EasyByMall DSO510

DSO510 Compact Digital Oscilloscope User Manual

Model: DSO510
Brand: EasyByMall

1. Introduction

The DSO510 is a compact and versatile digital oscilloscope designed for convenient use in various environments. It features a real-time sampling rate of 48 MS/s and a 10 MHz bandwidth, making it suitable for both periodic analog and non-periodic digital signals. With its intuitive automatic function, users can quickly display measured waveforms without complex adjustments.

This manual provides detailed instructions on the setup, operation, and maintenance of your DSO510 oscilloscope. Please read it thoroughly before using the device to ensure proper and safe operation.

2. Product Features

- **High Performance:** 48 MS/s real-time sampling rate and 10 MHz bandwidth.
- **Wide Voltage Range:** Measures voltages up to ±400 V (X10 probe setting).
- **Automatic Function:** One-button auto-adjustment for quick waveform display.
- **Integrated Signal Generator:** Built-in 50 kHz function signal generator with various waveform types.
- **Clear Display:** 2.8-inch 320x240 high-definition LCD screen.
- **Portable Design:** Compact size (99 x 68.3 x 19.5 mm) and lightweight (294g).
- **Long Battery Life:** Built-in 1000 mAh lithium battery provides approximately 4 hours of continuous use.
- **USB Charging:** Convenient 5V/1A USB charging.
- **Foldable Stand:** Integrated stand for hands-free operation.

Image: The DSO510 combines the functions of a 10MHz oscilloscope and a signal generator in one compact device.

Image: The DSO510 features a foldable stand for hands-free use and a gear toggle button for easy adjustments.

3. Package Contents

Verify that all items listed below are included in your package:

- 1 x DSO510 Host Unit
- 1 x P6100 High-Voltage Probe
- 1 x Adapter
- 1 x Alligator Clip Probe
- 1 x Charging Cable (USB)
- 1 x Lanyard
- 1 x User Manual

Image: The DSO510 package includes the main unit, high-voltage probe, alligator clip probe, charging cable, adapter, and lanyard.

Image: The DSO510 can be conveniently charged via its USB port using the included charging cable.

4. Specifications

Parameter	Value
Model	DSO510
Real-time Sampling Rate	48 MS/s

Parameter	Value
Bandwidth	10 MHz
Vertical Sensitivity	10 mV/div - 10 V/div
Time Base Range	50 ns/div - 20 s/div
Voltage Range (X1 Probe)	±40 V (Vpp: 80 V)
Voltage Range (X10 Probe)	±400 V (Vpp: 800 V)
Trigger Modes	Auto, Normal, Single
Trigger Edge	Rising Edge / Falling Edge
Coupling Modes	AC / DC
Calibration Square Wave	Frequency: 1 KHz; Duty Cycle: 50%; Amplitude: 3.3 V
Signal Generator Frequency	0-50 KHz
Signal Generator Duty Cycle	0-100% (Square wave, Sawtooth wave)
Signal Generator Amplitude	0.1-3.0 V
Signal Generator Waveforms	Sine wave, Square wave, Sawtooth wave, Half wave, Full wave, Positive step wave, Inverse step wave, Exponential rise, Exponential fall, DC signal, Multi-audio, Sink pulse, Lorentz wave
Display Screen	2.8" LCD, 320 x 240 resolution
USB Charging	5 V / 1 A
Lithium Battery Capacity	1000 mAh
Dimensions (L x W x H)	99 x 68.3 x 19.5 mm
Weight	294 g
Color	Black and Blue

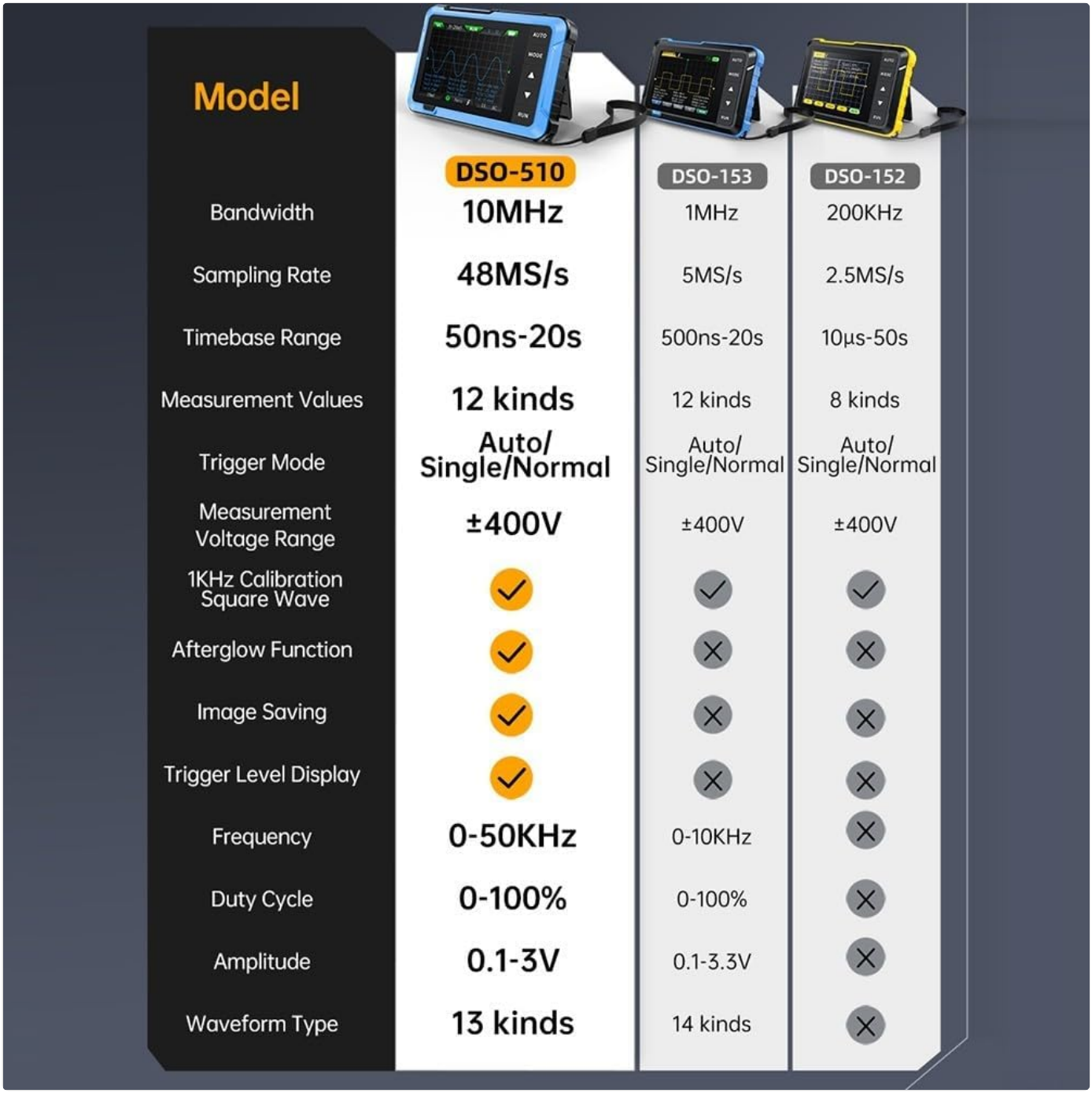

Image: Detailed specifications of the DSO510, highlighting its capabilities compared to similar models.

5. Setup

5.1 Initial Charging

Before first use, fully charge the DSO510. Connect the included USB charging cable to the device's USB port and a 5V/1A USB power adapter (included) or a computer USB port. The charging indicator will show the charging status. A full charge takes approximately 4 hours and provides up to 4 hours of continuous operation.

5.2 Attaching the Probe

Connect the BNC connector of the high-voltage probe (P6100) to the BNC input port on the DSO510. Ensure a secure connection by twisting the connector until it locks into place.

5.3 Probe Compensation (Recommended)

For accurate measurements, it is recommended to compensate the probe. Connect the probe tip to the calibration signal output (usually a 1KHz square wave) on the oscilloscope. Adjust the compensation trimmer on the probe until the square

wave displayed on the screen has flat tops and bottoms without overshoot or undershoot.

5.4 Setting Probe Ratio

Ensure the probe ratio setting on the DSO510 matches the physical switch setting on your probe (1X or 10X). If the probe is set to 1X, the oscilloscope should also be set to 1X. A 1X setting measures voltages up to ±40 V, while a 10X setting measures up to ±400 V.

6. Operating Instructions

6.1 Power On/Off

Press and hold the power button (usually located on the side or bottom) to turn the device on or off.

6.2 Automatic Measurement (AUTO Button)

For quick setup and display of a stable waveform, press the**AUTO** button. The oscilloscope will automatically adjust the time base, vertical sensitivity, and trigger settings to display the measured waveform.

6.3 Navigating Menus and Adjusting Parameters

Use the navigation buttons (up/down/left/right) and the**MODE** button to navigate through menus and adjust parameters. The gear toggle button on the side can also be used for quick adjustments.

6.4 Trigger Modes

The DSO510 supports three trigger modes:

- **Auto:** Automatically triggers and displays the waveform, even if the signal is unstable.
- **Normal:** Triggers only when the signal meets the trigger conditions. If no trigger occurs, the display remains unchanged.
- **Single:** Captures a single waveform when the trigger condition is met and then stops.

6.5 Waveform Adjustment After Pause

When the measurement waveform is paused (STOP mode):

- Switch **MODE** to "V H". The wheel button controls the time base (horizontal scale), and the up/down keys control the channel vertical sensitivity.
- Switch **MODE** to the arrow keys. The wheel button controls horizontal trigger movement, and the up/down keys control waveform vertical movement.

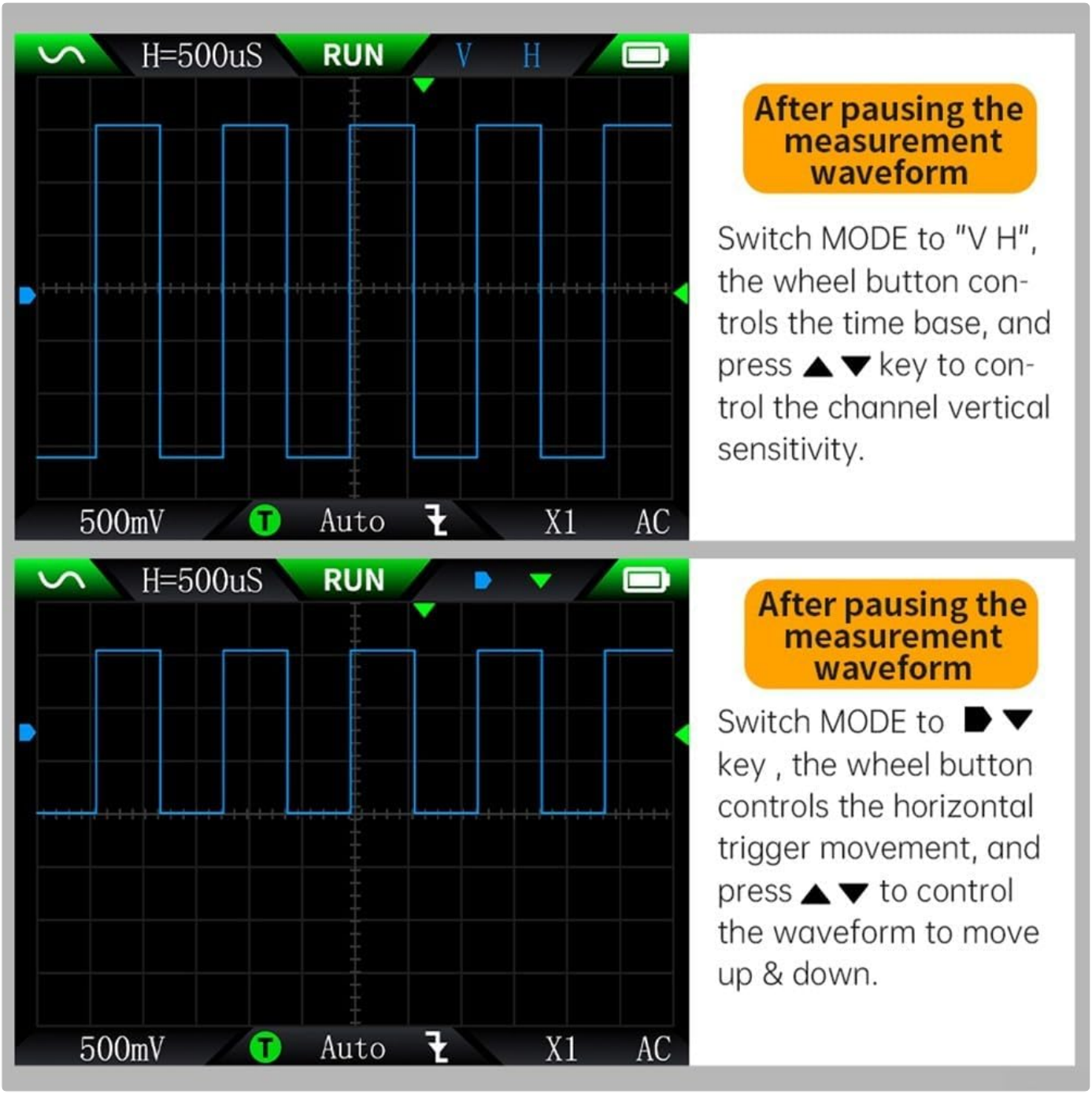

Image: Instructions on how to adjust the waveform display, including time base, vertical sensitivity, and horizontal/vertical positioning, after pausing the measurement.

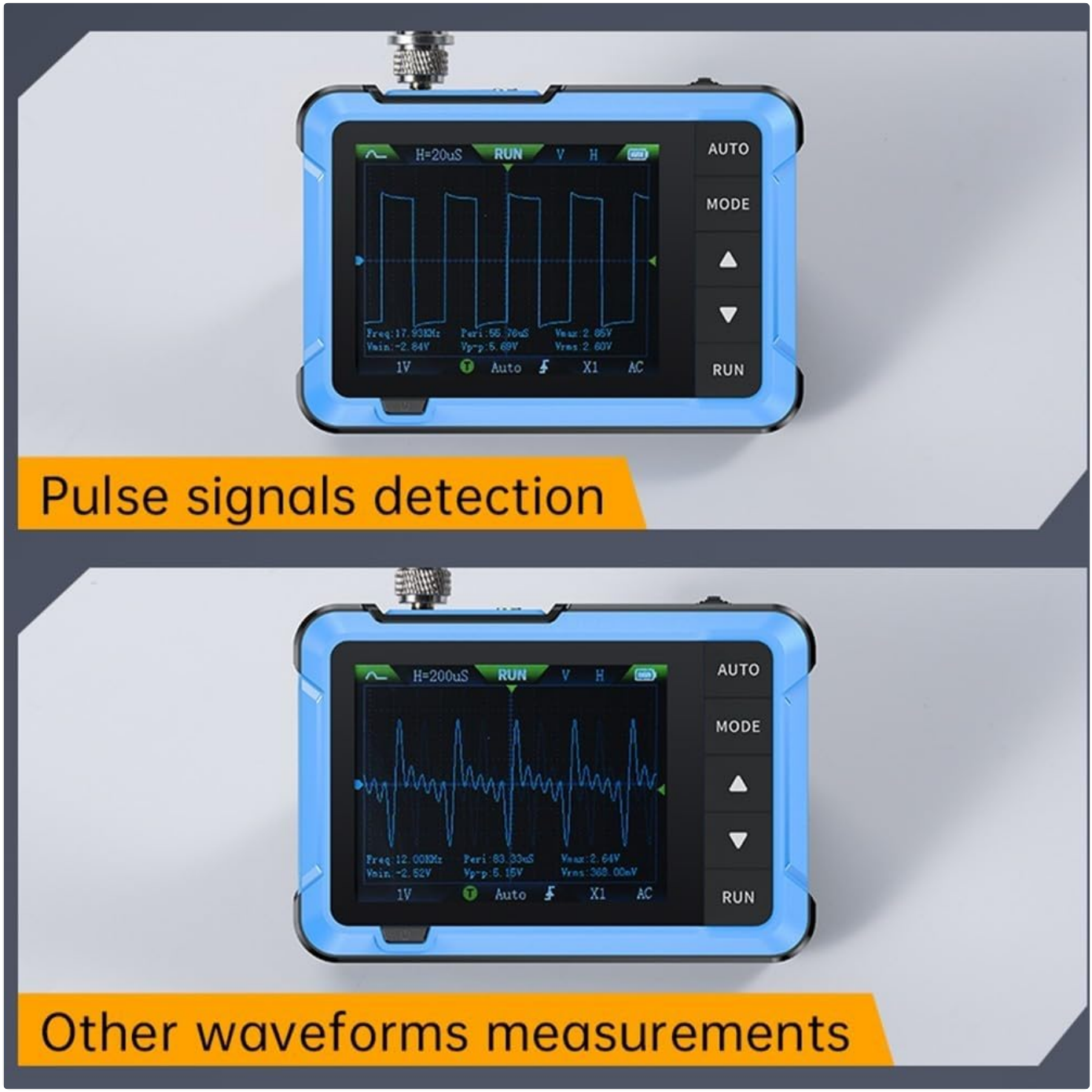

Image: The DSO510 is capable of detecting various signal types, including pulse signals and other complex waveforms.

7. Display Indicators

The DSO510 display provides various indicators to help you interpret measurements:

1. **Vertical Unit:** Represents the voltage value for one large grid in the vertical direction.
2. **Trigger Mode Indicator:** Displays "Auto" for automatic trigger, "Single" for single trigger, and "Normal" for normal trigger.
3. **Probe Ratio:** Must be consistent with the 1X/10X switch setting on the probe handle.
4. **Input Coupling Mode Indicator:** "AC" indicates AC coupling, "DC" indicates DC coupling.
5. **Trigger Voltage Indicator:** Shows the current trigger voltage level.
6. **Trigger Position Indicator:** Indicates the horizontal position of the trigger point.
7. **Baseline Indicator:** Shows the 0V reference line.
8. **Time Base Indicator:** Represents the duration for one large grid in the horizontal direction.

9. **Pause Indicator:** "RUN" means operation, "STOP" means pause.
10. **Trigger Edge Indicator:** Shows whether the trigger is set to rising or falling edge.

8. Signal Generator Function

The DSO510 includes a built-in signal generator capable of producing various waveforms with adjustable frequency, duty cycle, and amplitude.

- **Frequency Range:** 0-50 KHz
- **Duty Cycle:** 0-100% (for square and sawtooth waves)
- **Amplitude:** 0.1-3.0 V
- **Waveform Types:** Sine wave, Square wave, Sawtooth wave, Half wave, Full wave, Positive step wave, Inverse step wave, Exponential rise, Exponential fall, DC signal, Multi-audio, Sink pulse, Lorentz wave.

To access and configure the signal generator, refer to the specific menu options on the device. Use the navigation buttons to select the desired waveform type and adjust its parameters.

9. Maintenance

9.1 Cleaning

Wipe the device with a soft, dry cloth. Do not use abrasive cleaners or solvents, as they may damage the casing or screen. Ensure the device is powered off before cleaning.

9.2 Storage

Store the DSO510 in a cool, dry place away from direct sunlight, extreme temperatures, and high humidity. When storing for extended periods, ensure the battery is partially charged (around 50%) to prolong its lifespan.

9.3 Battery Care

The device uses a built-in lithium battery. Avoid fully discharging the battery frequently. If the device will not be used for a long time, charge it every 3-6 months to prevent deep discharge.

10. Troubleshooting

Problem	Possible Cause	Solution
Device does not power on.	Low battery; Power button not pressed long enough.	Charge the device for at least 30 minutes. Press and hold the power button for 3-5 seconds.
No waveform displayed or waveform is unstable.	Incorrect probe connection; Incorrect trigger settings; Signal too small or too large; Probe ratio mismatch.	Ensure probe is securely connected. Press the **AUTO** button. Adjust vertical sensitivity (V/div) and time base (s/div). Verify probe ratio setting matches physical probe switch.
Waveform is distorted (e.g., rounded corners on square wave).	Probe compensation issue.	Perform probe compensation as described in Section 5.3.

Problem	Possible Cause	Solution
Battery drains quickly.	Aging battery; Continuous high-intensity use.	Ensure the device is fully charged. Reduce screen brightness if possible. If battery life significantly degrades, contact customer support.

11. Warranty and Support

This product is covered by a standard manufacturer's warranty. For specific warranty terms and conditions, please refer to the documentation provided at the time of purchase or contact your retailer.

For technical support, troubleshooting assistance, or inquiries regarding replacement parts, please contact EasyByMall customer service. Please have your product model (DSO510) and serial number (if applicable) ready when contacting support.

Manufacturer: EasyByMall

Model Number: H2SV732SH08P7G239N2441

ASIN: B0DLBF6183