

DC POWER SUPPLY

Users Manual

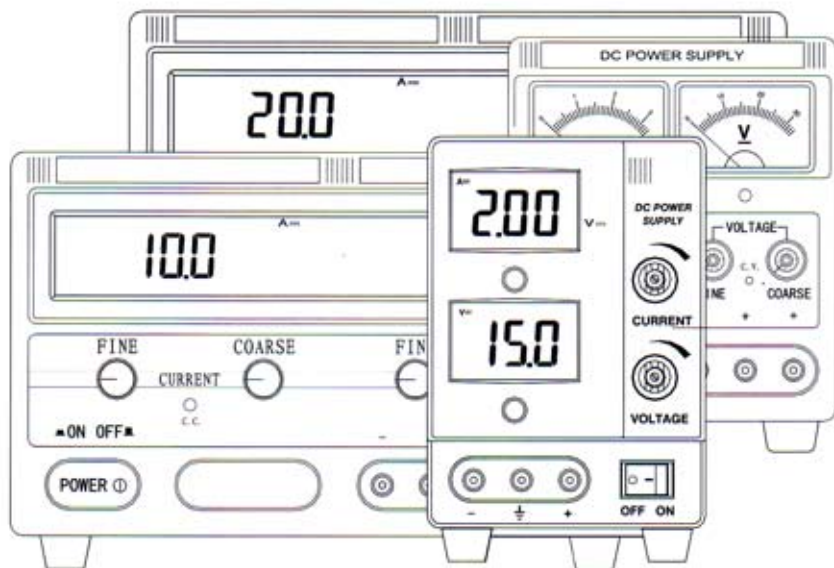


Table of Contents

CHAPTER

1.	Introduction	1-1
	Unpacking and Inspection	1-2
	Safety Precautions	1-2
	Safety Information	1-3
	Safety Symbols	1-3
	Instrument Front Panel	1-4
	Instrument Back Panel	1-6
2.	Operation	2-1
	Line Power Supply Setting	2-1
	Operation Procedure	2-3
3.	Specifications	3-1
	General Specifications	3-1
	Technical Parameters	3-2
4.	Maintenance	4-1
	Replacing the Fuse	4-1

Chapter 1

Introduction

This manual contains information and warnings, which must be followed to ensure safe operation and retain the DC power supply in safe condition.



WARNING

READ "SAFETY INFORMATION" BEFORE USING, INSTALLING OR MAINTENANCE THE INSTRUMENT.

The **DC power supply series** are a bench top single output variable DC power supply. Stable regulated DC power supplies allowing continuous adjustment of both the output voltage and output current levels. They have been designed according to IEC1010-1 concerning safety requirements and comply with.

There are three display types for the **power supply series** monitoring output voltage and current. They are LCD, LED and two pointer meters. One of them is equipped to the DC power supply. There are different numbers of output voltage and output current ranges for the **DC power supply series**, too. These difference models of the DC power supply are available for choice of user.

The output voltage and current range and equipped display type of the **DC power supply series** as follows:

OUTPUT VOLTAGE (regulated)	OUTPUT CURRENT (regulated)	DISPLAY TYPE		
		LCD	LED	POINTER METER
0~15V	0~2A	•	•	•
	0~3A	•	•	•

OUTPUT VOLTAGE (regulated)	OUTPUT CURRENT (regulated)	DISPLAY TYPE		
		LCD	LED	POINTER METER
0~18V	0~2A	•		
	0~3A	•		
0~30V	0~2A	•	•	•
	0~3A	•	•	•
	0~5A	•	•	•
	0~10A		•	
	0~20A		•	
	0~2A		•	
0~50V	0~3A		•	

These difference models of the DC power supply are available for choice of user.

Unpacking and Inspection

The packing should include the following items:

1. DC power supply
2. Power line cord
3. Instruction manual
4. Spare fuse

Please check to see that all of the above items are included.



Safety Precautions

1. Before applying power to your DC power supply, make sure that power select switch is correctly setting for you applicable AC

- power supply.
2. Connect the instrument to an AC power source using the power line core provided.
 3. Do not connect a voltage that is greater than the current output voltage to the terminals of the instrument.
 4. Never ground yourself when taking electrical measurements. Keep your body isolated from ground by using dry clothing; rubber shoes, rubber mat, or any approved insulating material.
 5. Never touch exposed wiring, connections or any live circuit when attempting to take measurements.
 6. Avoid shorting circuit the output of DC power supply.
 7. Set the voltage and current adjustment knobs as you desire.
 8. The unit should be stored in a dry and well ventilated place and the power cord removed if storing for long periods.



Safety Information

The DC power supply series has been designed according to IEC1010 – 1 concerning safety requirements for electrical measuring instruments with an overvoltage category (300V CAT II) and pollution 2.

Safety Symbols



Important safety information, refer to the operating manual.



DC – Direct current.



Earth ground.



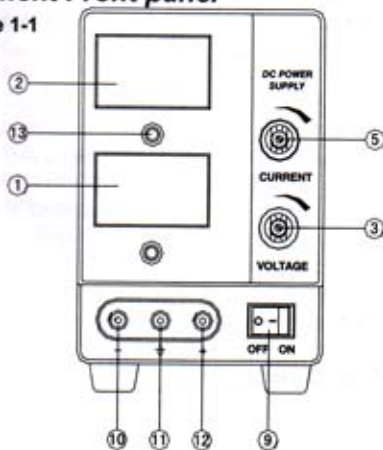
Caution! Hot surface. Avoid contact.



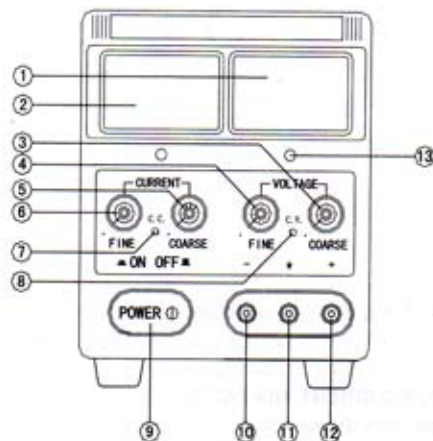
Conforms to European Union directives.

Instrument Front panel

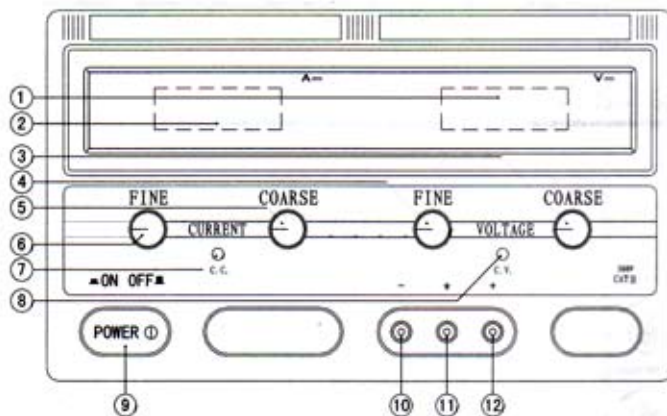
Figure 1-1



15/18V



30/50V 2/3/5A



30V 10/20A

1. OUTPUT VOLTAGE INDICATOR

This indicator shows output voltage as measured at the output terminals.
There is LCD or LED or pointer meter display type. They are available for choice of user.


2. OUTPUT CURRENT INDICATOR

This indicator shows output current as measured at the output terminals.
There is LCD or LED or pointer meter display type. They are available for choice of user.

3. COARSE(MAIN) VOLTAGE REGULATOR

- Adjust output voltage of the DC power supply.
4. **FINE VOLTAGE REGULATOR**
This is a fine control. Adjust output voltage of the DC power supply.
5. **COARSE(MAIN) CURRENT REGULATOR**
Adjust output current of the DC power supply and delivered.
6. **FINE CURRENT REGULATOR**
This is a fine control. Adjust output current of the DC power supply and delivered.
7. **C.C. INDICATOR**
Constant current mode indicator
8. **C.V. INDICATOR**
Constant voltage mode indicator
9. **POWER ON/OFF SWITCH**
This is main power switch of the instrument.
10. **NEGATIVE OUTPUT TERMINAL**
11. **GROUND OUTPUT TERMINAL**
12. **POSITIVE OUTPUT TERMINAL**
13. **POINT METER ZERO (only pointer meter display)**
Each pointer meter has a mechanical screw adjustment for setting the zero point. Using a small screwdriver, turn off the power and adjust the screw under the meter respectively to read zero. There is only pointer meter model.

Instrument Back Panel (Figure 1-2)

1. **HEAT SINK**
There is an  on the heat sink. It indicates "caution! Hot surface avoid contact".
2. **POWER SELECT SWITCH**

Two kinds of power 220VAC and 110VAC 50Hz/60Hz can be supplied to the instrument. According to user's needs, setting it

3. FUSES

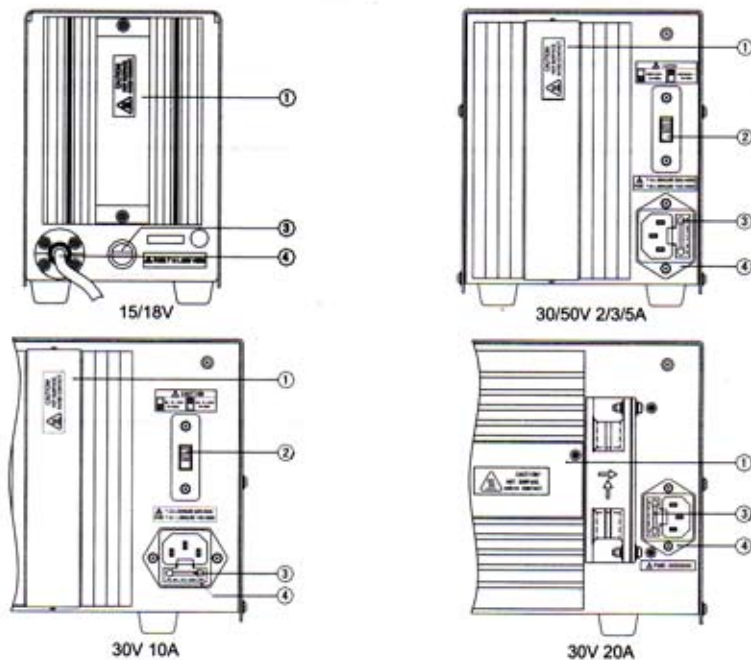
There are two fuses in the AC power input socket. One is in use and the other is for spare part.

The fuse of The DC power supply series as follows:

OUTPUT VOLTAGE Regulated	OUTPUT CURRENT regulated	FUSE TYPE line 220VAC	FUSE TYPE line 110VAC
0~15V	0~2A	T 1A L 250V	T 2A L 250V
	0~3A	T 1A L 250V	T 2A L 250V
0~18V	0~2A	T 1A L 250V	T 2A L 250V
	0~3A	T 1A L 250V	T 2A L 250V
0~30V	0~2A	T 1A L 250V	T 2A L 250V
	0~3A	T 2A L 250V	T 4A L 250V
	0~5A	T 3.15A L 250V	T 6.3A L 250V
	0~10A	T 5A L 250V	T 10A L 250V
	0~20A	T 8A L 250V	T 15A L 250V
0~50V	0~2A	T 2A L 250V	T 4A L 250V
	0~3A	T 3.15A L 250V	T 6.3A L 250V

4. AC POWER INPUT

Figure 1-2





WARNING

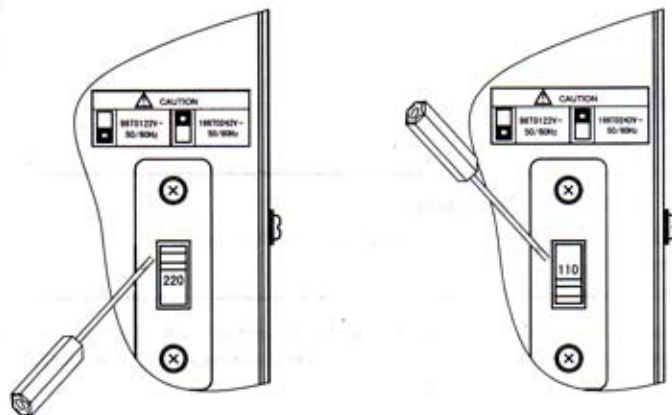
To avoid user for injury and the instrument for damage, the voltage value of AC power must be examined with same the power requirements of instrument before connect power cord to live power source.



WARNING

To avoid electrical shock, disconnect power cord from live power source and remove the test leads and any input signals before replacing the power fuses. Replace it only with the same type of fuses.

Figure 2-1



CAUTION

The applicable AC power supply range is:

220VAC $\pm 10\%$ (198 to 242V~) 50Hz/60Hz or 110VAC $\pm 10\%$ (98 to 122V~) 50Hz/60Hz.

NOTE: The instrument without **POWER SELECT SWITCH** is factory pre-set in accordance with your main voltage when your local distributor place the order with the factory.

Operating Procedure

CONSTANT VOLTAGE MODE

1. Turn the voltage regulator anti-clockwise to minimum position and the current regulator clockwise to maximum position.
2. Press the power ON / OFF switch to ON.
3. Turn the voltage regulator clockwise to that you are desirous of output voltage value.
4. Connect the positive output terminal and negative output terminal with a load or similar component.
5. The voltage regulator controls the output voltage indicator. Indicator shows that output voltage of the output terminals.

CONSTANT CURRENT MODE

1. Turn the voltage regulator clockwise to maximum position and the current regulator anti – clockwise to minimum position.
2. Press the power ON/ OFF switch to ON.
3. Connect the positive output terminal and negative output terminal with a load or similar component.
4. Turn the current regulator clockwise to that you are desirous of output current value.
5. The voltage regulator controls the output voltage indicator. The current regulator controls the output current indicator. Indicator show that output voltage and current of the output terminals.

RESTRICTED CURRENT PROTECTION MODE

1. Press the power ON/ OFF switch to ON.
2. Turn the current regulator anti-clockwise to minimum position then clockwise a little.
3. Turn the voltage regulator clockwise to that you are desirous of output voltage level position (approx.1.5V).
4. Link the positive and negative output terminals with a wire.
5. Turn the current regulator clockwise to get the current level at which the restricted current protection will be active as you desire.

6. Remove the wire linked to the positive and negative output terminals. Connect the positive output terminal and negative output terminal with a load or similar component.
7. When the output current achieves the setting value of restricted current protection, and the restricted current protection is active.

NOTE: After setting of the restricted current protection, if the current regulator is turned again, the restricted current protection range will be changed.

C.C. AND C.V. INDICATOR (*Only for the instrument with C.C. and C.V. INDICATOR*)

The C.C. indicator is controlled by the constant current mode. Otherwise C.V. indicator is controlled by the constant voltage mode.



CAUTION

The **DC power supply series** has perfect restricted current protection. Even so, when the output terminal is short - circuit, the DC power supply should be turned off and the short - circuit should be removed before continuing operation because the power transistors in the instrument will bear heavy.

The AC power must be switched off before servicing and servicing should be referred to a qualified person.



CAUTION

Using this appliance in an environment with a strong radiated radio - frequency electromagnetic field (approximately 3V/m) may influence its measuring accuracy.

Chapter 3

Specifications

General Specifications

Safety:

Designed comply with IEC 1010 -1 specifications. CAT. II 300V

Temperature:

0°C to 40°C for operating, -10°C to 50°C for storage

Under 75% rated output power for continuous, upward of 75% rate output power for one hour.

Relative Humidity:

20% to 80% RH (0°C to 40°C).

Protection:

constant current and short - circuit protection

Weight & Size

OUTPUT VOLTAGE (regulated)	OUTPUT CURRENT (regulated)	WEIGHT	SIZE
0~15V	0~2A	Approx. 3kg	206(L) × 110(W) × 153(H) mm
	0~3A	Approx. 4kg	206(L) × 110(W) × 153(H) mm
0~18V	0~2A	Approx. 4kg	206(L) × 110(W) × 153(H) mm
	0~3A	Approx. 4.5kg	206(L) × 110(W) × 153(H) mm
0~30V	0~2A	Approx. 4kg	291(L) × 136(W) × 158(H) mm
	0~3A	Approx. 5kg	291(L) × 136(W) × 158(H) mm

OUTPUT VOLTAGE (regulated)	OUTPUT CURRENT (regulated)	WEIGHT	SIZE
0~30V	0~5A	Approx. 3kg	291(L) × 136(W) × 158(H) mm
	0~10A	Approx. 12kg	365(L) × 265(W) × 164(H) mm
	0~20A	Approx. 15kg	365(L) × 265(W) × 164(H) mm
0~50V	0~2A	Approx. 5kg	291(L) × 136(W) × 158(H) mm
	0~3A	Approx. 6kg	291(L) × 136(W) × 158(H) mm

Technical Parameters

Input voltage :

220V AC $\pm 10\%$ 50HZ/60HZ $\pm 2\text{HZ}$ or 110V AC $\pm 10\%$ 50HZ/60HZ $\pm 2\text{HZ}$

Voltage indication accuracy:

LED display and LCD display $\pm 1\% \pm 2\text{digits}$, Pointer meter display 2.5%

Current indication accuracy:

LED display and LCD display $\pm 2\% \pm 2\text{digits}$, Pointer meter display 2.5%

Output Voltage and Current:

OUTPUT VOLTAGE (regulated)	OUTPUT CURRENT (regulated)
0~15V	0~2A
	0~3A
0~18V	0~2A
	0~3A
0~30V	0~2A
	0~3A

Output Voltage and Current:

OUTPUT VOLTAGE (regulated)	OUTPUT CURRENT(regulated)
0~30V	0~5A
	0~10A
	0~20A
0~50V	0~2A
	0~3A

Source Effect(Line regulation):

$$CV \leq 0.01\% + 1\text{mV}$$

$$CC \leq 0.2\% + 1\text{mA}$$

Loading Effect(Load regulation):

$$CV \leq 0.01\% + 3\text{mV}$$

$$CC \leq 0.2\% + 3\text{mA}$$

Ripple and noise:

$$CV \leq 0.5\text{mVr.m.s}$$

$$CC \leq 3\text{mAr.m.s}$$

To obtain the stability guarantee of source and loading effect, allow the instrument to warm up for at least 15 minutes.

Chapter 4

Maintenance

Introduction

Do not attempt to repair or service your instrument unless you are qualified to do so and have the relevant calibration, performance test, and service information.

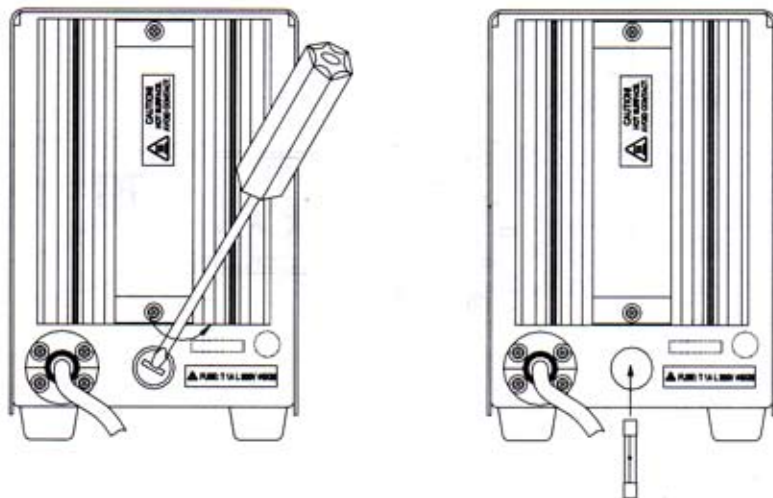
Replacing the Fuse



WARNING

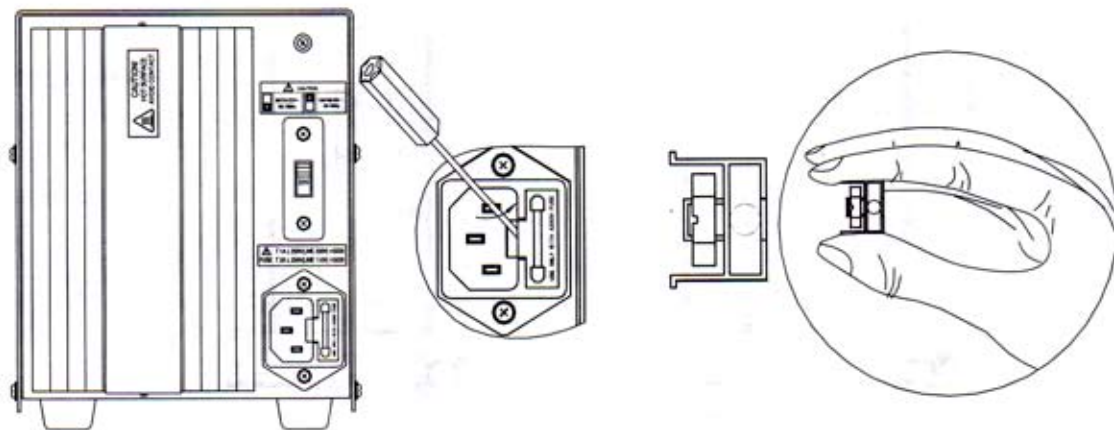
Turn off the power switch, remove the power line cord from the power socket and disconnect the test leads at output terminals before replacing the fuse. Replace it only with same type of fuse.

Figure 4-1



15/18V FUSE

Figure 4-2



30/50V FUSE