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› [OWON](#) /

› [OWON SP6103 Single Channel DC Power Supply User Manual](#)

OWON SP6103

OWON SP6103 Single Channel DC Power Supply User Manual

Model: SP6103

1. INTRODUCTION

The OWON SP6103 is a high-performance single-channel linear DC power supply designed for various applications requiring stable and precise power. This unit provides a maximum output of 60V and 10A, with a total power output of 300W. It features a 3.7-inch TFT LCD for clear display of parameters, low ripple and noise, and essential protection functions such as over-voltage (OVP) and over-current (OCP) protection. The SP6103 supports both Constant Voltage (CV) and Constant Current (CC) output modes and includes an RS232 port for remote control via SCPI commands.

2. SAFETY INSTRUCTIONS

To ensure safe operation and prolong the lifespan of your OWON SP6103 power supply, please read and adhere to the following safety guidelines:

- **Power Source:** Connect the unit only to a power source that matches the voltage and frequency specified on the product label. Ensure the power cord is properly grounded.
- **Ventilation:** Do not block the ventilation openings on the sides and rear of the unit. Adequate airflow is essential to prevent overheating.
- **Environment:** Operate the power supply in a dry, well-ventilated indoor environment. Avoid exposure to moisture, dust, direct sunlight, or extreme temperatures.
- **Load Connection:** Always connect the load to the output terminals before turning on the output. Ensure correct polarity.
- **Output Terminals:** Do not touch the output terminals when the output is active. High voltage and current can cause electric shock.
- **Maintenance:** Refer all servicing to qualified personnel. Do not attempt to open or repair the unit yourself.
- **Cleaning:** Disconnect the power cord before cleaning. Use a soft, dry cloth. Do not use liquid cleaners or aerosols.

3. PRODUCT OVERVIEW

3.1 Front Panel

The front panel provides all controls and the display for operating the power supply.



Figure 3.1: Front Panel Layout

- **Display:** 3.7-inch TFT LCD showing output voltage, current, power, OVP/OCP settings, and status indicators.
- **Power Switch:** Main power toggle for the unit.
- **System Button:** Accesses system settings and configurations.
- **Memory Button:** Used to save and recall output settings.
- **Keylock Button:** Locks the front panel controls to prevent accidental changes.
- **Navigation Buttons (Up, Down, Left, Right, OK):** Used for menu navigation and parameter adjustment.
- **Knob:** Fine adjustment of voltage and current parameters.
- **On/Off Button:** Toggles the output power to the terminals.
- **Output Terminals:** Red (+) for positive, Green (Ground) for chassis ground, Black (-) for negative output.

3.2 Side View and Ventilation

The side panels feature ventilation grilles to ensure proper cooling of the internal components.



Figure 3.2: Side Ventilation

4. SETUP

Follow these steps to set up your OWON SP6103 power supply:

1. **Unpacking:** Carefully remove the power supply from its packaging. Inspect the unit for any signs of damage during transit.
2. **Placement:** Place the unit on a stable, level surface, ensuring adequate space around the ventilation openings for proper airflow.
3. **Power Connection:** Connect the provided AC power cord to the power input on the rear panel of the SP6103, then plug the other end into a grounded AC outlet.
4. **Initial Power On:** Flip the main power switch on the front panel to the 'ON' position. The display should illuminate.
5. **Load Connection:** Before activating the output, connect your load to the output terminals. Connect the positive (+) terminal of your load to the red (+) terminal of the power supply, and the negative (-) terminal of your load to the black (-) terminal of the power supply. If grounding is required, connect to the green (Ground) terminal.

5. OPERATING INSTRUCTIONS

5.1 Setting Voltage and Current

To set the desired output voltage and current:

1. Ensure the output is OFF (the 'On/Off' button LED is off).
2. Use the navigation buttons (Left/Right) to select the parameter you wish to adjust (Voltage or Current). The selected parameter will be highlighted.
3. Rotate the **Knob** to adjust the value. Press the **OK** button to confirm the value or move to the next digit for fine adjustment.
4. Repeat for both voltage and current limits.

5.2 Activating Output

After setting the desired voltage and current limits, press the **On/Off** button to activate the output. The LED on the button will illuminate, and the actual output voltage and current will be displayed.

5.3 Constant Voltage (CV) / Constant Current (CC) Mode

The SP6103 automatically operates in either Constant Voltage (CV) or Constant Current (CC) mode depending on the load. If the load resistance is high, the unit will operate in CV mode, maintaining the set voltage. If the load resistance is low, causing the current to reach the set limit, the unit will switch to CC mode, maintaining the set current and reducing the output voltage.

5.4 Over-Voltage Protection (OVP) and Over-Current Protection (OCP)

The SP6103 includes OVP and OCP features to protect the connected load and the power supply itself.

- **Setting OVP/OCP:** Access the OVP/OCP settings through the System menu or dedicated display area. Use the navigation buttons and knob to set the desired protection thresholds.
- **Triggering Protection:** If the output voltage or current exceeds the set OVP or OCP limits, the output will automatically shut down, and an indicator will appear on the display.
- **Resetting Protection:** To clear a protection trigger, turn off the output, resolve the condition that caused the trigger, and then turn the output back on.

5.5 Memory Functions

The **Memory** button allows you to save and recall frequently used voltage and current settings. Consult the on-screen prompts for saving to and recalling from memory slots.

5.6 Keylock Function

Press the **Keylock** button to disable the front panel controls, preventing accidental changes to the output settings during operation. Press it again to unlock.

5.7 RS232 Communication

The SP6103 features an RS232 port for remote control and data logging. It supports Standard Commands for Programmable Instruments (SCPI). Refer to the detailed programming manual (if available from the manufacturer) for specific SCPI commands and communication protocols.

6. MAINTENANCE

The OWON SP6103 requires minimal maintenance to ensure optimal performance:

- **Cleaning:** Regularly clean the exterior of the unit with a soft, dry, lint-free cloth. Do not use abrasive cleaners or solvents. Ensure the unit is powered off and unplugged before cleaning.
- **Ventilation:** Periodically check that the ventilation openings are free from dust and debris. Use compressed air to gently clear any blockages if necessary.
- **Storage:** When not in use for extended periods, store the power supply in a cool, dry place, away from direct sunlight and extreme temperatures.

7. TROUBLESHOOTING

If you encounter issues with your OWON SP6103, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Unit does not power on	No AC power; Power cord loose; Main power switch off	Check AC outlet; Ensure power cord is securely connected; Turn main power switch ON
No output voltage/current	Output is OFF; OVP/OCP triggered; Load disconnected or faulty	Press 'On/Off' button; Check OVP/OCP settings and reset if triggered; Verify load connection and functionality
Output voltage/current unstable	Poor load connection; Overheating	Ensure secure load connections; Check ventilation, reduce load if necessary
Display shows error message	Internal fault; Protection triggered	Note error code and consult manufacturer support; Reset protection as described in section 5.4

8. SPECIFICATIONS

The following table outlines the key technical specifications for the OWON SP6103 DC Power Supply:

SP Series Programmable DC power supply

- + Small body for easy carry
- + 150W/300W maximum output power
- + High resolution: 10mV / 1mA
- + Low ripple/noise
- + Over voltage/over current protection
- + Intelligent temperature control fan cooling
- + 3.7-inch TFT LCD display
- + Support RS232 digital communication
- + Support SCPI and LabVIEW

**Performance Specifications**

Model	SP3051	SP3101	SP6101	SP6053	SP3103	SP6103
Channel	Single Channel Output					
Total Output Power	150W		300W			
Channel Output	0 - 30V / 0 - 5A	0 - 30V / 0 - 10A	0 - 60V / 0 - 10A	0 - 60V / 0 - 5A	0 - 30V / 0 - 10A	0 - 60V / 0 - 10A
Display	3.7 inch color LCD display					
Dimension	117mm(L)*194mm (H) *295mm (D)					
Weight	Approx. 3.0kg					
Interface	RS232					

The instrument must be operated continuously for more than 30 minutes at the specified temperature to ensure the following parameters.

Model	SP3051	SP3101	SP6101	SP6053	SP3103	SP6103
Rated Output (0°C-40°C)	Voltage 0 - 30V Current 5A Output Power 150W	Voltage 0 - 30V Current 10A Output Power 150W	Voltage 0 - 60V Current 10A Output Power 300W	Voltage 0 - 60V Current 5A Output Power 300W	Voltage 0 - 30V Current 10A Output Power 300W	Voltage 0 - 60V Current 10A Output Power 300W
Load Regulation	Voltage $\leq 30mV$ Current $\leq 30mA$					
Power Regulation	Voltage $\leq 20mV$ Current $\leq 20mA$					
Setting Resolution	Voltage 10mV Current 1mA					
Readback Resolution	Voltage 10mV Current 1mA					

The above parameters are subject to change without further notice, please refer to the website update.

Application

Military R&D Quality Inspection Circuit Functional Testing Automotive Circuit Testing Education and Technical Training Electronic component testing and aging experiment Monitoring battery charging curve

Accessories The picture is for reference only, please refer to the actual product

Figure 8.1: OWON SP Series Specifications Overview

Parameter	Specification (SP6103)
Model Number	SP6103
Channel	Single Channel
Output Voltage	0-60V
Output Current	0-10A
Output Power	300W
Voltage Resolution	10mV
Current Resolution	10mA
Display	3.7 inch TFT LCD
Ripple/Noise (Vp-p)	$\leq 30mVp-p$
Ripple/Noise (rms)	$\leq 3mVrms$
Protection	Over-Voltage Protection (OVP), Over-Current Protection (OCP)
Interface	RS232 (SCPI support)
Dimensions (W×H×D)	117mm × 194mm × 295mm
Weight	Approx. 2.3kg (5.07 lbs)
Operating Temperature	0-40°C
Input Voltage	220-240V AC

9. WARRANTY AND SUPPORT

For warranty information, technical support, or service inquiries, please contact your authorized OWON dealer or the manufacturer directly. Keep your purchase receipt as proof of purchase for warranty claims. Specific warranty terms and conditions may vary by region and retailer.