SPORTARC 1401041888

SPORTARC SCO2 Dual-Channel Digital Oscilloscope User Manual

Model: 1401041888

1. Introduction

The SPORTARC SCO2 is a portable, dual-channel digital oscilloscope designed for a wide range of electronic measurement tasks. It features a 50M sample rate, 10MSa/S analog bandwidth, and a 3.2-inch LCD display, making it suitable for both professional and hobbyist applications. This manual provides essential information for the safe and effective use of your SCO2 oscilloscope.

Key Features:

- **Dual-Channel Design:** Simultaneous measurement on two channels.
- **High Performance:** 50M sample rate, 10MSa/S analog bandwidth, 2MSa/S real-time bandwidth.
- **Comprehensive Trigger Functions:** Supports single, normal, and automatic trigger modes for various signal types.
- **One-Key AUTO Function:** Simplifies waveform display without complex adjustments.
- **Waveform Storage:** 20K storage depth with support for waveform compression and expansion (up to 165x).
- **High-Pressure Anti-Burn Protection:** Enhanced safety for measurements up to ±400V.
- **PC Software Support:** Allows system updates and future functionality expansion (e.g., FTT, upper computer communication).
- **Expandable Modules:** Designed for future expansion with modules like audio, function generator, and transistor tester (currently under development).
- **Current Measurement:** Integrated current measurement from 0-6A with 2mA minimum precision.

2. Package Contents

Verify that all items are present in your package. The contents may vary based on the specific set purchased.

Image showing the SCO2 Oscilloscope along with its accessories, including a USB cable, crocodile clips, and a high-voltage probe.

For SETS 2 (High-End Oscilloscope):

- 1 x SCO2 Oscilloscope Unit
- 1 x USB Cable
- 1 x Crocodile Clip Cable
- 1 x High-Voltage Probe

Note: Other sets (SETS 1, SETS 3) may include different combinations of accessories. Refer to your purchase documentation for exact contents.

3. Product Overview

Familiarize yourself with the physical components and controls of your SCO2 oscilloscope.

Front view of the SCO2 Oscilloscope, showing the display, input channels (CH1, CH2), output, input, and control buttons.

Angled view of the SCO2 Oscilloscope, highlighting the CH1 and CH2 input connectors, OUT and IN ports, and the OFF/ON switch.

Controls and Connectors:

- **CH1** / **CH2:** Input channels for connecting probes.
- **OUT** / **IN:** Auxiliary ports (functionality may expand with future modules).
- **OFF/ON:** Power switch.
- **Menu Button:** Accesses the main menu for settings and functions.
- **Flexo Button:** Likely for flexible control or specific mode selection.
- **Auto Button:** Automatically adjusts settings for optimal waveform display.
- **Ok/Hold Button:** Confirms selections or freezes the current waveform display.
- **Left** / **Right Buttons:** Navigation or parameter adjustment.
- **+** / **- Buttons:** Adjusts parameters (e.g., voltage scale, time base).
- **Display:** 3.2-inch LCD screen (320*240 resolution) for waveform visualization and data.

4. Setup

4.1 Initial Charging

Before first use, fully charge the oscilloscope's internal 2500mA battery using the provided USB cable and a standard 5V power adapter. The charging indicator will show the charging status.

4.2 Connecting Probes

1. Ensure the oscilloscope is powered off.
2. Connect the BNC connector of your probe (e.g., crocodile clip cable or high-voltage probe) to the desired input channel (CH1 or CH2) on the top of the oscilloscope.
3. If using a high-voltage probe, ensure its attenuation setting (e.g., X1 or X10) matches the setting selected on the oscilloscope for accurate readings.
4. Connect the ground clip of the probe to the ground reference of the circuit under test.

5. Operating Instructions

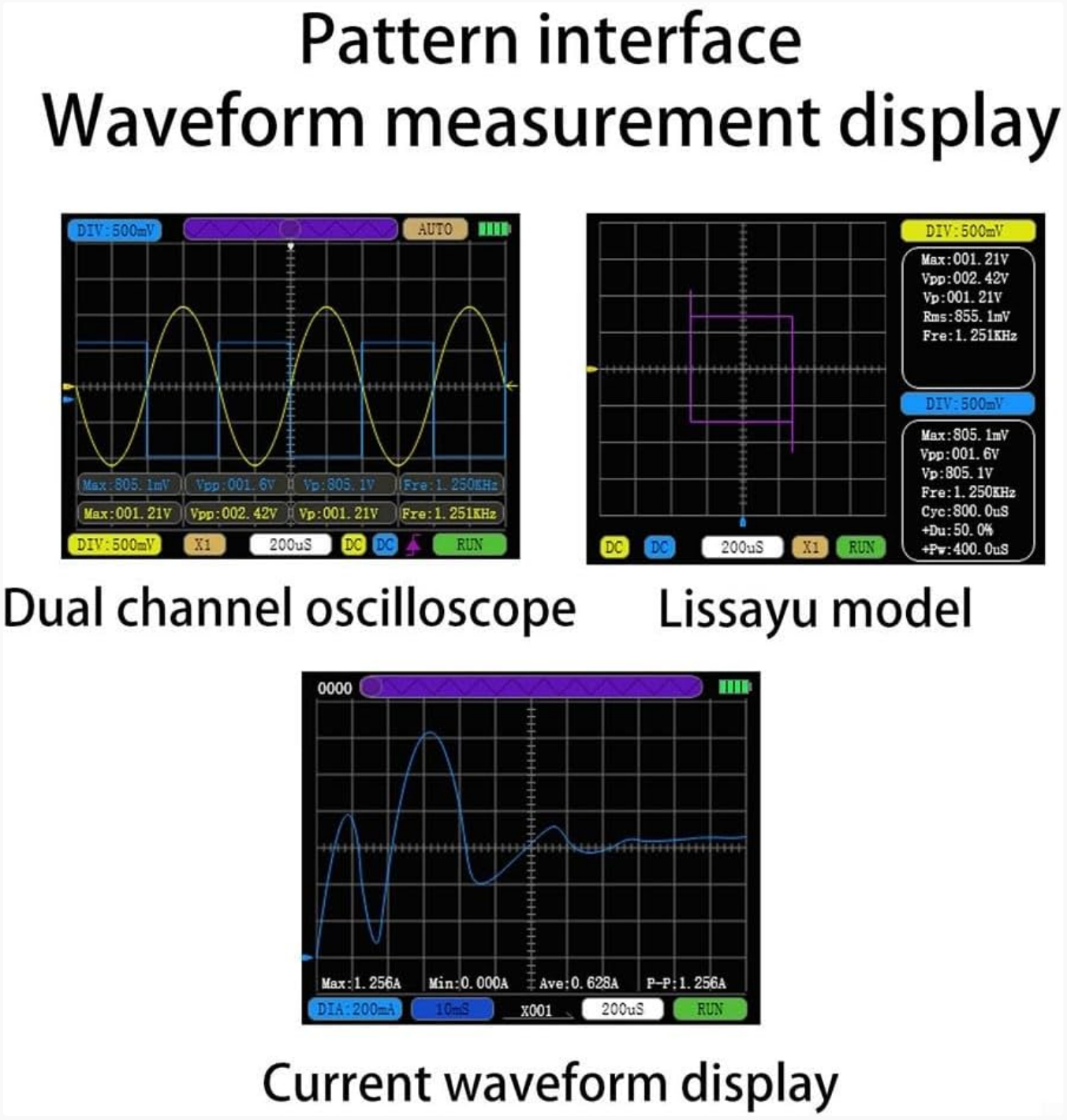
5.1 Powering On/Off

To power on the device, slide the OFF/ON switch to the 'ON' position. To power off, slide it to 'OFF'.

5.2 Basic Waveform Measurement (AUTO Function)

1. Connect the probe to the circuit you wish to measure.
2. Power on the oscilloscope.
3. Press the **Auto** button. The oscilloscope will automatically adjust the vertical scale, time base, and trigger settings to display a stable waveform.
4. Observe the waveform and measurement parameters on the screen.

The SCO2 Oscilloscope displaying a clear sine wave, demonstrating its waveform measurement capabilities.



Various waveform displays, including dual-channel oscilloscope view, Lissajous pattern, and current waveform display, illustrating the device's versatility.

5.3 Trigger Functions

The SCO2 offers three trigger modes:

- **Auto:** Automatically triggers and displays waveforms, even if the signal is not perfectly stable.
- **Normal:** Triggers only when the signal meets the set trigger conditions. Useful for stable display of periodic signals.
- **Single:** Captures a single event when the trigger conditions are met and then stops. Ideal for non-periodic or transient signals.

Access and adjust trigger settings via the **Menu** button.

5.4 Waveform Compression and Expansion

The oscilloscope supports waveform compression and expansion, allowing you to view long signal captures or zoom into specific details. With a 20K storage depth, waveforms can be compressed up to 165 times to observe changes over extended periods.

Use the **+** and **-** buttons, or navigate through the menu, to adjust the waveform display scale.

5.5 PC Software and Firmware Updates

The SCO2 supports PC software for system updates and future advanced functionalities like FTT (Fast Fourier Transform) and upper computer communication. Connect the oscilloscope to your computer via the USB port. Refer to the official SPORTARC website or contact customer service for the latest software and firmware updates (e.g., after September 1, 2023).

6. Maintenance

6.1 Cleaning

To clean the oscilloscope, use a soft, dry cloth. For stubborn dirt, slightly dampen the cloth with water or a mild cleaning solution. Avoid using abrasive cleaners or solvents that could damage the casing or screen.

6.2 Storage

Store the oscilloscope in a cool, dry place away from direct sunlight, extreme temperatures, and high humidity. Keep it protected from dust and physical impact. If storing for extended periods, ensure the battery is partially charged (around 50%) to prolong its lifespan.

6.3 Battery Care

The SCO2 is equipped with a rechargeable lithium battery. To maximize battery life:

- Avoid fully discharging the battery frequently.
- Do not expose the device to high temperatures.
- Charge the device regularly, even if not in frequent use.

7. Troubleshooting

Common Issues and Solutions:

- **No Power:** Ensure the battery is charged. Connect the USB cable to a 5V power source and check if the charging indicator lights up.
- **No Waveform Display:**
  - Check probe connections to CH1/CH2 and the circuit under test.
  - Ensure the ground clip is properly connected.
  - Press the **Auto** button to automatically adjust settings.
  - Verify the input signal is within the measurable voltage range (±40V for X1, ±400V for X10).
  - Adjust the vertical scale (V/DIV) and time base (S/DIV) manually if Auto mode doesn't yield results.
- **Unstable Waveform:**
  - Adjust the trigger level.
  - Change the trigger mode (Auto, Normal, Single) to suit the signal type.
  - Ensure the probe is securely connected and not picking up excessive noise.
- **Incorrect Readings:**
  - Verify the probe attenuation setting (X1/X10) matches the oscilloscope's setting.
  - Check for proper grounding.

If you encounter issues not covered here, please refer to the official SPORTARC support resources or contact customer service.

8. Specifications

Technical specifications for the SPORTARC SCO2 Digital Oscilloscope.

Parameter	Value
Brand	SPORTARC
Model Number	1401041888
Number of Channels	2
Sample Rate	50M/1CH
Analog Bandwidth	10MSa/S (1CH)
Real Bandwidth	2 MSa/S (1CH)
Max Measurable Voltage	±400 V
Measurement Voltage (Probe)	X1 (±40V), X10 (±400V)
Input Impedance	1 MΩ
Storage Depth	20 KB
Parameter Display Types	12 types
Current Measurement Range	0-6 A
Minimum Current Precision	2 mA
Current Sample Rate	2.4KSa/s
Display	3.2-inch LCD, 320*240 resolution
Charging Voltage	5 V
Battery Capacity	2500mA
Continuous Working Time	4.5-6 Hours
Dimensions (L x W x H)	120 mm x 66 mm x 18.5 mm
Weight	320 g

9. Warranty and Support

9.1 Warranty Information

Please refer to your purchase documentation or the retailer's website for specific warranty terms and conditions applicable to your SPORTARC SCO2 oscilloscope. Typically, products are covered against manufacturing defects for a specified period from the date of purchase.

9.2 Customer Support

For technical assistance, troubleshooting beyond this manual, or inquiries regarding firmware updates and future module availability, please contact SPORTARC customer service. Keep your product model number (1401041888) and purchase details ready when contacting support.

For the latest firmware, please contact customer service after September 1, 2023.