

LAVOLTA
DC REGULATED POWER SUPPLY
BPS-305

USER MANUAL

In order to use the power supply better, please read the user manual carefully before using and keeping it properly.

Warning: Do not connect any load to the power supply before it's turned on. Likewise, make sure to disconnect the load before shutting down the power supply as this may damage the device. This voids the warranty.

Warning: If you are running inductive load like magnetic coils, DC motors, stepper motors, etc., make sure to change the voltage/current slowly, and NEVER turn the power supply on or off with an inductive load connected!

1. Overview

The power supply is specially designed for laboratory, school and production line. The output voltage can continuously be regulated from 0 to nominal voltage value as well as output load current. The stability and ripple factor of the power supply are suitable. The device is also equipped with a perfect overload and short circuit protection. It can act as both a voltage regulation power supply and a current regulation power supply.

2. Specifications

2.1 Rated operating condition and dimensions

Power supply input: 220 V/110V \pm 10% 50Hz/60Hz (switch at the back)

Operating conditions:

Temperature: 0°C to 40°C

Relative humidity: <80%

Storage conditions:

Temperature: -10°C to 70°C

Relative humidity: $<70\%$

Device dimensions: $285 \times 128 \times 145\text{mm}$

2.2 Voltage regulation working condition

(1) The output voltage can continuously be regulated from 0 to nominal voltage value: 0-30V.

(2) Voltage stability:

Power stability $<0.01\%+3\text{mV}$

Load stability : $<0.01\%+3\text{mV}$ (Max. current $<3\text{A}$)

(3) Recovery time: $<100\mu\text{S}$ (load-variant 50%, min. load current 0.5A)

(4) Ripple & noise:

$<0.5\text{mVrms}$ (5Hz-1MHz) (Max. current $<3\text{A}$)

$<1.0\text{mVrms}$ (5Hz-1MHz) (Max. current $>3\text{A}$)

(5) Temperature coefficient: $<300\text{PPM}/^{\circ}\text{C}$

2.3 Current regulation working condition

(1) The output current can continuously be regulated from 0 to nominal current value: 0-5A.

(2) Current stability:

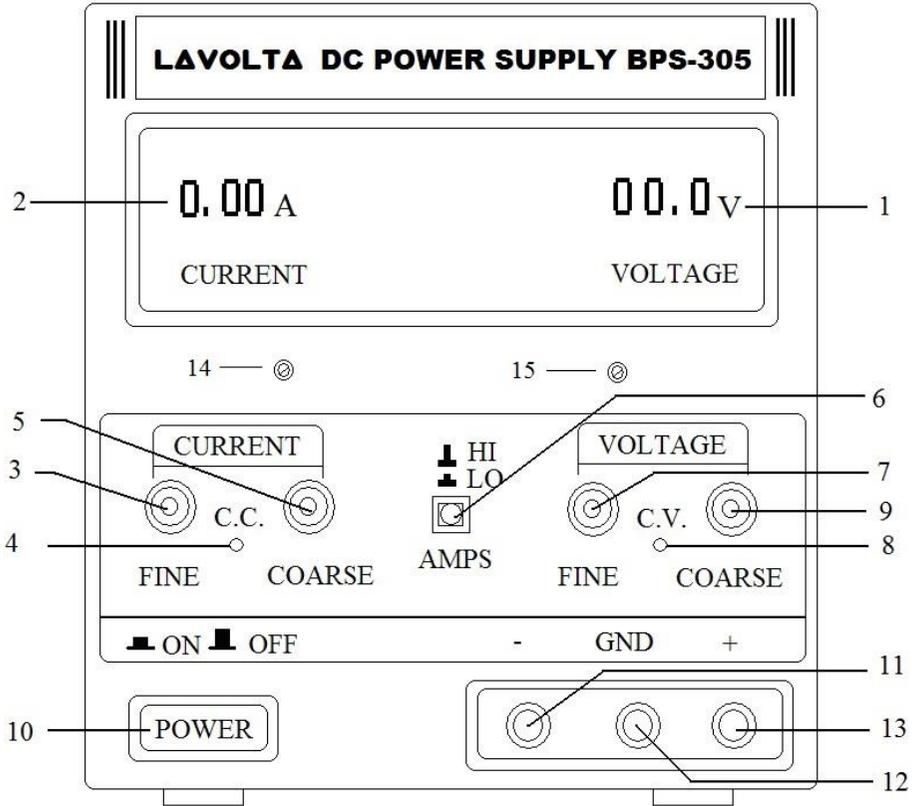
Power stability : $<0.2\%+3\text{mA}$

Load stability : $<0.2\%+3\text{mA}$

(3) Ripple & noise : $<3\text{mArms}$

3. Panel control and indicators

3.1 Front panel (Figure 1)



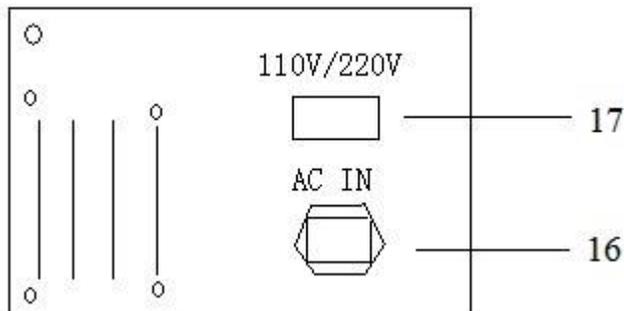
(Figure 1)

- (1) Digital voltmeter: displays output voltage value.
- (2) Digital ammeter: displays output current value.
- (3) Current fine regulation knob: finely regulates the value of output current.
- (4) Current regulation indicator light: the indicator light is on when the power supply is under the condition of current regulation.

- (5) Current coarse regulation knob: coarsely regulates the value of output current.
- (6) Current control knob: high or low current range selection.
- (7) Voltage fine regulation knob: finely regulates the value of output voltage.
- (8) Voltage regulation indicator light: the indicator light is on when the power supply is under the condition of voltage regulation.
- (9) Voltage coarse regulation knob: coarsely regulates the value of output voltage.
- (10) Power supply switch.
- (11) “-” output terminal: negative polarity (black).
- (12) “GND” terminal: ground terminal (green).
- (13) “+” output terminal: positive polarity (red).
- (14) Current calibration
- (15) Voltage calibration

3.2 Back panel

- (16) Power socket.
- (17) AC voltage selection switch.



(The image of back panel)

4. Instruction

4.1 Matters need attention

(1) AC input should be $220V \pm 10\%$ 50Hz or $110V \pm 10\%$ 60Hz.

There is a switch selection on the back panel. If the input voltage is wrong, the power supply cannot work normally and this may result in damage.

(2) Do not use it if the temperature is higher than 40°C . Radiator of the power supply is located at the back of the instrument. There should be enough space for cooling of the power supply.

(3) When opening or closing the power supply, voltage between output terminals should not exceed the default value.

4.2 Current limitation setting

(1) Firstly, decide the highest save current of needed power supply instruments.

(2) Use a lead to make the “+” and “-” terminal shorted temporarily.

(3) Regulate voltage control knob until the CC indicator light is on.

(4) Regulate the current knob to set the necessary current value.

(5) If the current value (the value of overload protection) is set completely, don't regulate the current knob again.

(6) Take off the short line and start working.

4.3 Constant voltage / current features

The characteristic of the power supply is constant-voltage / constant-current automatic conversion. It can continuously change between constant-current and constant-voltage with the load change.

For example: if the load makes the power supply work under the constant-voltage, as load rises, the output voltage will remain stable all the time until it reaches to the value of current limitation. When the value of current

limitation is reached, output current will remain stable. And output voltage will decrease proportionally as the load increases. The conversion of constant voltage and current will be indicated on the front panel by a LED light.

Similarly, the automatic conversion from constant current to constant voltage is working as the load decreases. In constant voltage state, the CV indicator light is on, while in constant current state, the CC indicator light is on.

4.4 Operating procedure

- (1) Place the power switch in “OFF” position.
- (2) Determine the correct input voltage (110V or 220V, there is a selective switch in the back panel).
- (3) Connect the device to the power socket.
- (4) Place the power switch in “ON” position.
- (5) Regulate “VOLTAGE” and “CURRENT” knobs to set the necessary values of output voltage and current.
- (6) Connect the external loading to “+” and“-” terminal.
- (7) When used in places with high demand, the output post head “-” must reliably connect with post head “GND” so as to reduce output ripple voltage.

5. Maintenance

5.1. Replacement of fuse

If the fuse burns out, the device will no longer be powered. Replace it with equivalent fuse (5Amp, 250V, 20x5mm). The crisper should not be opened unless something goes wrong.

5.2. Power supply voltage conversion:

The power supply is suitable for 110v/220v 50Hz/60Hz power supply voltage; you can use two different input voltages through changing voltage conversion switch (this can be found on the back panel).

- (1) First remove power plug.
- (2) Set the power conversion switch to needed voltage.
- (3) Voltage conversion: the size of corresponding fuse needs to be changed according to the requirement of back panel.

6. Calibration instructions

- (1) Set volts and amps to maximum; AMPS button should be fully extended to HI setting.
- (2) Connect the multimeter.
- (3) Compare the readings of volts and amps shown by the device and the multimeter.
- (4) Using a thin screwdriver calibrate the device through the opening under the screen:
 - a) for higher settings rotate the knob counter clockwise;
 - b) for lower settings rotate the knob clockwise.