OWON SPE3103

OWON SPE3103 Programmable DC Power Supply User Manual

Model: SPE3103

1. Introduction

The OWON SPE3103 is a single-channel programmable DC power supply designed for laboratory and industrial applications. It features a compact design, high resolution (10mV / 1mA), and a 2.8-inch TFT LCD display for clear readings. This power supply offers a list waveform editing output function, allowing for up to 10 groups of timing outputs. It incorporates low ripple/noise characteristics, along with essential protection features such as over voltage protection (OVP) and over current protection (OCP). The unit also includes output voltage and current curve monitoring, intelligent temperature-controlled fan cooling, and a USB communication interface supporting SCPI commands.

2. Safety Instructions

Please read and understand these safety instructions before operating the OWON SPE3103 power supply. Failure to comply may result in injury or damage to the instrument.

- **Grounding:** Always connect the power supply to a properly grounded AC power outlet to prevent electric shock.
- **Power Source:** Ensure the input voltage matches the rating specified on the rear panel of the instrument.
- **Ventilation:** Do not block the ventilation openings. Ensure adequate airflow around the unit to prevent overheating.
- **Environment:** Operate the instrument in a dry, well-ventilated area, away from direct sunlight, high temperatures, humidity, and corrosive gases.
- **Liquid Contact:** Avoid exposing the instrument to liquids. Do not operate with wet hands.
- **Servicing:** Do not attempt to open or service the instrument yourself. Refer all servicing to qualified personnel.
- **Fuse:** Replace fuses only with the specified type and rating.

3. Package Contents

Verify that all items listed below are present in the package:

- 1 x OWON SPE3103 Power Supply Main Device
- 1 x Power Cord
- 1 x User Manual (this document)
- 1 x Fuse
- 1 x Test Leads

4. Product Overview

4.1 Front Panel

The front panel features the 2.8-inch TFT LCD display, control buttons, a rotary encoder, and output terminals.

Image Description: This image displays the front panel of the OWON SPE3103 power supply. It shows the main display screen indicating voltage and current readings, control buttons for voltage (V), current (I), OVP, OCP, Display, Memory, and On/Off. A rotary encoder is visible on the right side. Below the display are the 5V 1A USB charging port and the red (positive), green (ground), and black (negative) output terminals.

4.2 Rear Panel

The rear panel includes the AC power input, fuse holder, power switch, and cooling fan.

Image Description: This image shows the rear panel of the OWON SPE3103 power supply. It features a prominent cooling fan grille, an AC power input socket, a fuse holder, and a main power switch. A warning label regarding electrical shock and grounding is also visible.

4.3 Dimensions

The unit has a compact form factor, with approximate dimensions of 82mm (Width) x 142mm (Height) x 226mm (Length).

Image Description: This image illustrates the dimensions of the OWON SPE3103 power supply, showing its width (82mm), height (142mm), and length (226mm). An internal view of the power supply's circuit board is also depicted, highlighting its internal components.

5. Setup

5.1 Power Connection

1. Ensure the main power switch on the rear panel is in the OFF position.
2. Connect the provided power cord to the AC power input socket on the rear panel of the instrument.
3. Plug the other end of the power cord into a properly grounded AC power outlet. Verify that the outlet voltage matches the instrument's rating (110Vac or 220Vac, as marked on the rear panel).

5.2 Connecting Test Leads

1. Connect the red test lead to the red (positive) output terminal.
2. Connect the black test lead to the black (negative) output terminal.
3. If grounding is required for the connected load, use the green terminal.
4. Connect the other ends of the test leads to your load or circuit, observing correct polarity.

6. Operating Instructions

6.1 Powering On/Off

1. To power on, flip the main power switch on the rear panel to the ON position. The display will illuminate.
2. To power off, flip the main power switch on the rear panel to the OFF position.

6.2 Setting Voltage and Current

1. Press the **V** button to select voltage adjustment mode. The voltage setting on the display will become active.
2. Rotate the rotary encoder to adjust the desired voltage value. Press the encoder to move between digits for fine adjustment.
3. Press the **I** button to select current adjustment mode. The current setting on the display will become active.
4. Rotate the rotary encoder to adjust the desired current limit. Press the encoder to move between digits.
5. After setting, press the **On/Off** button (output control) to enable or disable the output. The display will show the actual output voltage and current when enabled.

6.3 Over Voltage Protection (OVP) and Over Current Protection (OCP)

The SPE3103 includes OVP and OCP functions to protect the connected load and the power supply itself.

- Press the **OVP** button to set the over voltage protection threshold. Use the rotary encoder to adjust the value.
- Press the **OCP** button to set the over current protection threshold. Use the rotary encoder to adjust the value.
- When an OVP or OCP event occurs, the output will be disabled, and an indicator will typically appear on the display.

6.4 Memory Functions

The power supply allows saving and recalling frequently used voltage and current settings.

- Press the **Memory** button to access memory functions.
- Follow the on-screen prompts to save current settings to a memory location or recall settings from a saved location.

6.5 List Waveform Editing Output

The SPE3103 supports editing and outputting up to 10 groups of timing sequences for voltage and current. Refer to the detailed programming guide (if available separately) for advanced configuration of list waveform outputs.

6.6 USB Communication

The unit features a USB communication interface for remote control and data logging, supporting the SCPI (Standard Commands for Programmable Instruments) protocol. Connect the power supply to a computer using a USB cable. Install the necessary drivers and software (available from the manufacturer's website) to utilize this feature.

7. Maintenance

7.1 Cleaning

To clean the instrument, disconnect it from the power source. Use a soft, damp cloth with a mild detergent. Do not use abrasive cleaners or solvents. Ensure no liquid enters the instrument.

7.2 Fuse Replacement

If the power supply does not turn on, the fuse may need replacement. Disconnect the power cord from the AC outlet. Locate the fuse holder on the rear panel. Use a suitable tool to open the fuse holder, remove the old fuse, and replace it with a new fuse of the identical type and rating (e.g., 250V, F5A for 220Vac input or 250V, F10A for 110Vac input, as specified on the unit). Close the fuse holder securely.

8. Troubleshooting

This section addresses common issues you might encounter with the SPE3103 power supply.

- **No Power:**
  - Check if the power cord is securely connected to both the instrument and the AC outlet.
  - Ensure the main power switch on the rear panel is in the ON position.
  - Verify the AC outlet is functional.
  - Check and replace the fuse if necessary (refer to Section 7.2).
- **No Output Voltage/Current:**
  - Ensure the output is enabled by pressing the**On**/**Off** button on the front panel.
  - Check if OVP or OCP has been triggered. Reset if necessary.
  - Verify that the test leads are correctly connected to the output terminals and the load.
  - Ensure the set voltage and current limits are appropriate for the connected load.
- **Unstable Output:**
  - Check for loose connections in the test leads or load.
  - Ensure the load is within the power supply's operating range.
  - Verify proper ventilation to prevent overheating.

9. Specifications

The following table details the technical specifications for the OWON SPE3103 Programmable DC Power Supply. The instrument must be operated continuously for more than 30 minutes at the specified operating temperature to achieve these specifications.

Category	Parameter	SPE3103
Input Characteristics	Supply Voltage	110Vac±15% or 220Vac±15%
	Input Frequency	45-65Hz
	Input Parameter 1 (110Vac±15%)	
	Input Voltage Range	93-127Vac
	Full Load Input Current	≤5.6A
	No-Load Input Current	≤300mA
	Input Fuse	250V,F10A
Input Parameter 2 (220Vac±15%)	Input Voltage Range	187-253Vac
	Full Load Input Current	≤2.8A
	No-Load Input Current	≤150mA
	Input Fuse	250V,F5A
Rated Output	Voltage	0-30V
	Current	0-10A
	Power	300W
	Efficiency (110Vac, rated load)	80%
Regulation (CV)	Load	≤30mV
	Line	≤20mV
	Efficiency (220Vac, rated load)	85%
Regulation (CC)	Load	≤30mA
	Line	≤20mA

Category	Parameter	SPE3103
	Voltage (Vp-p)	≤30mV
Ripple & Noise (Noise bandwidth 20MHz, ripple bandwidth 1MHz, connect 10uF electrolytic capacitor in parallel with 0.1uF ceramic capacitor to the output terminal for testing)	Voltage (rms)	≤3mV
	Current (Ap-p)	≤30mA
Setting Resolution	Voltage	10mV
	Current	1mA
Readback Resolution	Voltage	1mV
	Current	1mA
Setting Accuracy	Voltage	≤0.1%±20mV
	Current	≤0.1%±10mA
Readback Accuracy	Voltage	≤0.1%±20mV
	Current	≤0.1%±10mA
Response time	Transient recovery time (50%-100% rated load)	≤1ms
Protective function	OVP	0-31V
	OCP	0-10.1A
	OTP	85°C
Temperature coefficient of output	Voltage	100ppm/°C
	Current	200ppm/°C
Temperature coefficient of readback value	Voltage	100ppm/°C
	Current	200ppm/°C
Display	Resolution	240 × 320 pixels
	Color	65536 color, TFT
Environment	Working Temperature	0°C ~ 40°C
	Storage Temperature	-20°C ~ 60°C
	Relative Humidity	≤90%RH; no condensation
	Height	2,000 meters
	Cooling	Fan cooling, temperature intelligent

Category	Parameter	speed control SPE3103
Other	Communication Port	USB communication, compatible with SCPI communication protocol
	USB Charging Port	5V/1A USB charging
	Dimension	82mm (Width) × 142mm (Height) × 226mm (Length)
	Weight	Approx. 1.5 kg

Image Description: This section combines information from three images (512ilAsAuML.jpg, 51j+PwnHStL.jpg, 41MdcFYV4eL.jpg) to present a comprehensive technical specification table for the SPE3103 power supply. It details input characteristics, rated output, regulation, ripple & noise, resolution, accuracy, response time, protective functions (OVP, OCP, OTP), temperature coefficients, display features, environmental conditions, and other specifications like communication ports, USB charging, dimensions, and weight.

10. Warranty and Support

The OWON SPE3103 Programmable DC Power Supply is manufactured by LILLIPUT. For warranty information, technical support, or service inquiries, please contact the manufacturer or your authorized distributor. Retain your purchase receipt as proof of purchase for warranty claims.

Related Documents - SPE3103

	OWON ODP3031 Linear Programmable DC Power Supply User Manual Comprehensive user manual for the OWON ODP3031 Linear Programmable DC Power Supply, detailing its features, operation, safety precautions, troubleshooting, and technical specifications.
	OWON ODP Series Linear Programmable DC Power Supply User Manual User manual for the OWON ODP Series Linear Programmable DC Power Supply, covering general safety, characteristics, quick start guide, front panel operation, PC communication, troubleshooting, technical specifications, and appendices.

	[OWON ODP Series Triple Output DC Power Supply User Manual] Comprehensive user manual for OWON ODP Series Triple Output Linear Programmable DC Power Supplies (ODP3033, ODP3063, ODP6033), covering setup, operation, safety, and technical specifications.
	[Owon P Series Single Channel DC Power Supply User Manual] Comprehensive user manual for the Owon P Series single channel DC power supply, detailing safety precautions, panel operations, system settings, troubleshooting, and general care.
	[OWON ODP8000 Series Programmable DC Power Supply User Manual] Comprehensive user manual for the OWON ODP8000 Series Programmable DC Power Supply, covering ODP8353 and ODP8354 models. It details safety precautions, front and rear panel operations, user interface, output settings, programmable functions, utility settings, troubleshooting, and technical specifications.
	[OWON ODP Series Dual Output Linear Programmable DC Power Supply User Manual] User manual for the OWON ODP Series Dual Output Linear Programmable DC Power Supply (models ODP3122, ODP6062), detailing safety precautions, operation procedures, interface descriptions, troubleshooting, technical specifications, and maintenance.

Documents - OWON – SPE3103

[pdf] User Manual Instructions Specifications Warranty Accessories

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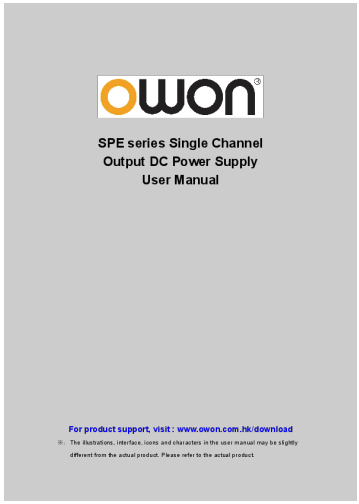

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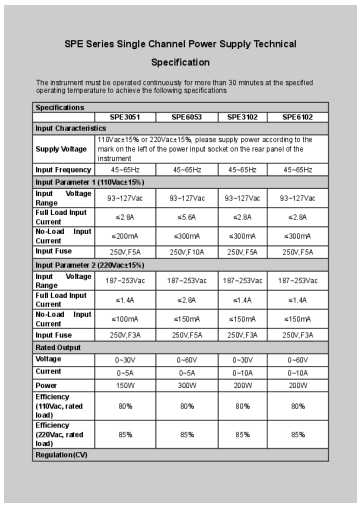
SPE Series Single Channel Power Supply Technical Specification

The instrument must be operated continuously for more than 30 minutes at the specified operating temperature to achieve the following specifications

Specifications	SPE3051	SPE6053	SPE3102	SPE6102
Input Characteristics				
Supply Voltage	110Vac±15% or 220Vac±15%, please supply power according to the mark on the left of the power input socket on the rear panel of the instrument			
Input Frequency	45~65Hz	45~65Hz	45~65Hz	45~65Hz
Input Parameter 1 (110Vac±15%)				
Input Voltage Range	93~127Vac	93~127Vac	93~127Vac	93~127Vac
Full Load Input Current	≤2.9A	≤5.6A	≤2.8A	≤2.8A
No-Load Input Current	≤200mA	≤300mA	≤300mA	≤300mA
Input Fuse	250V,F5A	250V,F10A	250V,F5A	250V,F5A
Input Parameter 2 (220Vac±15%)				
Input Voltage Range	187~253Vac	187~253Vac	187~253Vac	187~253Vac
Full Load Input Current	≤1.4A	≤2.9A	≤1.4A	≤1.4A
No-Load Input Current	≤100mA	≤150mA	≤150mA	≤150mA
Input Fuse	250V,F3A	250V,F5A	250V,F3A	250V,F3A
Rated Output				
Voltage	0~30V	0~60V	0~30V	0~60V
Current	0~5A	0~5A	0~10A	0~10A
Power	150W	300W	200W	200W
Efficiency (110Vac, rated load)	80%	80%	80%	80%
Efficiency (220Vac, rated load)	85%	85%	85%	85%
Regulation(CV)				

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SPE Series Single Channel Power Supply Technical Specification The instrument must be operated cont ... tes at the specified operating temperature to achieve the following specifications Specifications **SPE3103** SPE6103 Input Characteristics Supply Voltage Input Frequency 110Vac15 or 220Vac15 , ple...

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[pdf] Safety Datasheet Catalog

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Product Catalogue Spectrum Analyzers Digital Storage Oscilloscopes Arbitrary Waveform Generators Pro ... specified temperature to ensure the following parameters. Model SPE3051 SPE3102 SPE6102 SPE6053 **SPE3103** SPE6103 Rated Output 0-40 Voltage Current Output Power 0 - 30V 5A 150W 0 - 30V 10A 20...

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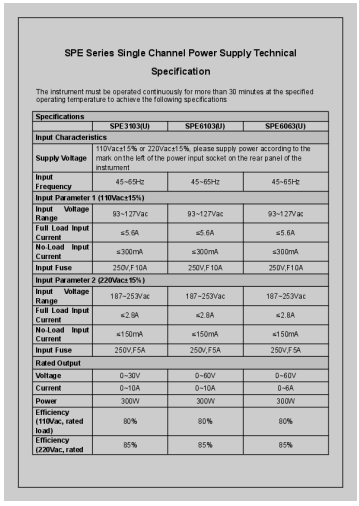

SPE Series Single Channel Power Supply Technical Specification

The instrument must be operated continuously for more than 30 minutes at the specified operating temperature to achieve the following specifications

Specifications	SPE3103(U)	SPE6103(U)	SPE6063(U)
Input Characteristics			
Supply Voltage	110Vac±5% or 220Vac±5%, please supply power according to the mark on the left of the power input socket on the rear panel of the instrument		
Input Frequency	45~65Hz	45~65Hz	45~65Hz
Input Parameter 1 (110Vac±5%)			
Input Voltage Range	93~127Vac	93~127Vac	93~127Vac
Full Load Input Current	≤5.6A	≤5.6A	≤5.6A
No-Load Input Current	≤300mA	≤300mA	≤300mA
Input Fuse	250V,F10A	250V,F10A	250V,F10A
Input Parameter 2 (220Vac±5%)			
Input Voltage Range	187~253Vac	187~253Vac	187~253Vac
Full Load Input Current	≤2.8A	≤2.8A	≤2.8A
No-Load Input Current	≤150mA	≤150mA	≤150mA
Input Fuse	250V,F5A	250V,F5A	250V,F5A
Rated Output			
Voltage	0~30V	0~60V	0~60V
Current	0~10A	0~10A	0~6A
Power	300W	300W	300W
Efficiency (110Vac, rated load)	80%	80%	80%
Efficiency (220Vac, rated	85%	85%	85%

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SPE Series Single Channel Power Supply Technical Specification The instrument must be operated continuously for more than 30 minutes at the specified operating temperature to achieve the following specifications Specifications **SPE3103** U SPE6103 U SPE6063 U Input Characteristics Supply Volt...

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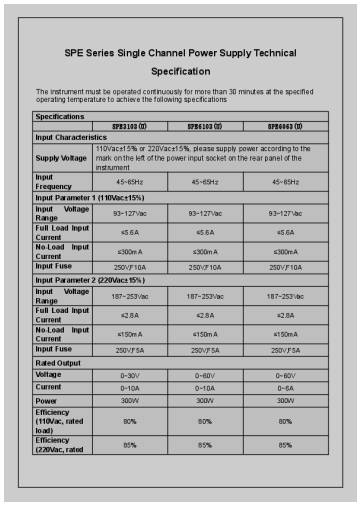

SPE Series Single Channel Power Supply Technical Specification

The instrument must be operated continuously for more than 30 minutes at the specified operating temperature to achieve the following specifications

Specifications	SPE3103 (U)	SPE6103 (U)	SPE6063 (U)
Input Characteristics			
Supply Voltage	110Vac±5% or 220Vac±5%, please supply power according to the mark on the left of the power input socket on the rear panel of the instrument		
Input Frequency	45~65Hz	45~65Hz	45~65Hz
Input Parameter 1 (110Vac±5%)			
Input Voltage Range	93~127Vac	93~127Vac	93~127Vac
Full Load Input Current	≤5.6A	≤5.6A	≤5.6A
No-Load Input Current	≤300mA	≤300mA	≤300mA
Input Fuse	250V,F10A	250V,F10A	250V,F10A
Input Parameter 2 (220Vac±5%)			
Input Voltage Range	187~253Vac	187~253Vac	187~253Vac
Full Load Input Current	≤2.8A	≤2.8A	≤2.8A
No-Load Input Current	≤150mA	≤150mA	≤150mA
Input Fuse	250V,F5A	250V,F5A	250V,F5A
Rated Output			
Voltage	0~30V	0~60V	0~60V
Current	0~10A	0~10A	0~6A
Power	300W	300W	300W
Efficiency (110Vac, rated load)	80%	80%	80%
Efficiency (220Vac, rated	85%	85%	85%

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SPE Series Single Channel Power Supply Technical Specification The instrument must be operated continuously for more than 30 minutes at the specified operating temperature to achieve the following specifications Specifications **SPE3103** U SPE6103 U SPE6063 U Input Characteristics Supply Volt...

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Product Catalogue Spectrum Analyzers Digital Storage Oscilloscopes Arbitrary Waveform Generators Pro ... 0-30V Current 5A OutputPower 150W SPE3102 U 0-30V 10A 200W SPE6102 U 0-60V 5A SPE6053 U **SPE3103** U 0-60V 0-30V 10A 300W SPE6103 U 0-60V USBOutput 5V/1A SPEseries or18Woutput,forfas...

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