INSTRUCTION MANUAL

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CSI 3003EIII
CSI 3005EIII
CSI 5003EIII

MULTI-OUTPUT
DC REGULATED POWER SUPPLY

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Product Manual

Our CSI 3003EIII and CSI 3005EIII and CSI 5003EIII models are highly accurate DC power supplies providing 3 x DC regulated outputs. The units feature 2 x fully adjustable outputs and 1 x fixed output.

The two adjustable outputs can be set for constant voltage (CV) or constant current (CC) as required. The unit will default to CV at switch-on.

In constant voltage operation mode, the output voltage can be adjusted from 0V to 30V/50V In constant current operation mode, the output current can be adjusted from 0A to either 3A (for the CSI 3003EIII/5003EIII) or to 5A (for the CSI 3005EIII).

The two outputs can be connected in parallel or in series. The voltage and current settings can be then be adjusted as required within the parameters of the unit.

The fixed output voltage is 5V. This output also features good stability and low ripple along with overload (short circuit) protection.

The unit is compact and combines excellent performance with an elegant design.

It is ideal for research applications, for use in universities, industry, laboratories as well as for home project use.

1. TECHNICAL SPECIFICATION

Models:	CSI 3003EIII CSI 3005EIII CSI 5003EIII
Input voltage:	220-240VAC 50/60Hz
Variable Outputs:	x 2 adjustable
Output voltage:	0–30V (adj. continuously)
Output current:	CSI 3003EIII/5003EIII 0–3A, CSI 3005EIII 0-5A (adj. continuously)
Source regulation:	Cv≤0.01%+3mV
	CC≤0.01%+6mA
Load regulation:	CV≤0.01%+2mV(rated≤5A)
	CV≤0.01%+5mV(rated> 5A)
	CC≤0.01%+6mA
Ripple and noise:	CV≤1mV(rms)
	CV≤20mVp-p
	CC≤3mA(rms)
	CC≤50mAp-p
Protection:	Current-limiting protection
Indication:	Voltmeter, Ammeter
	or 3-digit volt-LED & Amp-LED

- Volt-indication: LED ±1%±2digits
- Amp-indication: LED ±2%±2digits

Fixed output:

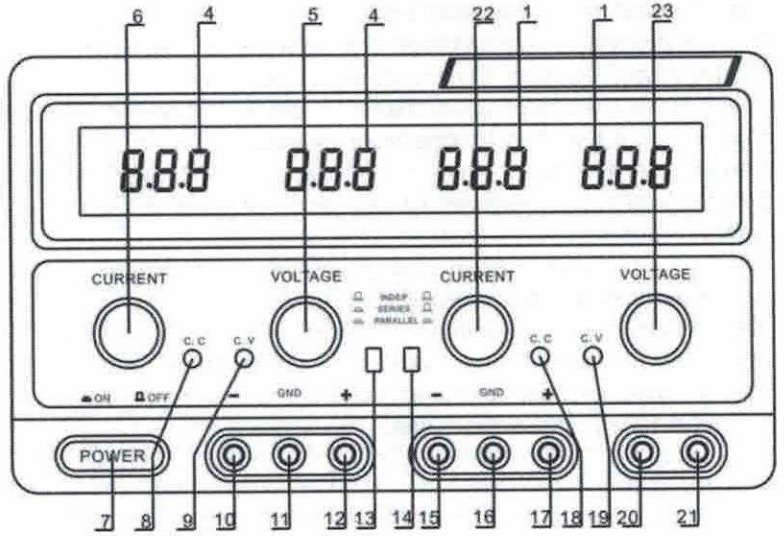
Output voltage:	5V±3%
Output current:	3A
Source regulation:	$\leq 1\times10^{-4}$+1mV
Load regulation:	$\leq 1\times10^{-3}$
Ripple & noise:	≤1mV(rms)
	≤10mVp-p
Protection:	Current Limiting
	Short Circuit Protection

Operating environment

Operating temperature:	0 to +40° C
Relative humidity:	less than 90%
Dimensions:	360mm×265mm×165mm
Operating time:	8 hours continuous

2. OPERATION

Front Panel – Controls



(1) Meter or LED: indicates master output Voltage and Current value.
(4) Meter or LED: indicates slave output Voltage and Current value.
(5) Slave constant Voltage adjustment: adjust slave output Voltage value.
(6) Slave constant Current adjustment: adjust slave output Current value to adjust the Current-limiting protection point)

(7) Power switch: Depress switch to activate (unit is "ON" = button is in). At this time, the Constant Voltage (C.V.) or Constant Current (C.C.) indicator will illuminate. Depress switch again to deactivate (unit is "OFF" = button is out).

(8) Slave Constant Current state or two-way parallel state indicator. When slave output is in Constant Current state or the two adjustable outputs are in parallel mode, this indicator will illuminate.

(9) Slave Constant Voltage indicator: When slave output is in Constant Voltage mode, this indicator will illuminate.

(10) Slave output negative binding post: Negative polarity of output Voltage is connected to negative terminal of load.

(11) Case grounded terminal: The case provides an earth connection.

(12) Slave output positive binding post: positive polarity of output Voltage is connected to positive terminal of load.

(13/14) The control switch for selecting the two adjustable outputs independent, series or parallel.

(15) Master output negative binding post: Negative polarity of output Voltage is connected to negative terminal of load.

(16) Case grounded terminal: The case is connected to earth.

(17) Master output positive binding post: Positive polarity of output Voltage is connected to positive terminal of load.

(18) Master output Constant Current state indicator: This indicator illuminates when master output is in Constant Current mode.

(19) Master output Constant Voltage state indicator: This indicator illuminates when master output is in Constant Voltage mode.

(20) Fixed 5V DC output negative binding post: Negative polarity of output Voltage is connected to negative terminal of load.

(21) Fixed 5V DC output positive binding post: Positive polarity of output Voltage is connected to positive terminal of load.

(22) Master output constant Current adjustment: Adjusts master output Current value. (Also adjusts Current-limiting protection point)

(23) Master output Constant Voltage adjustment: Adjusts master output Voltage value.

2. 2 Operating procedure

Independent use of two adjustable outputs

Set the switches (13) and (14) to the "OFF" position (▬ position).
When the adjustable output is used as a C. V. output, first rotate the C. C. adjustment (6) and (22) clockwise to MAX.
Turn ON the power switch (7), adjust C. V. adjustment (5) and (23) until slave & master DC output voltage reach required voltage value. The C. C indicator (8) and (18) lights will be off.

To set Constant Current (C.C) output.

Switch ON the power (7). Rotate the C. V. adjustment (5) and (23) clockwise to MAX, rotate the C. C. adjustment (6) and (22) counterclockwise to MIN. Now connect the required load. Rotate dials (6) and (22) until the output Current reaches the required current value. At this time, the C. V. indicator (9) and (19) go out and the C. C. indicators (8) and (18) will illuminate.

To use in Constant Voltage Mode (normal operation)

Set the C. C. adjustment (6) and (22) to MAX, so that no current limiting occurs. Set Voltage as desired. Output can then be set.
NB: Current will be shown on the display only when a load is connected.

To set a current limit for use during normal operation:

Turn power "ON". Select a low Voltage (e.g 0.1V).
Turn the C. C. adjustment (6) and (22) to MIN. Then connect the positive and negative output terminals to create a short circuit. This puts the unit in C.C. set mode. Rotate the C. C. Adjustment (6) and (22) clockwise until the desired output current is shown on the display.
Now disconnect the short. The CC setting is set until the unit is next powered "OFF". At next switch-on the unit defaults to the MAX current value.

Series use of the two adjustable outputs

Depress switch (13) (▬ position), and leave switch (14) set to the "OUT" position (▬ position). Now turn the master voltage adjustment (23). The slave output voltage will track the master output voltage. Output voltage is generated up to 60V between the terminals marked (10) and (17).

NB: Before connecting in series, check that the negative terminals of both master and slave outputs are **not** connected to the GND terminal. If they are they must first be disconnected – otherwise, a short-circuit will occur in the slave output when the two outputs are connected in series.

When the two outputs are in series, the output voltage is controlled by master output, but current adjustment of two outputs is still independent. Therefore, attention should be paid to the position of the C. C. adjustment dial (6).
For example, if dial (6) is rotated fully over to the left (fully counterclockwise) or if the current setting of the slave output exceeds the current-limit protection point, the voltage of the slave output will not track the voltage of the master output.
In order to avoid this happening in series mode, ensure that dial (6) is fully to the right (rotated clockwise to MAX) .

When setting up a series connection under load, proper leads corresponding to output power should be used to connect the negative terminal of master output with positive terminal of the slave output. As it is shorted by a switch inside the unit, current will pass on the shorted switch when there is power output. Failure to use appropriate leads may affect the reliability of the unit.

Using the two adjustable outputs in parallel
Press in switch (13) (▬ position) as well as switch (14) (▬ position), at this time, the two outputs are in parallel, adjust voltage adjustment (23) of master output the voltage of two ways keep same, and slave output C. C. indicator (8) lights on.

When the two outputs are in parallel, the C. C. adjustment (6) of the slave output is redundant. When using the unit for Constant Current supply in parallel mode, simply adjust the C. C. adjustment (22) of the master output.
The current of both master and slave output are controlled by this dial, and output can be set up to the MAX current value of the combined outputs.

While the two outputs are in parallel, care should be taken to ensure that appropriate leads are used to connect any shorts across the terminals (connect the 2 negative terminals and the 2 positive terminals separately). Failure to use adequate leads may result in damage to the unit and / or the parallel / series switch.

2. 4 Safety

The CSI 3003EIII and CSI 3005EIII and CSI 5003EIII units feature very efficient built -in protection functions. The 5V output has reliable protection for current-limiting and short circuit. Similarly, the 2x adjustable outputs feature current-limiting protection.

In the event of a short circuit on the adjustable outputs, the power output will drop on detection of a short. The control circuits regulate loss of power. This prevents damage to the unit.

Regular monitoring of the unit is recommended. If a short is detected and the user notes that the power supply has protected itself, the problem circuit should be removed / rectified as soon as possible in order to prevent undue wear to the unit.

Please store the unit in a cool, dry, well-ventilated place of good ventilation. Please try to keep it clean and free from excessive dust.

If not using for a long period of time, remove from mains and disconnect the power lead.

For any maintenance, or operations requiring removal of the cover, please ensure that the unit is disconnected from mains supply first.

Damage may be caused by improper operation or use of the unit in an environment other than that stipulated in the specification. component failure inside the unit.
If any such fault / damage (component failure) occurs, it is possible that the output voltage may exceed maximum rated output voltage. Please therefore exercise care when using this unit.