

# **Prüf- und Messtechnik**

 **Spitzentechnologie, die überzeugt**



**Operation manual**

**Regulated Laboratory Power Supply**

## 1. Safety Precautions

This product complies with the requirements of the following European Community Directives: 2004/108/EC (Electromagnetic Compatibility) and 2006/95/EC (Low Voltage) as amended by 2004/22/EC (CE-Marking).

To ensure safe operation of the equipment and eliminate the danger of serious injury due to short-circuits (arcing), the following safety precautions must be observed.

Damages resulting from failure to observe these safety precautions are exempt from any legal claims whatever.

- \* Do not use this instrument for high-energy industrial installation measurement.
- \* Prior to connection of the equipment to the mains, check that the available mains voltage corresponds to the voltage setting of the equipment.
- \* Connect the mains plug of the equipment only to a mains outlet with earth connection.
- \* Do not place the equipment on damp or wet surfaces.
- \* Replace a defective fuse only with a fuse of the original rating. Never short-circuit fuse or fuse holding.
- \* Disconnect test leads or probe from the measuring circuit before switching modes or functions.
- \* Do not cover the ventilation slots of the cabinet to ensure that air is able to circulate freely inside.
- \* Do not insert metal objects into the equipment by way of the ventilation slots.
- \* Do not place water-filled containers on the equipment (danger of short-circuit in case of knockover of the container)
- \* Check test leads and probes for faulty insulation or bare wires before connection to the equipment.
- \* Please use only 4mm-safety test leads to ensure immaculate function.
- \* To avoid electric shock, do not operate this product in wet or damp conditions. Conduct measuring works only in dry clothing and rubber shoes, i. e. on isolating mats.
- \* Never touch the tips of the test leads or probe.
- \* Comply with the warning labels and other info on the equipment.
- \* The measurement instrument is not to be operated unattended.
- \* Always start with the highest measuring range when measuring unknown values.
- \* Do not subject the equipment to direct sunlight or extreme temperatures, humidity or dampness.
- \* Do not subject the equipment to shocks or strong vibrations.
- \* Do not operate the equipment near strong magnetic fields (motors, transformers etc.).
- \* Keep hot soldering irons or guns away from the equipment.
- \* Allow the equipment to stabilize at room temperature before taking up measurement (important for exact measurements).
- \* Do not input values over the maximum range of each measurement to avoid damages of the meter.
- \* Periodically wipe the cabinet with a damp cloth and mild detergent. Do not use abrasives or solvents.
- \* The meter is suitable for indoor use only
- \* Do not operate the meter before the cabinet has been closed and screwed safely as terminal can carry voltage.
- \* Do not store the meter in a place of explosive, inflammable substances.
- \* Do not modify the equipment in any way
- \* Do not place the equipment face-down on any table or work bench to prevent damaging the controls at the front.
- \* Opening the equipment and service – and repair work must only be performed by qualified service personnel

**Measuring instruments don't belong to children hands.-**

### **Cleaning the cabinet**

Prior to cleaning the cabinet, withdraw the mains plug from the power outlet.

Clean only with a damp, soft cloth and a commercially available mild household cleanser. Ensure that no water gets inside the equipment to prevent possible shorts and damage to the equipment.

## **2. Introduction**

a precision controlled laboratory power supply with high efficiency. It provides constant voltage mode, constant current operation, overvoltage protection and overload protection function and can be operated 8 hours continuously at full load. Voltage and current values are adjusted linearly. With this high stability of this power supply it is suitable for use in schools, training, laboratory, university, and service.

### **2.1. Main features**

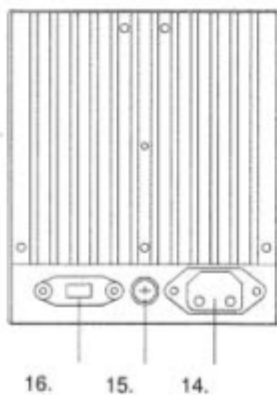
- 0-30 V Voltage Linearly Adjustment
- Voltage, Current Pre-set Feature
- CV/CC Mode Automatic Change
- Auto Current Cut Off Protection
- Full Loading Continuous Operation over 8 hours
- Rugged Metal Cabinet

To extend the operational life span of the power supply, we recommend you to limit the working time under full load to eight hours.

### 3. Controls and descriptions



1. Power-Switch
2. Power Indicator
3. Constant current mode: LED lights in CC-mode
4. Constant voltage mode: LED lights in CV-mode
5. Voltage-Display
6. Current-Display
7. Voltage coarse adjustment
8. Voltage fine adjustment
9. Current coarse adjustment
10. Current fine adjustment
11. Output socket (+)
12. Output socket (GND)
13. Output socket (-)



- 14. Power Input Socket: 115/230V; 50/60Hz; +/-10%
- 15. Fuse Socket: 230V = 3,15A; 115V = 6A
- 16. Input Voltage Selector: Selector for 115V or 230V

## 4. Technical Specifications

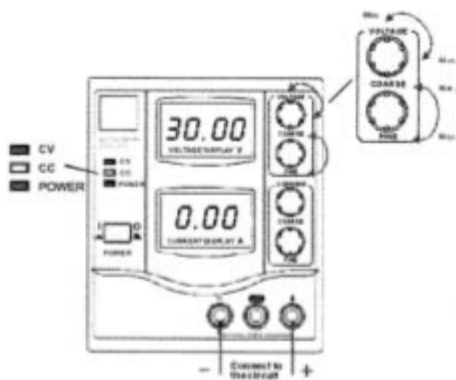
Input Voltage	115/230 V; 50/60 Hz (switchable); +/-10%
Fuse	115/230 V; 3,15 A F
Output Voltage	0 – 30 V
Output Current	0 – 5 A
Output Power	150 W max.

This power supply needs to warm up 30 minutes to meet the specifications.

Stability	Adjustable voltage output: $1 \times 10^{-4} + 3 \text{ mV}$ adjustable current output: $2 \times 10^{-3} + 3 \text{ mA}$
Loading Effect	Adjustable voltage output: $<2 \times 10^{-4} + 5 \text{ mV}$ ( $I < 3 \text{ A}$ ) $<2 \times 10^{-4} + 10 \text{ mA}$ ( $I > 3 \text{ A}$ )
Temperature coefficient (V)	150 ppm/°C
Temperature coefficient (A)	Adjustable current output: $<2 \times 10^{-4} + 5 \text{ mA}$ ( $I < 3 \text{ A}$ ) $<2 \times 10^{-4} + 10 \text{ mA}$ ( $I > 3 \text{ A}$ ) 500 ppm/°C
Ripple and Noise	$<1 \text{ mV}_{\text{rms}}$
Overload protection	Current limitation circuit
Digital Display	LED-Display Voltage Display: +/-0,2% + 2 digits Current Display: +/-1,0% + 2 digits
Operation Temperature	0°C ... 40°C; < 80% RH
Storage temperature	-20°C ... + 80°C; < 80% RH
DimensionsxHxT)	130 x 175 x 330 mm
Weight	ca. 6 kg
Accessories	Power cord, Operation manual

## 5. Operation

### 5.1. Setting the Output Voltage

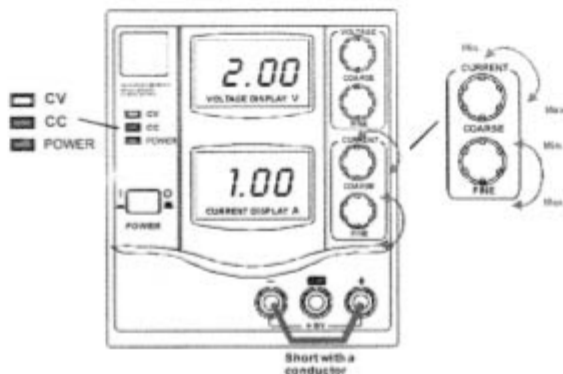


1. Connect the power supply to the power source.
2. Press the **POWER SWITCH [1]** to "I" position to turn on the power supply.
3. The **CV INDICATOR [4]** and **POWER INDICATOR [2]** will on and the voltage value will be displayed on the display.
4. Use the **VOLTAGE COARSE TUNE KNOB [7]** and **VOLTAGE FINE TUNE KNOB [8]** to adjust and fine tune the voltage to give a desired output voltage.
5. Connect the circuit to the **MAIN TERMINAL [11, 13]**.
6. When the **CC INDICATOR [3]** is on, adjust the **CURRENT COARSE TUNE KNOB [9]** and **CURRENT FINE TUNE KNOB [10]** to give a suitable current.

#### Caution:

- \* Make sure the **INPUT VOLTAGE SELECTOR [16]** set to a correct position. Otherwise, it will damage the power supply.
- \* Do not short the **MAIN TERMINAL [11, 13]** over 1 minute; it will damage the power supply.

## 5.2. Setting the Output Current



1. Turn on the power supply
2. Refer to Section 5.1 step 1 – 4 to give the voltage around 2-5V.
3. Turn the **CURRENT COARSE TUNE KNOB [9]** and **CURRENT FINE TUNE KNOB [10]** anticlockwise reach the minimum current value.
4. Short the + and the - **MAIN TERMINAL [11, 13]** with a conductor.
5. Adjust the **CURRENT KNOB [9, 10]** to give a desired output current.
6. Then the **CC INDICATOR [3]** will off and the **CV INDICATOR [4]** will on.
7. Remove the conductor from the **MAIN TERMINAL [11, 13]**.
8. Set to the desired voltage.
9. Connect the circuit to the **MAIN TERMINAL [11, 13]**.

### Caution:

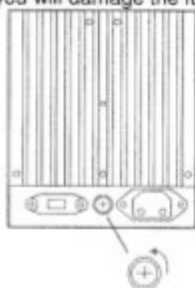
- \* Ensure the current is set to zero before short the **MAIN TERMINAL [11, 13]**. Otherwise it will damage the power supply.
- \* Do not short the **MAIN TERMINAL [11, 13]** over 1 minute; it will damage the power supply.



### 5.3. Changing the Fuse

#### Caution:

- \* Ensure no power is connected to the power supply; otherwise, will have an electrical shock.
- \* Do not over turn the fuse socket, or you will damage the fuse socket.



1. Disconnect all power connection.
2. Turn over the case.
3. Find the fuse socket.
4. Use a cross screw driver and turn anti-clockwise to open the fuse socket.
5. Replace the fuse with identical rating.  
Fuse: 115 V = 6 A/250 V 5 x 20 mm; 230 V = 3,15 A/250 V 5 x 20 mm
6. Use the cross screw driver and turn clockwise to close the fuse socket

### 6. Caution

These units have excellent protection function. The adjustable output have current-limit protection. As there is controlling circuit for regulating transistor's power loss in the circuit, when short-circuit occurs, the power loss on large power transistors is not very high, it can't cause any damage to the unit. But there is still power loss when short-circuit, in order to reduce aging and energy consumption, so this situation should be find as soon as possible and turn off power, then exclude the faults.

When operating is finished, put it in a dry place of good ventilation, and keep it clean. If it is not in use for a long period, pull off the power supply plug for storage.

For maintenance, input voltage must be cut off.