BENCHTOP INSTRUMENT

seean

Twintex

Single Channel DC Power Supply

TP Series

Operation Manual V1.0

CE

CONTENTS

1. INTRODUCTION

TP Series regulated DC power supply are designed to provide the required in laboratory, university and production lines.

The output voltage is continuously adjustable between 0 to rating voltage. The load current may have any value from 0 to rating current. Voltage and Current are adjusted by means of a coarse and fine potentiometer. Both outputs can accurately read on voltmeter and ammeter.

Both stability and ripple are extremely good to meet the requirements of modern circuit design. The unit can be used as either constant voltage or current source. It has output ON/OFF, fixed DC 5V/1A output (optional), digital LED display and overload protection circuits.

2. PRODUCTION MODELS

No.	Model	Output Voltage	Output Current	Output ON/OFF	Fixed 5V/1A	V/A Preset	Weight kg
1	TP-1303EC	0-30V	0-3A				4.5
2	TP-1305EC	0-30V	0-5A				5
3	TP-1603EC	0-60V	0-3A				5.5
4	TP-1303C	0-30V	0-3A	●			5
5	TP-1305C	0-30V	0-5A	●			5.5
6	TP-1603C	0-60V	0-3A	●			6
7	TP-1303	0-30V	0-3A	●	●		5
8	TP-1305	0-30V	0-5A	●	●		5.5
9	TP-1603	0-60V	0-3A	●	●		6
10	TP-3010	0-30V	0-10A	●		●	10
11	TP-6005	0-60V	0-5A	●		●	10
12	TP-3020	0-30V	0-20A	●		●	14
13	TP-6010	0-60V	0-10A	●		●	14

3. SPECIFICATIONS

Table 1

Model	**TP-1303EC** **TP-1303C** **TP-1303**	**TP-1305EC** **TP-1305C** **TP-1305**	**TP-1603EC** **TP-1603C** **TP-1603**
Constant voltage operation			
Line regulation	≤0.01%+3mV	≤0.01%+3mV	≤0.01%+5mV
Load regulation	≤0.01%+3mV	≤0.02%+5mV	≤0.02%+5mV
Ripple & Noise	≤3mVrms, 5Hz~1MHz		
Constant current operation			
Line regulation	≤0.2%+3mA		
Load regulation	≤0.2%+3mA	≤0.2%+5mA	≤0.2%+3mA
Fixed output (Only for TP-1303/1305/1603)			
Output voltage	5V±1%		
Output current	1A		
Ripple & noise	≤3mVrms, 5Hz~1MHz		
Display			
Voltmeter	3 digits LED display		
Ammeter	3 digits LED display		
Resolution	100mV/10mA		
Accuracy	±(1% reading+2 digits)		
General			
Operating environment	0˚C~40˚C, ≤80%RH		
Storage environment	-10˚C~70˚C, ≤70%RH		
Power source	AC110V/220V±10%, 50/60Hz		
Accessories	Power cord x1, Operation manual x1, Test lead x1		
Dimension	130Wx160Hx310Dmm		

Table 2

Model	TP-3010	TP-6005	TP-3020	TP-6010
Constant voltage operation				
Line regulation	≤0.01%+5mV	≤0.01%+5mV	≤0.01%+10mV	≤0.01%+5mV
Load regulation	≤0.02%+5mV	≤0.02%+5mV	≤0.02%+10mV	≤0.02%+5mV
Ripple & Noise	≤3mVrms, 5Hz~1MHz			
Constant current operation				
Line regulation	≤0.2%+3mA			
Load regulation	≤0.2%+3mA (I≤3A) ≤0.2%+5mA (I>3A) ≤0.2%+15mA (I≥10A)			
Ripple & Noise	≤3mArms (I≤3A) ≤10mArms (I>3A)			
Display				
Voltmeter	3 digits LED display			
Ammeter	3 digits LED display			
Resolution	100mV/10mA			
Accuracy	Real voltage and current output: ±(1% reading+2 digits) Preset voltage and current: ±(1% reading+8 digits)			
General				
Operating environment	0˚C~40˚C, ≤80%RH			
Storage environment	-10˚C~70˚C, ≤70%RH			
Power source	AC110V/220V±10%, 50/60Hz			
Accessories	Power cord x1, Operation manual x1, Test lead x1			
Dimension	255Wx155Hx370Dmm		255Wx155Hx330Dmm	

In purpose of product improvement, specifications are subject to change without prior notice.

4. PANEL CONTROLS AND INDICATORS

4-1. Panel Illustration

a. TP-1303EC/1305EC/1603EC Front panel

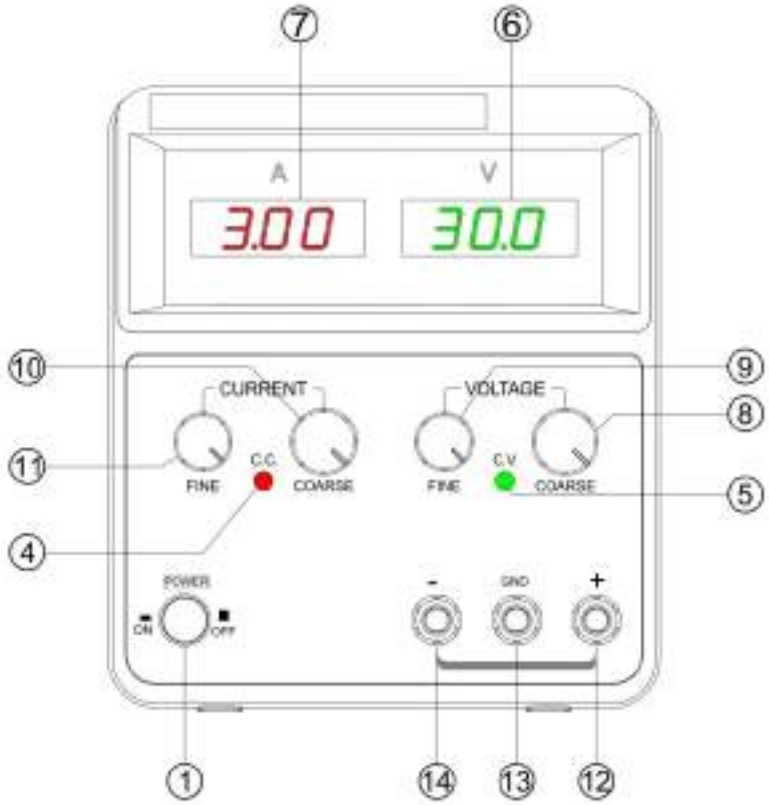

Fig.4-1

b. TP-1303C/1305C/1603C Front panel

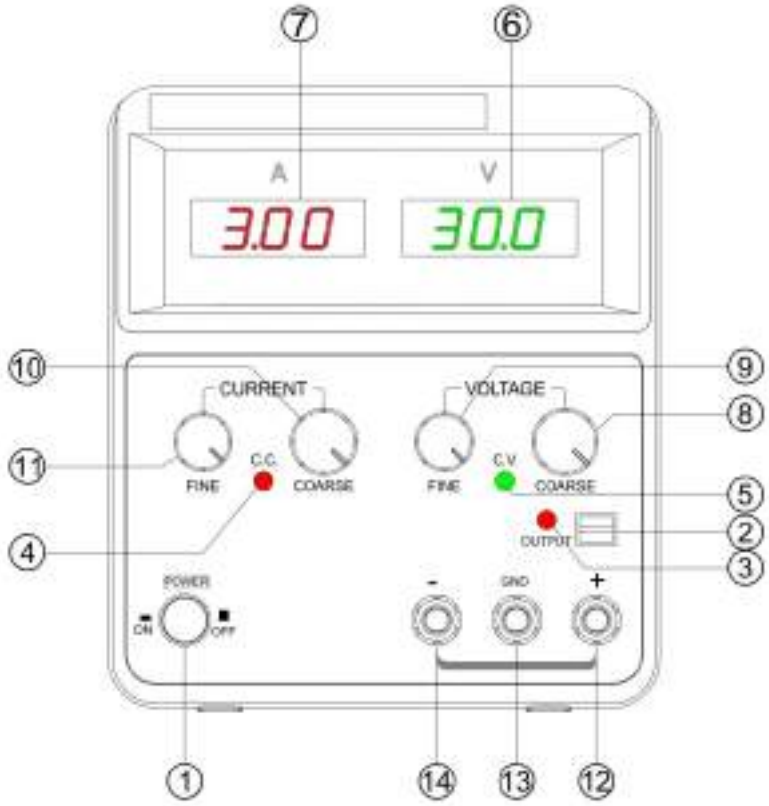

Fig.4-2

c. TP-1303/1305/1603 Front panel

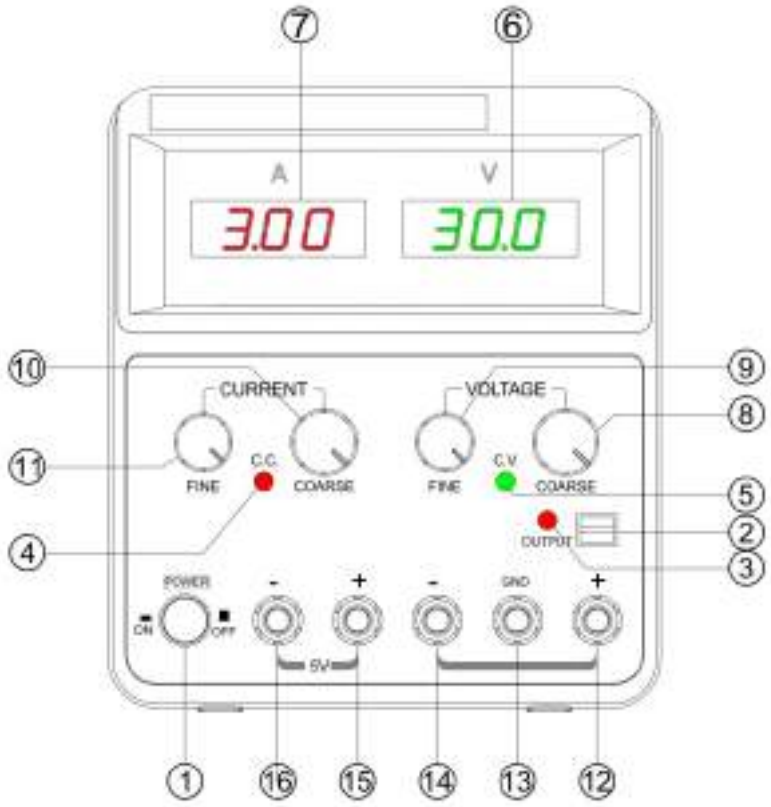

Fig.4-3

d. TP-3010/6005/3020/6010 Front panel

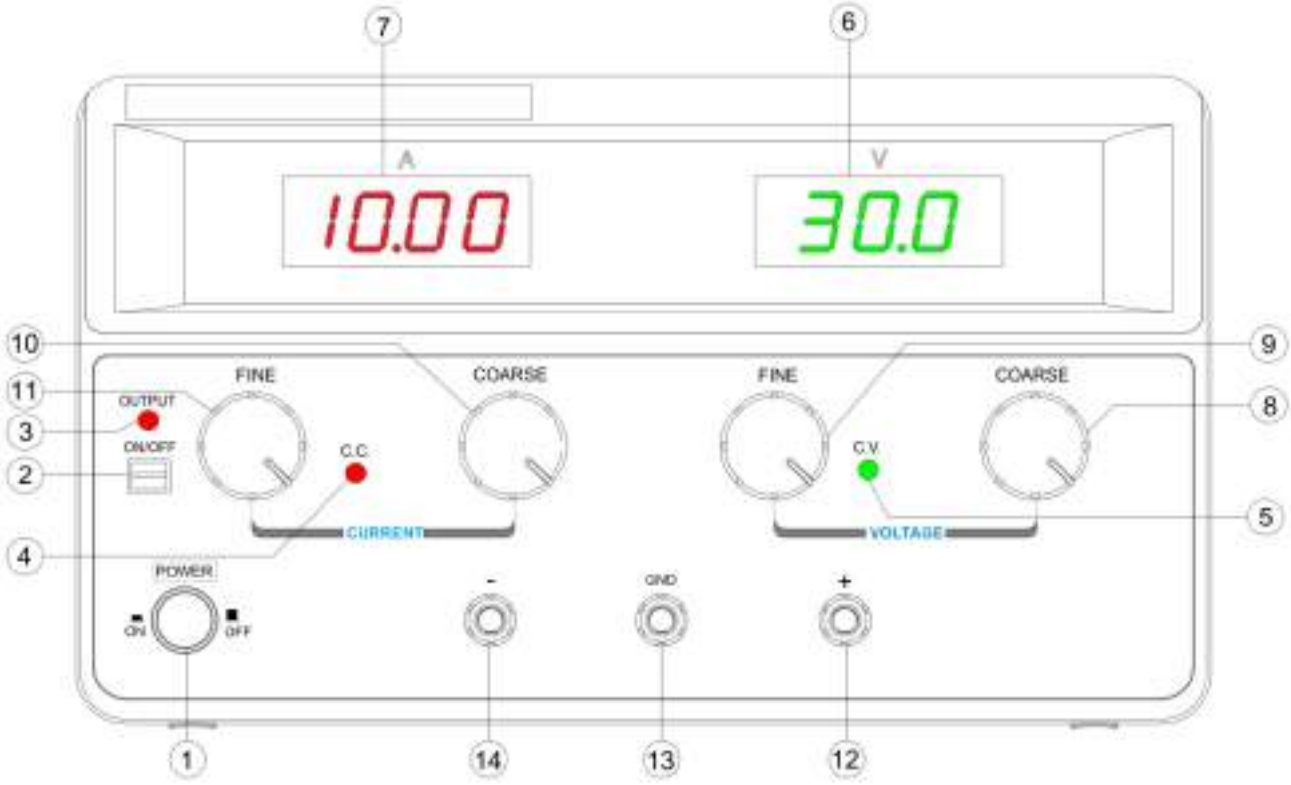

Fig.4-4

e. 30V/3A, 30V/5A, 60V/3A Rear panel

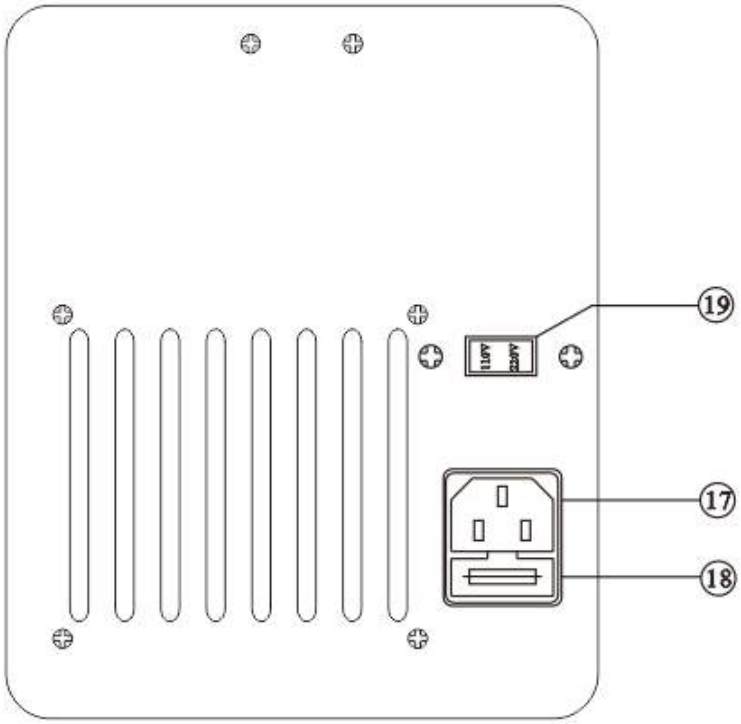

Fig.4-5

f. TP-3010/6005 Rear panel

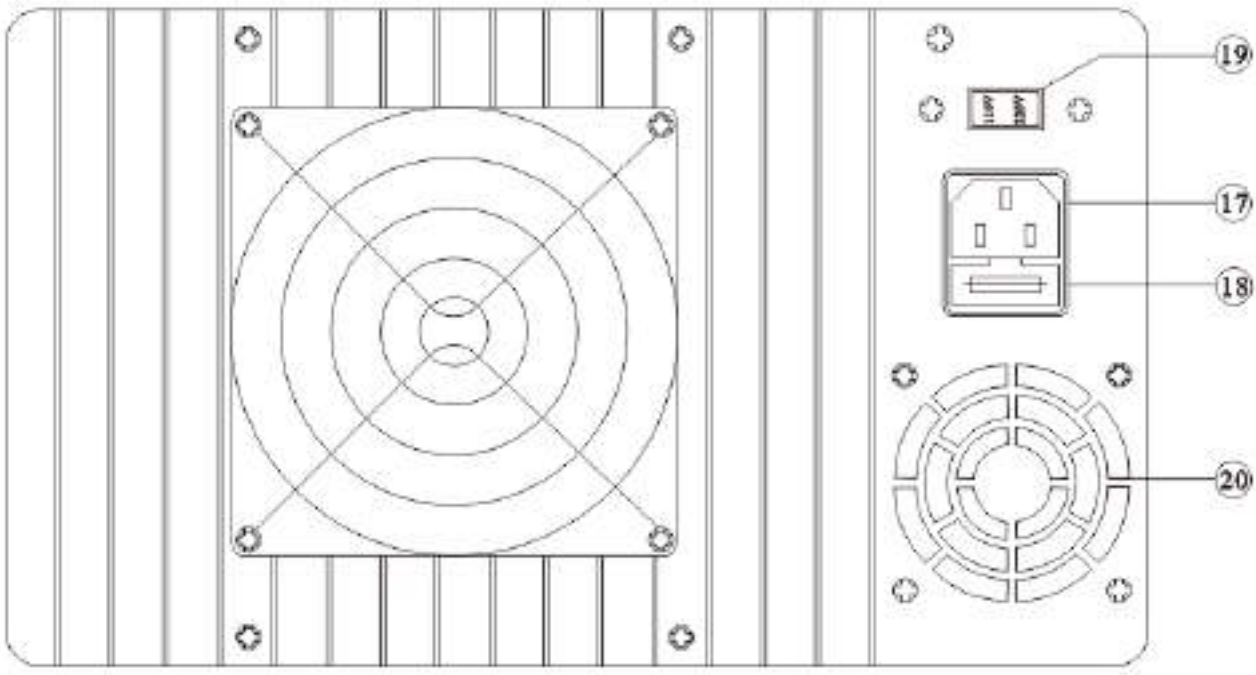

Fig.4-6

g. TP-3020/6010 Rear panel

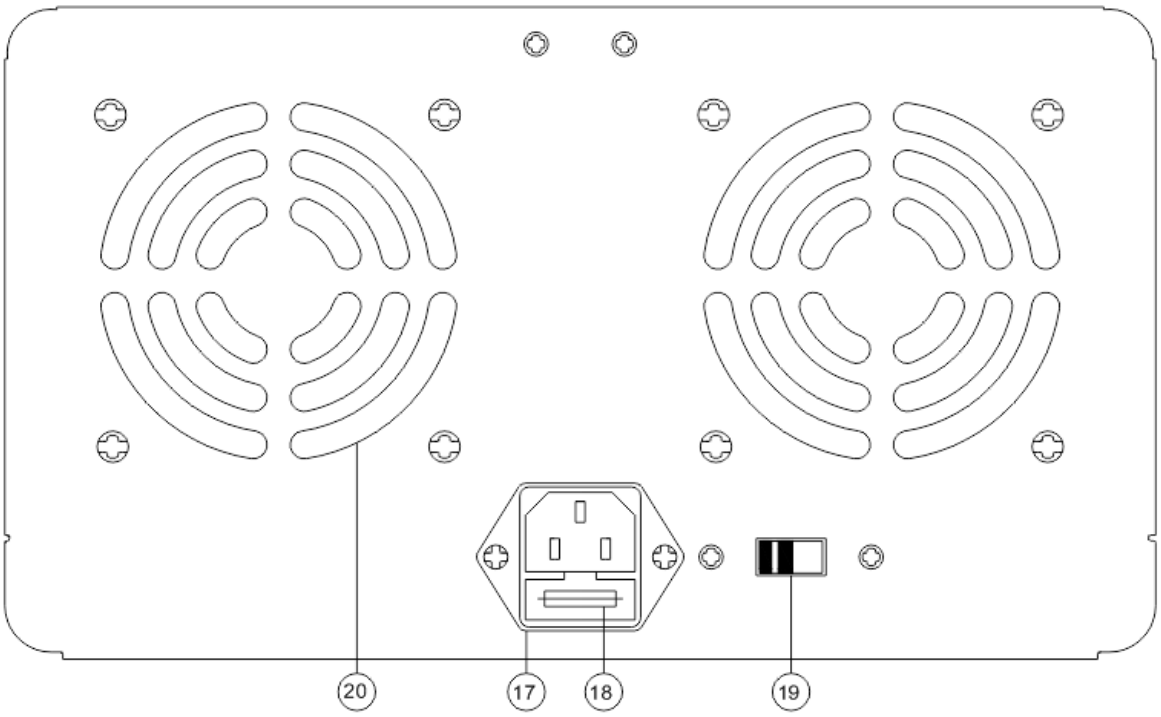

Fig.4-7

4-2. Front Panel Control

1	Power switch	: ON/OFF the power
2	Output ON/OFF switch	: After power on, there is no voltage cross the output terminals. Press this button, output LED on, the unit has power out. Press this button again, the out LED off, output voltage cross the terminals is zero. The is on standby mode.
3	OUTPUT indicator	: Lights on in red when the output is turned on. Details see above.
4	C.C indicator	: Lights when the power supply is in constant current operation.
5	C.V indicator	: Lights when the power supply is in constant voltage operation.
6	Voltmeter	: Indicates the output voltage.
7	Ammeter	: Indicates the output current.
8	Voltage Coarse	: For coarse adjustment of the output voltage.
9	Voltage Fine	: For fine adjustment of the output voltage.
10	Current Coarse	: For coarse adjustment of the output current.
11	Current Fine	: For fine adjustment of the output current.
12	“+” output terminal	: Positive polarity
13	“GND” terminal	: Earth and chassis ground.
14	“-” output terminal	: Negative polarity.
15	Fixed 5V/1A “+” output terminal	
16	Fixed 5V/1A “-” output terminal	

4-3. Rear Panel Control

17 Power socket

18 Fuse holder

19 AC input selector — The power transformer is designed to permit operation in 110V (115V/120V) or 220V (230V/240V),50/60Hz line voltage. To convert from one line voltage to another is done by change AC input selector as shown in section 6-2.

20 Cooling fan

5. OPERATION INSTRUCTIONS

5-1. Precaution

1) AC input

AC input must be within the range of line voltage ±10% 50/60Hz.

WARNING. To avoid electrical shock, the power cord protective grounding conductor must be connected to ground.

2) Installation

Allow enough space around the power supply for ventilation.

WARNING. To avoid damaging the power supply, do not use it in a place where ambient temperature exceeds 40˚C.

WARNING. Voltages more than 60V DC are a lethal shock hazard to the user. Be careful when connecting power supplies to achieve voltages higher than 60V DC total or 60V DC between any connection and earth ground.

CAUTION.

1 The instrument must be operated under rated main supply. If it is meant to work for a long time, it is suggested to use 60-70% instead of full load so as to avoid rapid aging.

2. Avoid frequent short-circuit operations.

3. In case of the instrument with full load, do not turn on the instrument. Before adding load, adjust the voltage knob to the minimum value, then turn on the instrument. Next turn the voltage/current adjustment knob to set targeted values.

5-2. Setting Current Limit

1) Determine the maximum safe current for the device to be powered.

2) Temporarily short the positive “+” negative “-” terminals of the power supply together with a test lead.

3) Rotate the COARSE VOLTAGE control away from zero sufficiently for the CC indicator to light.

4) Adjust the CURRENT control for the targeted current limit. Read the current value on the ammeter.

5) The current limit (over load protection) has now been preset. Do not change the CURRENT control setting after this step.

6) Remove the short between the “+” and “-” terminals and hook up for constant voltage operation.

5-3. Setting Constant Voltage

1) Turn on the power supply. The CV indicates lights.
2) Rotate the coarse and fine voltage control to the targeted voltages.
3) Press output ON/OFF button. The OUTPUT indicator lights and the terminals have voltage output.
4) For the models which do not have output ON/OFF function, the output voltage will be supplied cross terminals immediately after turn on the power supply.

5-4. C.C and C.V Mode

In constant voltage mode, if the output voltage is less than preset value and CC indicator light, it is over current protection. Unit automatically changed to constant current mode. Should check the load or increase current set value depends on the situation.

In constant current mode, if the output current is less than preset value and CV indicator light, the unit automatically changed into constant voltage mode. Should check the load or increase the preset voltage value.

6. MAINTENANCE

WARNING

The following instructions are for use by qualified personnel only. To avoid electrical shock, do not perform any servicing other than contained in the operating instruction unless you are qualified to do so.

6-1. Fuse Replacement

If the fuse blows, the CV or CC indicators will not light and the power supply will not operate. The fuse shall not normally open unless a problem has developed in the unit. Try to determine and correct the cause of the blown fuse, then replace only with a fuse of the correct rating type.

The fuse is located in rear panel.

WARNING. For continued fire protection, replace fuse only with 250V of the specified type and rating. And disconnect the power cord before replacing fuse.

WARNING. To protect the transformer and circuits of the unit, a fuse of the correct rating and type must be used. Refer to below for correct fuse ratings.

Fuse rating:

Model	220VAC rated input	110VAC rated input
TP-1303EC	250V/2A	250V/3A
TP-1303C	250V/2A	250V/3A
TP-1303	250V/2A	250V/3A
TP-1305EC	250V/3A	250V/6.3A
TP-1305C	250V/3A	250V/6.3A
TP-1305	250V/3A	250V/6.3A
TP-1603EC	250V/3A	250V/6.3A
TP-1603C	250V/3A	250V/6.3A
TP-1603	250V/3A	250V/6.3A
TP-3010	250V/6.3A	250V/10A
TP-6005	250V/6.3A	250V/10A
TP-3020	250V/10A	250V/10A
TP-6010	250V/10A	250V/10A

6-2. Line Voltage Conversion

The primary winding of the power transformer is tapped to permit operation from 110 or 220Vac ±10%, 50/60Hz line voltage. Conversion from one line voltage to another is done by change AC input selector switch. The rear panel identifies the line voltage to which the unit was factory set. To convert to a different line voltage, perform the following procedure:

1) Make sure the power cord is unplugged.
2) Change the AC select switch to the desired line voltage position.
3) A change in line voltage may also require a corresponding change of fuse value. Install the correct fuse as listed on rear panel.

If the output voltage is unstableness, please check the AC line that it may be less than 207V/105V.

6-3. Cleaning

To clean the power supply, use a soft cloth dampened in a solution of mild detergent and water. Do not spray cleaner directly onto the instrument, since it may leak into the cabinet and cause damage.
Do not use chemicals containing benzene, benzene, toluene, xylene, acetone, or similar solvents.
Do not use abrasive cleaners on any portion of the power supply.

Should the problems can not be solved, please contact local distributor or the manufacturer.