

200W LABORATORY GRADE DC SWITCHING MODE POWER SUPPLIES

SPS series

OPERATION MANUAL



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**Remark for Model SPS-2210 only :V meter max. display 
above 19.99 output voltage, V meter display **

1. SAFETY INSTRUCTIONS AND PRECAUTIONS

- 1). Do not use this apparatus near water.
- 2). Clean only with dry cloth.
- 3). Do not block any ventilation openings.
- 4). Do not install unit near any heat source or heating emitting devices.
- 5). Prevent the power cord from being walked on or pinched.
- 6). Unplug this unit during lightning storms or when unused for long periods of time.

PRECAUTIONS

- 1). The unit must be used within its specified range.
The rated input voltages can be found on the rating label at the back the unit.
Before plugging into the AC supply, check with the rating label.
- 2). Refer all servicing to qualified service personnel.

Warning !

Model SPS-2603, the maximum output voltage is up to 60 Vdc.

It may be hazardous to touch metal part of the output terminals.

User must avoid touch live metal part of the output terminals.

2. INTRODUCTION

This series of 200 watts LABORATORY GRADE SWITCHING DC POWER SUPPLIES are built with coarse and fine output voltage and current limiting controls.

Auto-range meters allow 0.000 ampere readings and 0.00 voltage readings in the low range operation and automatically to 00.00 readings in high range of the scale.

Current limiting control with automatic cross over of constant voltage (CV) and constant current (CC) indicators make this series ideal for R& D work in laboratory situations.

Auto Range and Absolute Zero of the ammeter

The Auto Range utilizes fully the three and half digit meters by the following ways to provide more resolution read outs of the current and voltage meters.

The Auto Range for the ammeter shifts from 4 digit 3 decimal points display in low range to 4 digit 2 decimal points in high range.

The change -over takes place in the range 1.850 ~1.990 A .

Smaller than (1.850~1.990A)  4 DIGIT 3 DECIMAL

Larger than (1.850~1.990A)  4 DIGIT 2 DECIMAL

The auto range for the voltage meter shifts from 4 digit 2 decimal points in the low range to 3 digit 1 decimal point in the high range (*except for SPS-2210 , the voltage meter reads 4 digit 2 decimal for whole range*)

The change over takes place in the range of 18.50 ~19.90 V.

Smaller than (18.50~19.90V)  4 DIGIT 2 DECIMAL

Larger than (18.50~19.90V)  3 DIGIT 1 DECIMAL

Absolute Zero read out of ammeter.

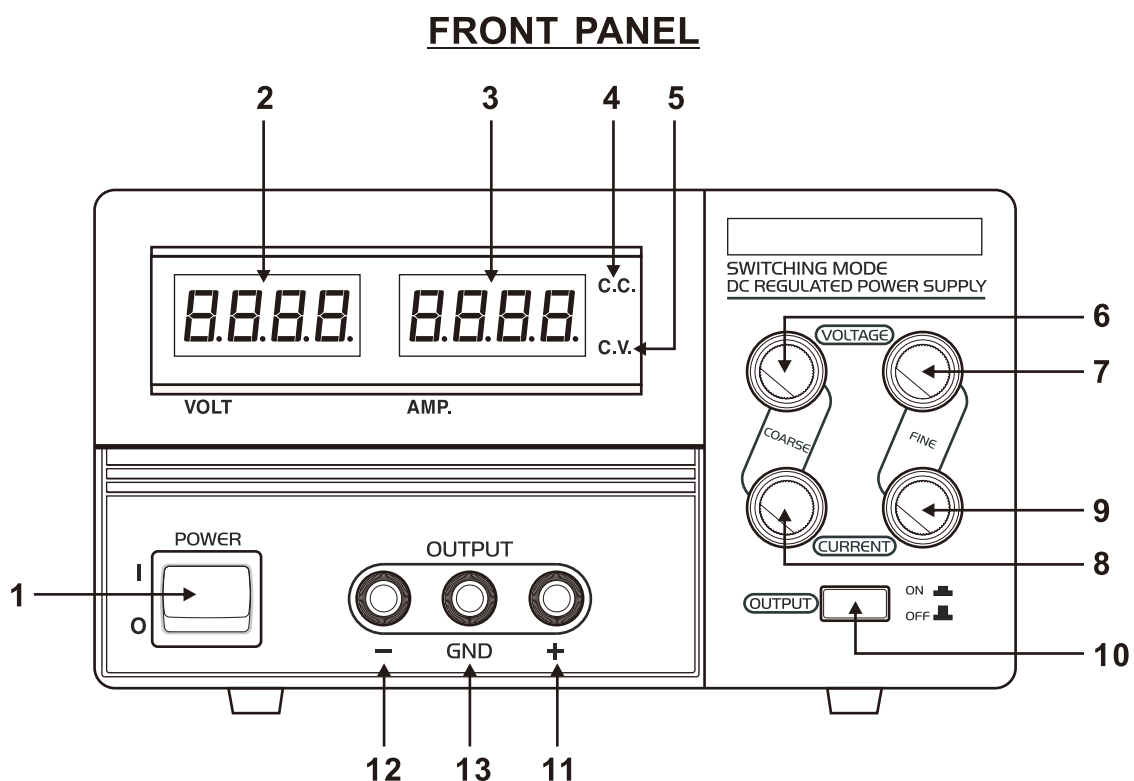
The read out of 0.000 Ampere for zero current output does not display in the ammeter as the opt-amp may pick up stray currents of up to 9 milliamps in the absolute zero current setting. This is as expected and accepted for the absolute zero becoming a few milliamps at which presents no practical significance in the 200W power supply which may give out from 3.3 to 10 Amperes.

3. SPECIFICATIONS

MODEL	SPS - 2210	SPS - 2405	SPS - 2603
Output Voltage	1 - 20V DC	1 - 40V DC	1 - 60V DC
Output Voltage Control	Fine and Coarse		
Rated Output Current	0 - 10A	0 - 5A	0 - 3.3A
Output Current Control	Fine and Coarse		
Ripple & Noise (P-P)	≤30mVp-p		
Load Regulation (0-100% Load)	≤300mV	≤220mV	≤150mV
Line Regulation	≤10mV		
Input Voltage	100 - 240VAC , 50Hz / 60Hz		
Meter Type	Digital LED		
V Meter Range	Auto-Range	3 1/2 digit LED	
A Meter Range	Auto-Range	3 1/2 digit LED	
Meter's Accuracy	±1% +5 counts		
Indicators	CC , CV		
Cooling System	Thermostatic control fan		
Protection Devices	Over voltage , Short circuit , Over temperature		
Approvals	CE EN-61010 EN-55011		
Dimension (WxHxD)	205 x 115 x 275 (mm)		
Weight	3 KG		

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4. CONTROLS AND INDICATORS



Front Panel

1. Power Switch

Turns the power supply ON-OFF the switch will be lighted up when the unit is ON.

2. DC Voltmeter (LED display)*

Indicates the present output voltage with AUTO-RANGE

3. DC Ammeter (LED display)

Indicates the present output current with AUTO-RANGE

4. Constant Current Mode (C.C.) Indicator

Indicates the power supply is operating in constant current mode.

5. Constant Voltage Mode (C.V.) Indicator

Indicates the power supply is operating in voltage mode.

6. Voltage Coarse

Coarse adjust knob for the output voltage in voltage mode.

7. Voltage Fine Adjust

Fine adjust knob for the output voltage in voltage mode.

8. Current Coarse Adjust

Coarse adjust knob for current limiting point and current value in constant current mode.

9. Current Fine Adjust

Fine adjust knob for current limiting point and current value in constant current mode.

10. Output ON/OFF Button

No more tedious work in physically "Disconnect" and "Reconnect" your test piece to the power supply during evaluation.

11. Output Terminal Positive (+)

Terminal for tapping of positive (+) output.

12. Output Terminal Negative (-)

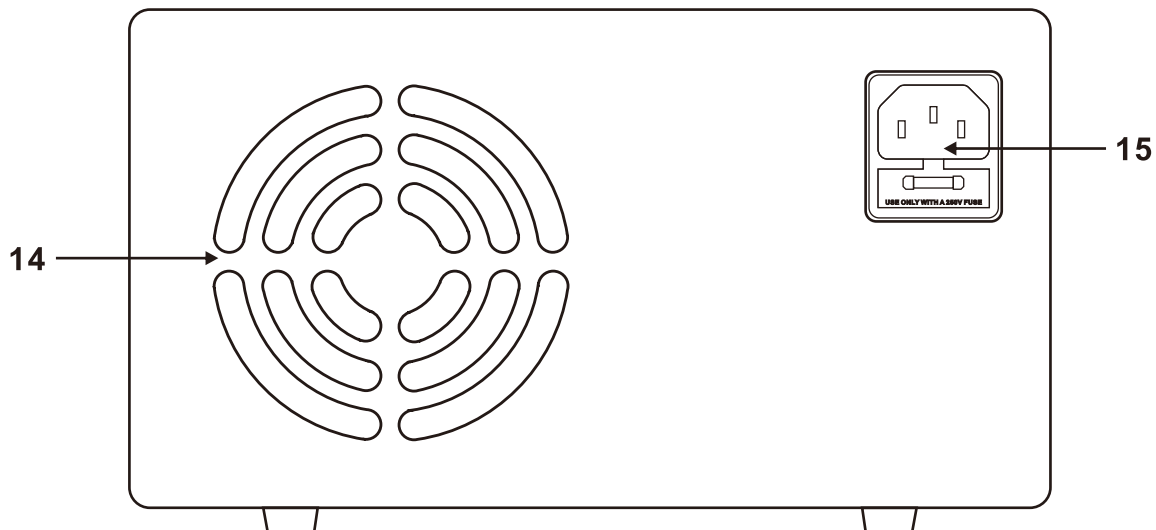
Terminal for tapping of negative (-) output.

13. GND Terminal (\perp)

Chassis ground terminal. normally, this is connected to either the (+) or (-) terminal depending on the application.

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REAR PANEL



Rear Panel

14. Fan

Allow at least 80mm space from wall.

15. Input Socket with Fuse

5. OPERATION PROCEDURES

Output Voltage Control

It is a dual control consists of a coarse and a fine potentiometer. The final DC voltage output is the sum of both potentiometers' adjustments.

Current Limiter Control

It is a dual control consists of a coarse and a fine controls which change the DC current over the rated current range .

Ground Connections

This power supply can be operated either with negative or positive output terminal grounded or with no terminal grounded. Both positive and negative ground connections are made by using the shorting plate at the terminals.

REMARKS:

When operating this supply with neither terminal grounded, high impedance leakage can exist between the power supply circuitry and the chassis ground.

Basic Mode of Operation

This power supply is designed to operate as a constant voltage source or as a constant current source. Automatic crossover to either mode of operation occurs when load conditions change as following:

Constant Voltage

The power supply will function as a constant voltage source as long as the load current is less than the current limiting value set by the current limit operation. When the load current is equal to or greater than the current limit set, the power supply will automatically cross over and operate as a constant current source.

Constant Current (Automatic cross over)

The power supply will function as a constant current source when the load voltage does not equal to the voltage value set by the output voltage control. When the load voltage equals to the value set by the output voltage control the power supply will automatically cross over and operate as a constant voltage source.

Presetting Current Limiting Value

There are occasions that you do not want your load to draw too much current and from being damaged ,you can preset the current limiting value as following.

Short circuit the output terminals and adjust the current limit control to your desired value.