

FNIRSI

FNIRSI 2C23T 3-in-1 Handheld Oscilloscope Multimeter DDS Generator

USER INSTRUCTION MANUAL

Model: 2C23T | Brand: FNIRSI

1. INTRODUCTION

The FNIRSI 2C23T is a versatile and compact handheld device integrating a 2-channel digital oscilloscope, a 10000-count multimeter, and a DDS signal generator. Designed for professionals, students, and hobbyists, this instrument offers comprehensive measurement and signal generation capabilities for various electrical and electronic applications. Its robust design, high-definition display, and long battery life make it an indispensable tool for on-the-go diagnostics and testing.

2. SAFETY INFORMATION

WARNING: Improper use of this device can lead to electric shock, injury, or damage to the device. Always adhere to safety precautions.

- Ensure all probes and test leads are properly insulated and free from damage before use.
- Do not exceed the maximum input voltage ratings for any mode (400V for oscilloscope, 750V AC/999.9V DC for multimeter).
- Avoid contact with exposed conductors or circuit components when the device is powered on.
- Always connect the ground lead first when making measurements, and disconnect it last.
- Do not operate the device in wet conditions or in environments with explosive gases or vapors.
- Refer to the full safety guidelines in the included manual for detailed instructions.

For a visual demonstration of probe safety and proper grounding techniques, please refer to the following video:

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Video demonstrating the importance of proper probe insulation and grounding for electrical safety.

3. PACKAGE CONTENTS

Upon unboxing your FNIRSI 2C23T, please verify that all the following items are included:

- FNIRSI 2C23T Handheld Oscilloscope Multimeter DDS Generator Unit
- 2 x Oscilloscope Probes (100MHz)
- 2 x Multimeter Test Leads
- USB Type-C Charging Cable
- User Manual
- Other Accessories (e.g., probe adjustment tool, color rings for probes)



Image: FNIRSI 2C23T device and its complete set of accessories.

4. PRODUCT OVERVIEW

The FNIRSI 2C23T features a compact and ergonomic design, built with an FPGA+MCU+ADC hardware architecture for stable performance. It includes a high-voltage protection module for enhanced safety during operation.

4.1. Display and Controls

The device is equipped with a 2.8-inch HD LCD color screen (320*240 resolution) for clear waveform and measurement display. Navigation and control are managed via intuitive buttons, including dedicated keys for channel selection, auto-ranging, saving, and menu access.



Image: Internal and external view of the FNIRSI 2C23T, showing its display and robust construction.

4.2. Power and Durability

The 2C23T is powered by a built-in 3000mAh rechargeable lithium battery, providing up to 6 hours of standby time. It supports Type-C (5V/1A) charging. The device's shell is constructed from ABS+silicone material, offering anti-fall and anti-shock protection for increased durability.

⚡ EXTRA ⚡ ENDURANCE



Image: Detailed view of the 3000mAh battery and USB-C charging capability.

5. SETUP

1. **Charge the Device:** Before first use, fully charge the FNIRSI 2C23T using the provided USB Type-C cable and a compatible 5V/1A power adapter (not included). The charging indicator will show progress.
2. **Power On:** Press and hold the power button (usually marked with a power symbol) until the screen illuminates.
3. **Select Mode:** Use the navigation buttons to select the desired operating mode (Oscilloscope, Multimeter, or Signal Generator) from the main menu.
4. **Connect Probes/Leads:** Depending on the selected mode, connect the appropriate oscilloscope probes or multimeter test leads to the corresponding input jacks on the device. Ensure secure connections.



Image: The FNIRSI 2C23T with its probes and leads connected, illustrating a typical setup.

6. OPERATING MODES

6.1. Oscilloscope Mode

The oscilloscope mode provides a visual representation of electrical signals over time. It features 2 channels, a 10 MHz bandwidth, and a real-time sampling rate of 50 MSa/s.

- **Channel Selection:** Use the CH1 and CH2 buttons to activate or deactivate channels.
- **Auto Measurement:** Press the AUTO button for automatic waveform detection and display optimization.
- **Vertical Sensitivity:** Adjust the vertical scale from 200mV/div to 10V/div to fit the signal amplitude.
- **Time Base:** Adjust the horizontal scale to view different time durations of the waveform.
- **Triggering:** Utilize Auto, Normal, or Single trigger modes with rising or falling edge options to stabilize waveforms.

FNIRSI **3in1**

DUAL CHANNEL DIGITAL OSCILLOSCOPE



Oscilloscope **Multimeter** **Signal Generator**

Dual channel 2X10MHz bandwidth

50MS/s real-time sampling rate

7 signal waveforms

9999 Counting



Image: The FNIRSI 2C23T in oscilloscope mode, displaying dual channel waveforms.

DUAL CHANNEL

10MHZ ANALOG BANDWIDTH

50M SAMPLING RATE

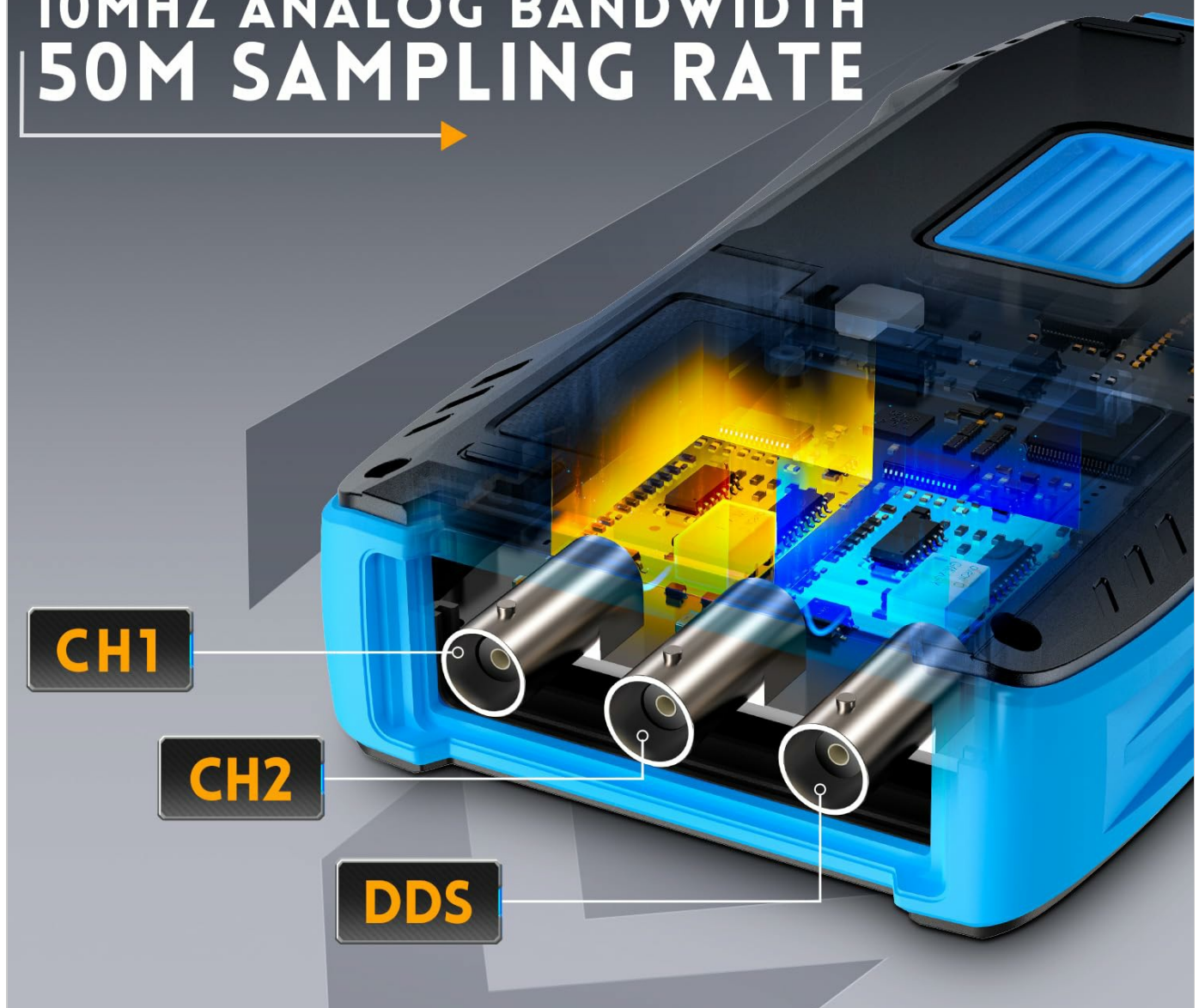


Image: Internal view illustrating the dual channel (CH1, CH2) and DDS connections.

Watch a brief demonstration of the oscilloscope function:

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Video: Quick overview of the FNIRSI 2C23T's oscilloscope capabilities.

6.2. Multimeter Mode

The multimeter mode offers 4-digit, 10000-count measurements for various electrical parameters. It automatically identifies the gear for measurement.

- **Voltage Measurement:** Measure AC Voltage (0-750 V) and DC Voltage (0-999.9 V).
- **Current Measurement:** Measure DC/AC Current (0-9.999 A).
- **Resistance:** Measure Resistance (0-99.99 MΩ).
- **Capacitance:** Measure Capacitance (0-99.99 mF).
- **Diode & Continuity:** Perform diode tests and continuity checks with audible alerts.
- **Live Line Detection:** Identify live electrical lines for safety.

INTELLIGENT ANTI BURNING



Image: The FNIRSI 2C23T performing a voltage measurement in multimeter mode, highlighting its anti-burning feature.

See the multimeter in action:

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Video: Demonstration of the FNIRSI 2C23T's multimeter functionality.

6.3. Signal Generator Mode

The DDS (Direct Digital Synthesis) signal generator can output various waveforms with adjustable frequency, duty cycle, and amplitude.

- **Frequency Range:** Output frequencies from 1Hz up to 2MHz, with 1Hz step resolution.
- **Waveform Types:** Generate seven distinct waveforms: Sine, Square, Triangle, Full-wave, Half-wave, Noise, and DC.
- **Amplitude:** Adjustable output amplitude from 0.1V to 3.3V.
- **Duty Cycle:** Adjustable duty cycle from 0-100% for square waves.

Observe the signal generator in operation:

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Video: A demonstration of the FNIRSI 2C23T's signal generator capabilities.

7. DATA MANAGEMENT

The FNIRSI 2C23T allows for convenient data management, including waveform storage and export.

- **One-Click Save:** Use the SAVE button to quickly capture and store waveform images.
- **Waveform Comparison:** The device supports displaying a reference waveform alongside the measured waveform for easy comparison and analysis.
- **Export to PC:** Connect the device to a PC via the data cable to upload and export saved waveform images for further analysis or documentation.

8. SPECIFICATIONS

Feature	Specification
Product Dimensions	6.6 x 3.4 x 1.4 inches
Item Weight	0.65 Pounds (10.4 ounces)
Model Number	2C23T
Power Source	Battery Powered (3000mAh Lithium Battery)
Display Screen	2.8-inch HD Color Screen (320*240 resolution)
Oscilloscope Bandwidth	10 MHz (Dual Channel)
Sampling Rate	50 MSa/s
Record Depth	32 kb
Max Measurement Voltage	400 V
Multimeter Counts	10000 Counts (4-digit)
Signal Generator Frequency	1Hz - 2MHz
Standby Time	Up to 6 Hours

9. MAINTENANCE

- **Cleaning:** Use a soft, dry cloth to clean the device. Do not use abrasive cleaners or solvents.
- **Storage:** Store the device in a cool, dry place away from direct sunlight and extreme temperatures.
- **Battery Care:** For long-term storage, ensure the battery is partially charged (around 50%) to prolong its lifespan. Recharge periodically if not in use.
- **Probe Care:** Inspect probes and test leads regularly for any signs of wear or damage. Replace them if necessary to ensure accurate measurements and safety.

10. TROUBLESHOOTING

Problem	Possible Cause	Solution
Device does not power on	Low or depleted battery	Charge the device fully using the USB-C cable.
Inaccurate multimeter readings	Incorrect mode selected; Damaged test leads; Out of calibration	Ensure correct mode is selected. Check test leads for damage. If issues persist, contact support for calibration.
Unstable oscilloscope waveform	Incorrect trigger settings; Probe compensation needed; Signal too noisy	Adjust trigger mode (Auto, Normal, Single) and edge. Perform probe compensation. Consider signal filtering if available.
Signal generator output issues	Incorrect frequency/amplitude settings; Loose connection	Verify frequency, duty cycle, and amplitude settings. Ensure output cable is securely connected.
Screen is frozen or unresponsive	Software glitch	Perform a soft reset by holding the power button until the device turns off, then restart.

11. WARRANTY AND SUPPORT

FNIRSI products are designed for reliability and performance. For specific warranty terms and conditions, please refer to the warranty card included with your product or visit the official FNIRSI website. For technical support, troubleshooting assistance beyond this manual, or service inquiries, please contact FNIRSI customer service through the contact information provided in your product packaging or on the official brand store page.

Visit the official FNIRSI Store for more information and support:[FNIRSI Technology Store](#)

ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question