FNIRSI DSO152

FNIRSI DSO152 Handheld Digital Oscilloscope User Manual

Model: DSO152 | Brand: FNIRSI

1. Introduction

The FNIRSI DSO152 is a compact and portable handheld digital oscilloscope designed for various electrical measurement tasks. With a real-time sampling rate of 2.5 MS/s and a 200 KHz bandwidth, it is suitable for both periodic analog signals and aperiodic digital signals. Its user-friendly interface and efficient one-key AUTO setting make it an ideal tool for maintenance, DIY learning, and educational purposes.

Figure 1: FNIRSI DSO152 Oscilloscope and its accessories.

2. Package Contents

Ensure all items are present in your package:

- DSO152 Oscilloscope (Host device)
- P6100 10X High Voltage Probe
- Alligator clip probe
- Charging cable (Type-C)
- Lanyard
- Instruction manual
- Adapter
- Packaging color box

Figure 2: Visual representation of package contents and key parameters.

3. Key Features

- **Faster Sampling Speed:** Real-time sampling rate of 2.5 MS/s and a 200 KHz bandwidth. The 10x probe can measure up to 800 VPP (equivalent to 280 V AC), with voltages up to 400 V measurable.
- **Professional Design:** Features a full trigger function (AUTO/Normal/Single) suitable for both periodic analog and aperiodic digital signals. Equipped with a 2.8-inch HD LCD display screen (320*240 resolution) for clear observation.
- **Portable Mini Oscilloscope:** An assembled, finished machine that is lightweight and easy to carry, ready for immediate use without assembly. Applicable to maintenance, R&D, and education industries.
- **Easy Measuring:** Efficient one-key AUTO setting for all parameters allows the measured waveform to be displayed without cumbersome adjustments. Long press the AUTO button to quickly calibrate the baseline for fast waveform measurement.
- **Longer Battery Life:** Built-in 1000 mAh high-quality lithium battery provides approximately 4 hours of continuous use after a full charge. The Type-C interface supports data transmission, charging, and

firmware upgrades.

Figure 3: Key features of the DSO152, including PWM signal output and high sensitivity.

Figure 4: Detailed view of the oscilloscope's physical features and controls.

4. Device Components and Controls

Familiarize yourself with the main components and buttons of the DSO152 oscilloscope:

Figure 5: Diagram of button functions and interfaces.

Button	Operation	Function
Trackwheel buttons (Left, OK, Right)	Short press	Control parameters function selection
	Long press	Enter the automatic calibration page
AUTO button	Short press	Automatic adjustment (frequency below 45Hz cannot be calibrated correctly)
MODE button	Short press	AUTO/Single/Normal switching
	Long press	Rising edge/Falling edge switching
Up button (▲)	Short press	Parameter addition adjustment

Button	Operation	Function
Down button (▼)	Short press	Parameter subtraction adjustment
RUN button	Short press	Run/pause waveforms (other pages) / Enter auto calibration (Auto calibration page)
	Long press	Show/close detailed parameters
Power button ( )	Long press	On/Off

Other interfaces include the Signal input probe (MXC) interface, Square wave calibration output, Reset hole, and Type-C charging interface (5V/1A) with a charging indicator light.

5. Initial Setup

1. **Charging:** Before first use, fully charge the oscilloscope using the provided Type-C cable and a 5V/1A power adapter. The charging indicator light will turn green when fully charged.
2. **Power On/Off:** Long press the power button ( ) located at the lower left corner to turn the device on or off.
3. **Connecting the Probe:** Connect the P6100 10X High Voltage Probe to the Signal input probe (MXC) interface on the top of the oscilloscope. Ensure a secure connection.
4. **Probe Calibration:** For accurate measurements, it is recommended to calibrate the probe. Long press the trackwheel button to enter the automatic calibration page, then follow the on-screen instructions (typically shorting the probe and pressing RUN).

6. Operating the Oscilloscope

The DSO152 is designed for straightforward operation. Here are common measurement scenarios:

6.1 Basic Waveform Measurement

The oscilloscope primarily graphs voltage over time. The display shows a grid where the vertical axis represents voltage and the horizontal axis represents time.

- **AUTO Button:** For most measurements, simply connect the probe to the circuit and press the AUTO button. The oscilloscope will automatically adjust the voltage and time scales to display a stable waveform.
- **MODE Button:** Use the MODE button to switch between trigger modes (AUTO, Normal, Single). Long press to switch between rising edge and falling edge triggering.
- **Trackwheel and Arrow Buttons:** Use the trackwheel (Left, OK, Right) to select parameters on the screen and the Up (▲) and Down (▼) arrow buttons to adjust their values.
- **RUN Button:** Short press the RUN button to pause or resume waveform acquisition. Long press to show or hide detailed measurement parameters (Vmax, Vmin, Vavg, Vrms, Vpp, Fre, Dut, Cyc).

6.2 Measuring DC Voltage (Example: 9V Battery)

To measure a DC voltage, connect the probe's ground clip to the negative terminal and the probe tip to the positive terminal of the DC source. The oscilloscope will display a flat line (DC level) corresponding to the voltage. The vertical scale can be adjusted to view the exact voltage level.

Video 1: Demonstration of measuring DC voltage with the FNIRSI DSO152 Oscilloscope.

6.3 Measuring AC Voltage (Example: Household Outlet)

When measuring AC voltage, ensure the oscilloscope is set to AC coupling. Connect the probe to the AC source. The oscilloscope will display a sine wave (or other AC waveform) showing the voltage fluctuations over time. Adjust the time scale (horizontal axis) to observe the frequency and period of the AC signal.

Video 2: Demonstration of measuring AC voltage and observing waveform characteristics.

6.4 Wide Range of Applications

The DSO152 is versatile and can be used in various fields:

- Mains voltage measurement (up to 220V)
- DIY learning and hobby electronics
- Research and teaching environments
- Car repair and automotive diagnostics
- Appliance repair
- Outdoor maintenance

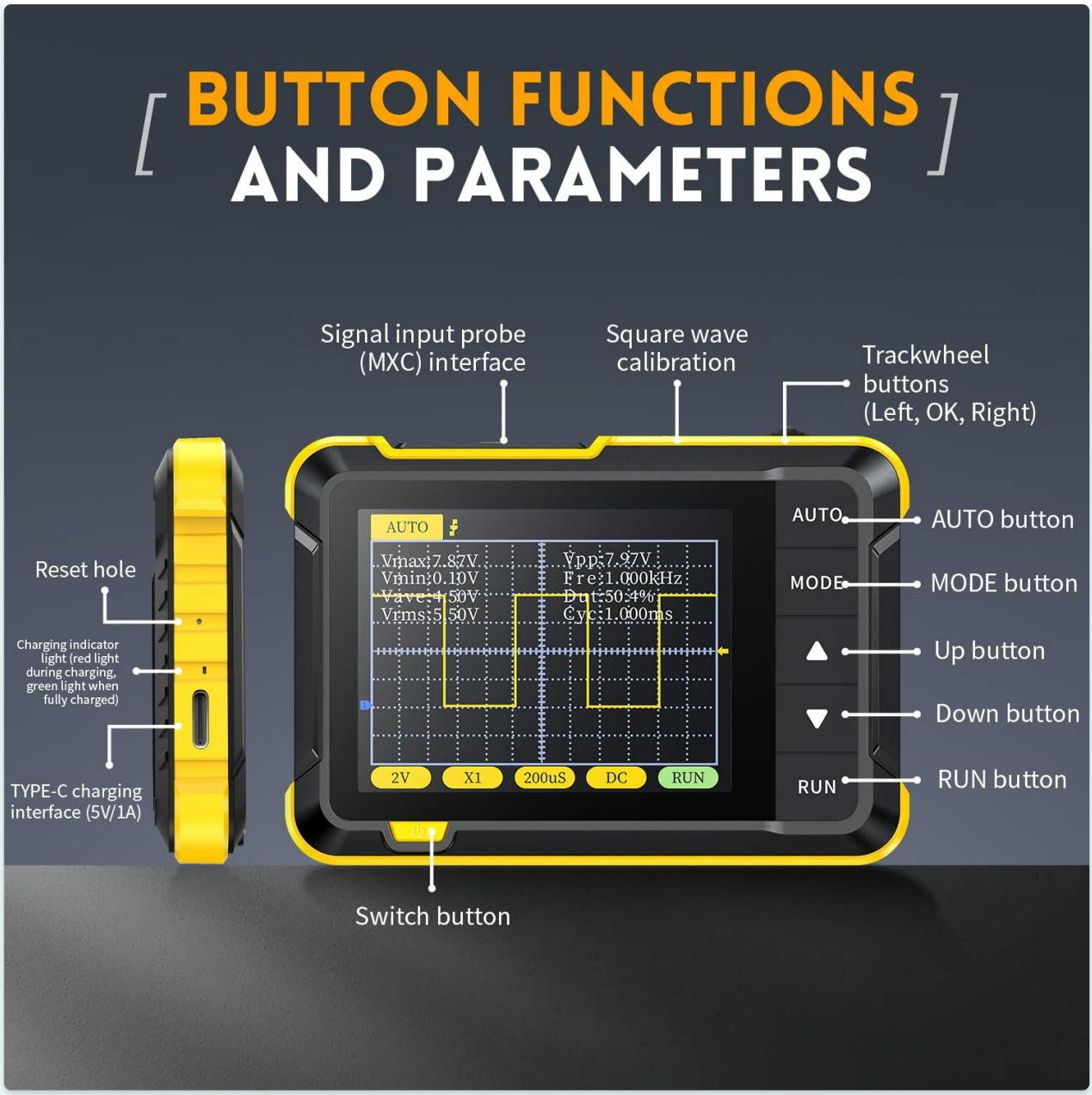

Figure 6: Examples of the wide range of applications for the DSO152.

7. Technical Specifications

Parameter	Value
Display	2.8" TFT 320x240
Channels	1
Analog Bandwidth	200KHz
Max Sampling Rate	2.5MS/s
Input Coupling	AC/DC
Trigger Method	Auto / Normal / Single

Parameter	Value
Signal Output	1X: 40V (Vpp: 80V) / 10X: 400V (Vpp: 800V)
Battery	1000mAh (Charging USB 5V/1A)
Square Wave Calibration	Frequency: 1KHz, Duty cycle: 50%
Vertical Sensitivity	10mV/Div-10V/Div (Progress according to 1-2-5 way)
Time Base Range	10µs/Div-50s/Div (Progress according to 1-2-5 way)
Size	99 x 68.3 x 19.5 mm
Weight	100g
Item Model Number	DSO152
Batteries Required	1 Lithium Polymer batteries (included)
Manufacturer	FNIRSI
Country of Origin	China

8. Maintenance

- **Cleaning:** Use a soft, dry cloth to clean the device. Avoid using abrasive cleaners or solvents that may damage the casing or screen.
- **Storage:** Store the oscilloscope in a cool, dry place away from direct sunlight, extreme temperatures, and high humidity.
- **Battery Care:** To prolong battery life, avoid fully discharging the battery frequently. Charge the device regularly, even if not in active use.
- **Probe Care:** Handle the probes with care. Avoid bending or stressing the cables and connectors. Keep probe tips clean.

9. Troubleshooting

If you encounter issues with your DSO152 oscilloscope, try the following basic troubleshooting steps:

- **Device Not Powering On:** Ensure the battery is charged. Connect the Type-C charging cable and allow it to charge for a while before attempting to power on again.
- **No Waveform Display:** Check that the probe is securely connected to both the oscilloscope and the circuit under test. Ensure the circuit is powered. Try pressing the AUTO button to allow the oscilloscope to automatically adjust settings.
- **Unstable Waveform:** Verify the trigger settings (AUTO/Normal/Single) are appropriate for the signal being measured. Adjust the time base and voltage scale manually if AUTO mode does not provide a stable display.
- **Incorrect Readings:** Perform a probe calibration as described in the Setup section. Ensure the probe's

attenuation setting (1X or 10X) matches the setting on the oscilloscope.

- **Device Unresponsive:** Use a thin object (like a toothpick) to press the reset hole located on the side of the device. This will perform a hard reset.

10. Warranty and Support

The FNIRSI DSO152 Oscilloscope is manufactured by FNIRSI. For specific warranty information, please refer to the documentation included with your product or contact FNIRSI customer support directly. Additional protection plans may be available for purchase through your retailer.
For technical support or service inquiries, please visit the official FNIRSI website or contact their customer service department. Keep your purchase receipt and product serial number handy for any warranty claims.