.4 Oscilloscope page diagram

①**Battery indicator:**This area displays the remaining battery.

②**Mode switch:**Short press the ENTER confirmation button to switch horizontal and vertical units, horizontal trigger movement, channel waveform up and down movement, and trigger level up and down movement.



③**Run/pause indication:**Short press the run/pause button, RUN for running, STOP for stopping.

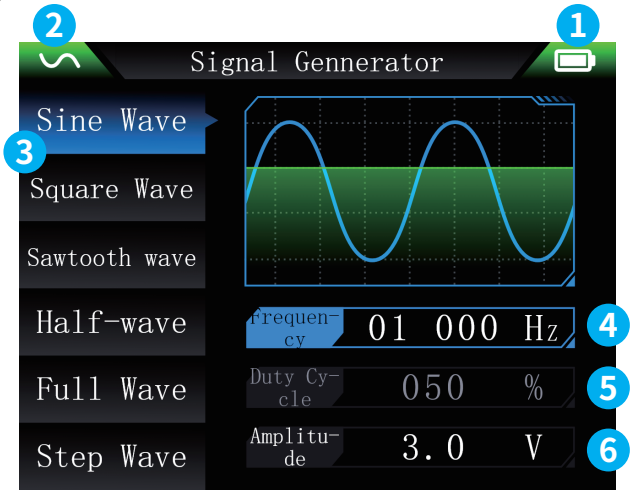
④**Time base：**refers to a large horizontal grid representing the length of time, which is determined by the sampling rate.

⑤**Signal generator indication:**Green means the function signal generator is turned on, red means it is not turned on, and the displayed graphics represent the set waveform category.

⑥**Trigger voltage indicator icon:**trigger threshold.
⑦**Trigger X position indicator arrow:**indicates that this is the trigger point.
⑧**Channel waveform:**waveform signal collected by the channel.
⑨**Measurement data:**long press the run/pause button to turn on/off the measurement parameter display.
⑩**Trigger setting:**long press the MODE button to set the trigger mode, trigger edge, probe ratio, and coupling type.
⑪**System voltage:**refers to a large vertical grid representing the voltage length, which is determined by the sampling rate.

Button	Operation	Function
⏻	Short Press	Menu button, return to the function menu
	Long Press	Turn the power on and off
MODE	Short Press	Switch to other modes
	Long Press	Open the oscilloscope setting menu to set waveforms, parameters, afterglow, pictures, etc. Press and hold again to close the parameter menu.
AUTO LIVE ↩	Short Press	Automatic measurement
	Long Press	Automatic calibration
ENTER ⇋ 50%	Short Press	Switch horizontal and vertical units, horizontal trigger movement, channel waveform movement, trigger level movement.If in the parameter menu, short press to confirm the setting.
	Long Press	50% center
RUN SAVE	Short Press	Click to pause, click again to run
	Long Press	Screenshot

2.5 Signal generator page



①**Battery indicator:**This area displays the remaining battery.

②**Status:**This area displays the on-state of the signal generator, green for on, red for off.

③**Waveform category:**Short press the up and down keys to select the waveform category, a total of 13 waveforms are available.

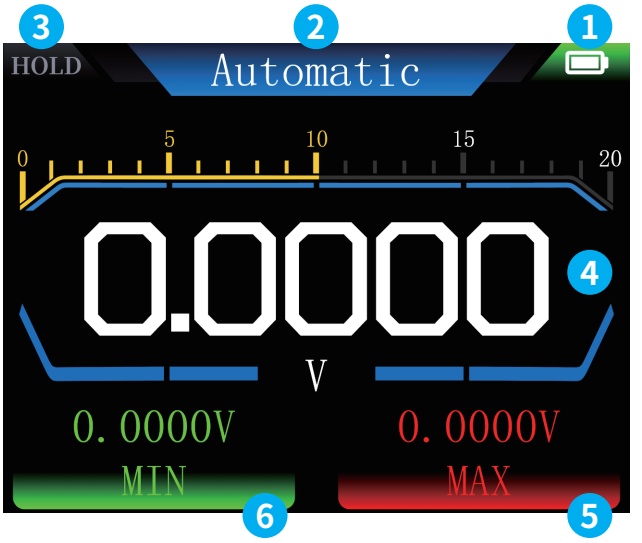
④**Frequency setting:**Click the confirmation button to enter the frequency/duty cycle/amplitude selection, click the button to select the frequency to enter the third-level navigation, set the frequency value, and click the return key to save.

⑤**Duty cycle setting:**Click the confirmation button to enter the frequency/duty cycle/amplitude selection, click the button to select the duty cycle to enter the third-level navigation, set the duty cycle, and click the return button to save.

⑥**Amplitude setting:**Click the confirmation button to enter the frequency/duty cycle/amplitude selection, click the button to select the amplitude to enter the third-level navigation, set the amplitude, and click the return button to save.

Button	Operation	Function
⏻	Short Press	Menu button, return to the function menu
	Long Press	Turn the power on and off
MODE	Short Press	Switch to other modes
AUTO LIVE	Short Press	Return button
ENTER	Short Press	Confirm, enter the frequency/duty cycle/ amplitude selection, and use the up, down, left, and right buttons to set the corresponding values.
RUN SAVE	Short Press	Click to turn on/off, and click again to turn on/off

2.6 Multimeter page



①**Power display:**This area displays the remaining power.

②**Gear display:**This area displays the gear selected for the multimeter measurement.

③**Data hold:**Short press the Run/Pause button to implement the data hold function.

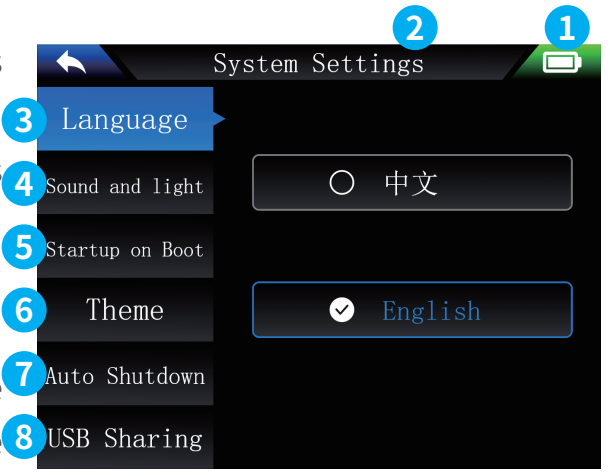
④**Measurement data display:**This area displays the measurement data of the gear selected for the multimeter measurement.

⑤**Max. value:**This area displays the maximum value during the measurement process and is updated in real time.

⑥**Min. value:**This area displays the minimum value during the measurement process and is updated in real time.

Button	Operation	Function
⏻	Short Press	Menu button, return to the function menu
	Long Press	Turn the power on and off
MODE	Short Press	Switch to other modes
	Long Press	Switch to recording mode, which will visualize the measured data
AUTO LIVE	Short Press	Switch to neutral line and live line detection, click again to exit
RUN SAVE	Short Press	Turn on/off data retention
	Long Press	Display in recording mode, record the measured data at the moment, and display it in the right area of the screen
ENTER	Short Press	Quickly switch the current gear and other options

2.7 System settings



①**Battery display:**This area displays the remaining battery.

②**Mode display:**This area displays the mode system settings.

③**Language:**Chinese and English can be switched.

④**Sound and light:**Click the confirmation button to enter the sound and light settings, use the up and down keys to select the sound/brightness, and the left and right keys to adjust. The sound can be set to mute.

⑤**Startup on Boot:**There are 3 function modes that can be selected to enter by default when the power is turned on, or you can choose none of them.

⑥**Theme:**The device provides two themes: night and daylight.

⑦**Auto Shutdow:**You can set the auto-off time to 15min, 30min, or 1hour. When there is no operation, the device will automatically shut down after the set standby time.

⑧**USB sharing:**After turning it on, you will enter the USB sharing interface. After connecting to the computer, a USB flash drive will pop up. You can get the screenshot image in the [Screenshot file] folder. You can also place "LOGODST-210.jpg" (custom startup LOGO) in the [LOGO] folder.

⑨**About:**Display product brand information and current version number.

⑩**Restore factory settings:**Click OK to choose whether to restore factory settings.

3.Technical Specifications

3.1 Device Parameters

Parameters	Specifications
Model	DST-210
Display	2.8-inch TFT color screen
Backlight	Brightness adjustable
Power supply	TYPE-C (5V / 1A)
Battery	3000mAh
Languages	中文、English
Product size	≈177.43×87.47×34.5mm
Bare weight	≈300g

3.2 Oscilloscope Parameters

Parameters	Specifications	Notes
Sampling rate	48MSa/s	
Bandwidth	10MHz	
Input impedance	1MΩ	
Coupling mode	AC/DC	
Test voltage range	1:1 probe: 80Vpp (+40V) 10:1 probe: 800Vpp (+400V)	Oscilloscope placed at X1 Oscilloscope placed at X10
Vertical sensitivity	10mV/div~10V/div	X1
Vertical displacement	Adjustable, with indication	
Horizontal time base range	50ns~20s	
Trigger mode	Automatic, normal and single	
Trigger mode	Rising edge, falling edge	
Trigger level	Adjustable, with indication	
Waveform freeze	With HOLD function	
Automatic measurement	Max, Min, Avg(Vavg), RMS, VPP, Freq, Cycle, Duty cycle	

3.3 Multimeter Parameters

Function	Range	Accuracy
DC voltage	1.9999V/19.999V/199.99V/1000V	±(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	±(0.5%+3)
	1.9999KΩ/199.99Ω	±(2.0%+3)
Capacitance	999.9uF/99.99uF/9.999uF/ 999.9nF/99.99nF/9.999nF	±(2.0%+5)
	9.999mF/99.99mF	±(5.0%+20)
Frequency	9.999MHz/999.9KHz/99.99KHz/9.999KHz/ 999.99Hz/99.99Hz/9.999Hz	±(0.1%+2)
Temperature	(-55~1300°C)/(-67~2372°F)	±(2.5%+5)
Diode/Continuity	✓	
Single probe AC voltage detection (live) (LIVE)	✓	

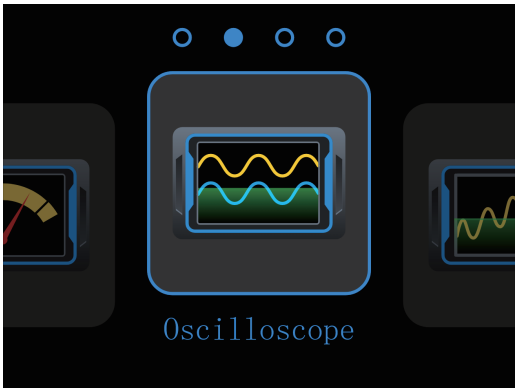
3.4 Signal Generator Parameters

Parameters	Specifications
Output waveform	Supports 13 waveform outputs
Waveform frequency	0-50KHz
Square wave duty cycle	0-100%, rectangular wave, sawtooth wave adjustable
Waveform amplitude	0.1V-3.0V

4.Operation Guide

4.1 Power on

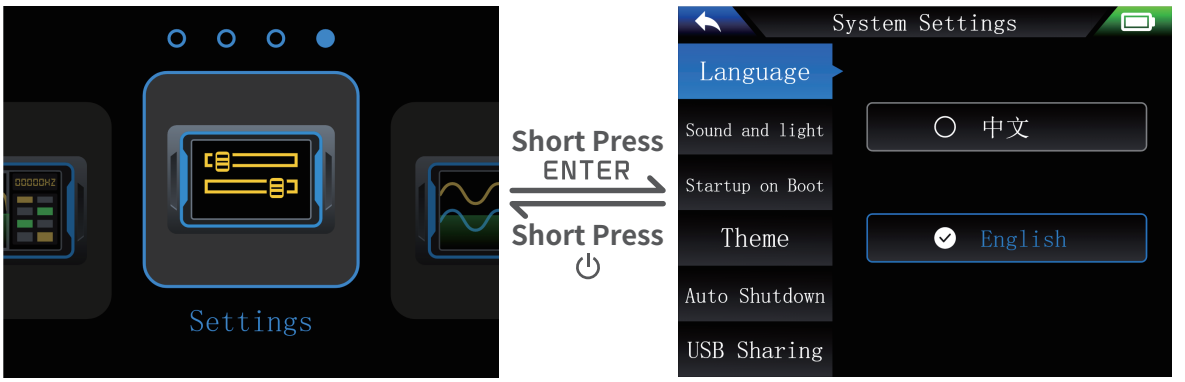
Long press ⏻ power on, wait for the system to load, and enter the default interface of system settings.



Default Interface

4.2 Language settings

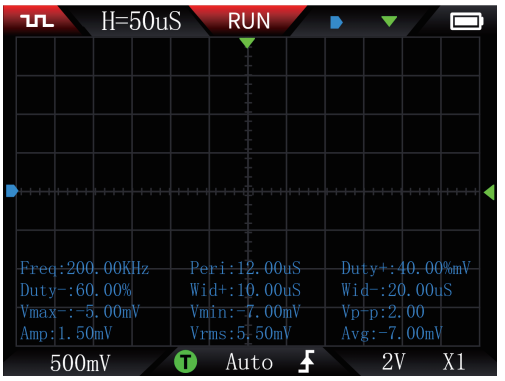
In the default interface, short press the left/right button to select system settings, short press the OK button to enter system settings, select language settings using the up/down buttons, and then short press the OK button to enter language settings, select the language to be set using the up/down buttons, and confirm the selection with the OK button.



4.3 Adjust oscilloscope parameters

Oscilloscope adjustment

In the default interface, short press the left and right buttons to select the function module oscilloscope, and click the confirmation button to enter the oscilloscope. Long press the mode switch button (**MODE**) to enter the oscilloscope parameter setting, and select and set the coupling type, probe ratio, trigger mode, trigger edge and other parameters through the button selection area. Long press the mode switch button (**MODE**) again to close the oscilloscope parameter setting.



Long press MODE

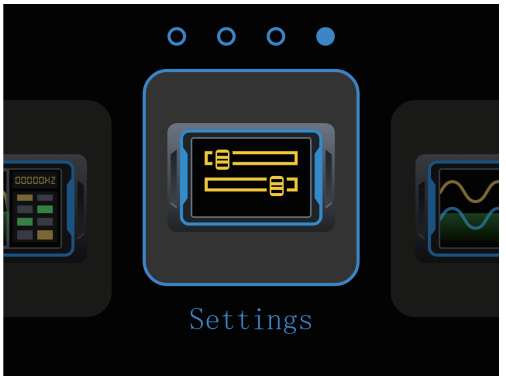
Long press MODE

Oscilloscope function **Oscilloscope parameter settings**

4.4 Brightness adjustment

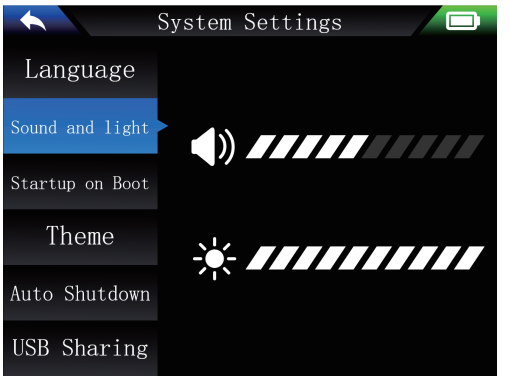
Brightness adjustment

In the default interface, short press the Select button to select System Settings, short press the Confirm button to enter System Settings, click the Select button to select Sound and Light Settings, then click the Confirm button to enter Sound and Light Settings, select Brightness, and use the left and right Select buttons to adjust the brightness in real time.



Short Press ENTER

Short Press



Adjust other functions of system settings

The corresponding function selection and activation are roughly the same as the above operation navigation, and the step description is omitted.

5.Quick Start Guide

5.1 Quick Measurement

1、Turn on the multi-function multimeter oscilloscope, wait for the system to load, and select the mode: oscilloscope, signal generator, multimeter, etc. For example: select signal generator.

2、First connect the interface, enter the signal generator, and select the waveform to be output. Click the confirmation button to confirm the setting of Freq, Duty cycle, Amp., etc.

3、When the corresponding parameters are set, click the run/pause button to start the signal generator.

4、Click the mode switch button to perform other functions.

5.2 Firmware Upgrade

- Turn off the device, long press the **MODE** button and the power button at the same time, the device will pop up the Firmware Upgrade interface, insert the USB Type-c data cable to connect the computer, enter the Firmware Upgrade interface to upgrade the firmware.
- After entering Firmware Upgrade, the computer will recognize the USB drive and copy the firmware file directly to the USB drive.
- Pull the firmware file to the specified folder of the USB drive. If the firmware upgrade is completed, the shutdown charging interface will be displayed.

※**Note:**Firmware upgrade is only supported on computers with Windows 10 and above.

6.Troubleshooting

6.1 Unable to boot

Possible causes:

·Battery exhausted. ·Loose or damaged battery connection

Solution:

①Check battery charge and charge if low

②If battery fails to charge or device still does not power on, try reinstalling or replacing the battery.

6.2 Screen does not display

Possible causes:

·Screen backlight is off. ·Display hardware malfunction.

·System software abnormality

Solution:

①Check and adjust the backlight brightness settings according to the manual.

②Try restarting the device to ensure the system returns to normal.

③If the screen still does not display properly, the display may need to be repaired or replaced.

7. Maintenance

Cleaning the outside of the device

●**Frequency:** Clean once a month, depending on the usage environment.

●**Method:** Use a soft cloth to gently wipe the surface of the device. Avoid using chemical cleaners, especially those containing alcohol or strong acids or alkalis, to avoid damaging the casing or screen.

●**Note:**

•Keep the device clean and remove dust around the buttons regularly to keep it in good condition.

•Ensure that no liquid, dust or debris enters the device interface.

•If the input jack is dirty or wet, it may affect the reading.

•Use a new cotton ball dipped in a cleaner or lubricant to clean each jack. The lubricant can prevent moisture-related jack contamination.

Check the battery and power

- **Battery maintenance:** For instruments with built-in batteries, check the health of the battery regularly. Avoid complete battery discharge. It is recommended to charge regularly and avoid not using the device for a long time.
- **Charging specifications:** Use the official charger to charge, avoid overcharging or over-discharging, and ensure that the battery is in the appropriate operating voltage range.
- **Battery replacement:** If the battery shows excessive attenuation (such as failure to charge normally or extremely fast discharge), it should be replaced in time.

Storage and Carrying:

- Storage environment: The device should be stored in a dry and ventilated environment, avoiding high temperature, high humidity or drastic temperature changes. Avoid placing it in direct sunlight.
- Carrying: Be careful to avoid falling when using, especially when carrying. It is recommended to use a protective case or a special bag for carrying.

Software Update

- Regularly check whether the device has new firmware to update. The latest firmware can fix known bugs and improve device performance.
- When updating, make sure the operation steps are correct, use the officially released firmware files, and avoid power outages or other interference.

Restore factory settings

- If the device is abnormal or does not work properly, try to restore the factory settings. After restoring the settings, the device will clear all custom configurations and return to the initial state.
- For methods to restore factory settings, please refer to the user manual or contact the manufacturer's customer service.

8.Contact Us

Any FNIRSI users who contact us with questions will receive our promise of a satisfactory solution, plus an extra 6-month warranty as a token of our appreciation for your support! By the way, we have created an exciting community, and we welcome you to contact FNIRSI staff to join.

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E-mail:service@fnirsi.com(Equipment Service)

http://www.fnirsi.com/

9.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

1.Unable to present the original valid warranty card.

2.Damage caused by improper installation not meeting product requirements, standards, or relevant specifications.

3.Damage caused by accessories in the installation environment not meeting product requirements, standards, or relevant specifications.

4.Damage caused by improper use, improper storage, unauthorized disassembly, or unauthorized repairs by the user.

5.Expiration of the warranty period.

Warranty Card

Product Model	**DST-210**	**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:**		