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> FNIRSI DST-210 Handheld Oscilloscope 10MHz Bandwidth, 19999 Counts, Digital Oscilloscope Multimeter DDS Generator 3IN1, 48MS/s Sampling Rate, AC/DC Voltage Current, Capacitor, Resistor, Diode Test

FNIRSI DST-210

FNIRSI DST-210 Handheld Oscilloscope, Multimeter, and DDS Signal Generator

User Instruction Manual

INTRODUCTION

The FNIRSI DST-210 is a compact and powerful 3-in-1 device designed for a wide range of electrical and electronic testing applications. It integrates the functionalities of a digital oscilloscope, a true RMS digital multimeter, and a DDS signal generator into a single handheld unit. This manual provides detailed instructions for its setup, operation, and maintenance.

WHAT'S IN THE BOX

- DST-210 DMM Scope (1)
- P6100 Probe (1)
- Multimeter Test Leads (1)
- Alligator Clip Probe (1)
- USB Data Cable (1)
- User Guide (1)

What's in the box?



1.DST-210 DMM Scope

2.P6100 Probe

3.DMM Test Leads

4.Alligator Clip Probe

5.USB Data Cable

6.User Guide

Figure 1: All components included in the FNIRSI DST-210 package.

SETUP

1. Charging the Device

Before initial use, fully charge the device using the provided Type-C USB cable. Connect the cable to the Type-C port on the side of the device and to a 5V 1A power source. The battery indicator on the screen will show charging status. A full charge typically takes approximately 3 hours for the 3000mAh battery.

2. Initial Power-On and Language Selection

Press and hold the power button on the side of the device to turn it on. Upon first power-on, you will be

prompted to select your preferred language. Use the navigation buttons to select 'English' and press 'ENTER'.

3. Connecting Probes

The DST-210 supports various probes for its different functions:

- **Multimeter Probes:** Insert the red and black multimeter test leads into the corresponding input jacks at the bottom of the device (V Ω Hz for red, COM for black).
- **Oscilloscope Probe:** Connect the P6100 oscilloscope probe to the BNC connector labeled 'DSO' on the top of the device. Ensure the probe's attenuation switch is set correctly (e.g., 1X or 10X) to match the device's settings.
- **Signal Generator Probe:** Connect the alligator clip probe to the 'DDS' BNC connector on the top of the device for signal output.



Figure 2: FNIRSI DST-210 with all probes connected for various functions.

OPERATING MODES

The DST-210 offers three primary operating modes: Multimeter, Oscilloscope, and Signal Generator. Use the rotary dial to select the desired mode from the main interface.

1. Multimeter Mode

This mode provides comprehensive digital multimeter functionalities with 19999 counts. It supports auto-ranging for most measurements.

- **Measurements:** DC/AC Voltage, DC/AC Current, Resistance, Capacitance, Frequency, Diode Test, Continuity Test, Live/Neutral Wire Detection.
- **Operation:** Rotate the dial to the 'Multimeter' position. The device will automatically attempt to detect the measurement type. Use the navigation buttons to manually select specific measurement types (e.g., AC Voltage vs. DC Voltage) if needed.
- **Features:** Curve recording, Max/Min value display, Data hold, Auto power-off.



Figure 3: Multimeter mode displaying various measurement types.

2. Oscilloscope Mode

The oscilloscope function allows for waveform visualization and analysis with a 10MHz bandwidth and 48MSa/s sampling rate.

- **Measurements:** Real-time waveform display, Frequency, Period, Duty Cycle, Vpp, Vmax, Vmin, Vrms, Average.
- **Operation:** Rotate the dial to the 'Oscilloscope' position. Connect the oscilloscope probe to the circuit under test. Use the navigation buttons to adjust vertical sensitivity (V/div) and horizontal time base (S/div). The 'AUTO' button can automatically optimize display settings.
- **Features:** Support trigger level display, infinite persistence, waveform storage and export.

Handheld 10MHz | 48MSa/s Oscilloscope

Support Trigger Level Display & Infinite Persistence

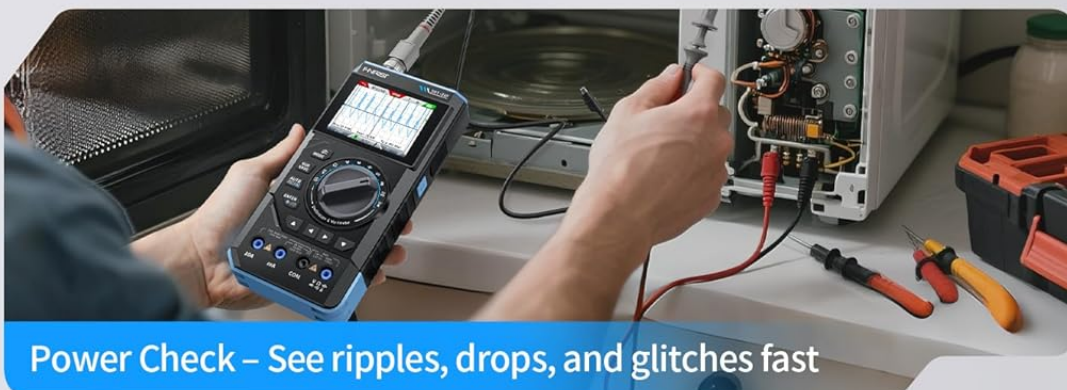


Figure 4: Oscilloscope mode demonstrating waveform analysis capabilities.

Video 2: Overview of the FNIRSI DST-210's oscilloscope features and real-time waveform display.

3. DDS Signal Generator Mode

The built-in DDS signal generator can output 13 types of waveforms for various testing and simulation purposes.

- **Waveforms:** Sine Wave, Square Wave, Sawtooth Wave, Half-Wave, Full-Wave, Step Wave, Reverse Step Wave, Index Up, Index Decrease, Direct Current, Multi-Audio, Sink Pulse, Lorentz Wave.
- **Operation:** Rotate the dial to the 'Signal Generator' position. Connect the alligator clip probe to the circuit where the signal is needed. Use the navigation buttons to select the desired waveform type, adjust

frequency (0-50KHz), duty cycle (0-100%), and amplitude (0.1V-3.0V).

Multiple Measurements

Reliable Tester with Capacitance, Diode, Frequency & Live/Neutral Wire — For Electricians & DIY



AC/DC Voltage



Continuity Test



AC/DC Current



Resistance

Figure 5: Signal Generator mode showing different waveform outputs.

MAINTENANCE

1. Battery and Charging

The device is powered by a 3000mAh lithium battery. Charge it using the Type-C port (5V 1A). The battery icon on the screen indicates the charge level. For optimal battery life, avoid fully discharging the device frequently.

2. Auto Power-Off

To conserve battery, the device features an auto power-off function. This can be configured in the 'System Settings' menu. Options typically include 15 minutes, 30 minutes, 1 hour, or disabled.

3. Display Settings

The 2.8-inch TFT color screen offers adjustable backlight brightness and theme options (Daylight/Night). These settings can be accessed via the 'System Settings' menu to enhance visibility in different lighting conditions.



Figure 6: System settings interface for display and power management.

4. Firmware Updates and USB Sharing

The device supports firmware updates and USB data sharing. Check the manufacturer's website

(www.fnirsi.cn) for the latest firmware and instructions. USB sharing allows for waveform data export to a computer.

TROUBLESHOOTING

- **Device not powering on:** Ensure the battery is charged. Connect to a Type-C charger and try again.
- **No reading in Multimeter mode:** Check that the probes are securely connected and that the correct measurement mode is selected for the circuit under test.
- **Unstable waveform in Oscilloscope mode:** Adjust the trigger level and time base settings. Ensure proper probe connection and attenuation settings.
- **Signal Generator not outputting:** Verify the probe is connected to the 'DDS' port and that the desired waveform, frequency, and amplitude are configured.
- **Screen issues (e.g., flickering, unresponsiveness):** Try a factory reset via the 'System Settings' menu. If the issue persists, contact customer support.

SPECIFICATIONS

Parameter	Value
Real-time Sampling Rate	48MSa/s
Analog Bandwidth	10MHz
Input Impedance	1M Ω
Coupling Mode	AC/DC
Test Voltage Range (1:1 Probe)	80Vpp (\pm 40V)
Test Voltage Range (10:1 Probe)	800Vpp (\pm 400V)
Vertical Sensitivity	10mV/div - 10V/div
Level Time Base	500ns ~ 20s
Multimeter Counts	19999
DDS Waveform Frequency	0-50KHz
Screen Material	2.8 inch TFT Color Screen
Battery	3000mAh
Product Size	\approx 177.43 \times 87.47 \times 34.5mm
Net Weight	\approx 300g

WARRANTY AND SUPPORT

FNIRSI Technology Co., Ltd. is the manufacturer of the DST-210. For warranty claims, technical support, or any inquiries regarding your device, please refer to the contact information provided in the original product packaging or visit the official FNIRSI website: www.fnirsi.cn.

