

# USER'S MANUAL



**DC REGULATED POWER SUPPLY**



## **DC POWER SUPPLY**

### **BRIEF INTRODUCTION:**

HY3000-2、HY3000-3、HY5000-2 series variable DC power supplies are very stable, regulated multiple output DC power supplies allowing continuous adjustment of both the output voltage and current levels.

The HY3000-2、HY3000-3、HY5000-2、HY6000-2 series have dual LED displays; HY3000C-2、HY3000C-3 have dual analogue displays and each display can be selected for either voltage or current display.

HY3000S-2、HY3000S-3 series have four analogue displays, allowing the output voltages and currents to be displayed simultaneously. It has three outputs, with one output being fixed at 5V. Both series and parallel connection is possible allowing twice the voltage or current and outputs can be tracked relative to the master output. The highest output voltage is the sum of twice the voltage value in series mode and the highest output current is the sum of twice the current value when in parallel mode.

HY3000F-2、HY3000F-3 series have four LED with two color display, HY3000D-2、HY3000D-3 series have four LCD displays, allowing the output voltages and currents to be displayed simultaneously. It has three outputs, with one output being fixed at 5V. Both series and parallel connection is possible allowing twice the voltage or current and outputs can be tracked relative to the master output. The highest output voltage is the sum of twice the voltage value in series mode and the highest output current is the sum of twice the current value when in parallel mode.

## MODELS:

MODEL	HY3002 -2	HY3003 -2	HY3005 -2	HY3002 -3	HY3003 -3	HY3005 -3
	HY3002D-2	HY3003D-2	HY3005D-2	HY3002D-3	HY3003D-3	HY3005D-3
	HY3002F-2	HY3003F-2	HY3005F-2	HY3002F-3	HY3003F-3	HY3005F-3
	HY3002C-2	HY3003C-2	HY3005C-2	HY3002C-3	HY3003C-3	HY3005C-3
	HY3002S-2	HY3003S-2	HY3005S-2	HY3002S-3	HY3003S-3	HY3005S-3
OUTPUT VOLTAGE	2×0-30V	2×0-30V	2×0-30V	2×0-30V	2×0-30V	2×0-30V
OUTPUT CURRENT	2×0-2A	2×0-3A	2×0-5A	2×0-2A	2×0-3A	2×0-5A
FIXED OUTPUT	NO	NO	NO	5V, 3A	5V, 3A	5V, 3A

MODEL	HY5002 -2	HY5003 -2	HY5005 -2	HY6002 -2	HY6003 -2	HY5005E -2	HY3010E-2
OUTPUT VOLTAGE	2×0-50V	2×0-50V	2×0-50V	2×0~60V	2×0~60V	2×0~60V	2×0~30V
OUTPUT CURRENT	2×0-2A	2×0-3A	2×0-5A	2×0~2A	2×0~3A	2×0~5A	2×0~10A

## 1 TECHNICAL PARAMETER

1.1 Input voltage: 104~127V AC (60Hz), or 207~253V AC (50Hz)

1.2 Dual adjustable power supply

- 1.2.1 Line regulation:  $CV \leq 0.01\% + 2\text{mv}$   $CC \leq 0.2\% + 2\text{mA}$
- 1.2.2 Load regulation:  $CV \leq 0.01\% + 3\text{mv} (I \leq 3\text{A})$   $CC \leq 0.2\% + 3\text{mA} (I \leq 3\text{A})$   
 $CV \leq 0.01\% + 5\text{mv} (I > 3\text{A})$   $CC \leq 0.2\% + 5\text{mA} (I > 3\text{A})$
- 1.2.3 Ripple and noise:  $CV \leq 0.5\text{mVr.m.s} (I \leq 3\text{A})$   $CC \leq 3\text{mAr.m.s} (I \leq 3\text{A})$   
 $CV \leq 1.0\text{mVr.m.s} (I > 3\text{A})$   $CC \leq 6\text{mAr.m.s} (I > 3\text{A})$
- 1.2.4 Protection: constant current or short-circuit protection
- 1.2.5 Voltage indication accuracy: LED/LCD  $\pm 1\% + 2\text{digits}$  analogue display 2.5%
- 1.2.6 Current indication accuracy: LED/LCD  $\pm 2\% + 2\text{digits}$  analogue display 2.5%
- 1.3 Fixed output
  - 1.3.1 Output voltage:  $5\text{V} \pm 2.5\%$
  - 1.3.2 Output current: 3A
  - 1.3.3 Line regulation:  $CV \leq 0.01\% + 1\text{mv}$
  - 1.3.4 Load regulation:  $\leq 0.1\%$
  - 1.3.5 Ripple and noise:  $\leq 0.5\text{mVr.m.s}$
  - 1.3.6 Protection: current restricted and short-circuit protection
- 1.4 Environment:  $0 \sim +40^\circ\text{C}$  Relative humidity:  $<90\%$

## 2 Operation

### 2.1 Front panel controls

- (1) Voltage and current indication for master output.
- (2) Voltage or current display selector for master output.

(3) Voltage or current display selector for slave output.

(4) Voltage and current indication for slave output.

(5) Voltage adjustment of master output.

(6) Current adjustment of master output.

(7) Voltage adjustment of slave output.

(8) Current adjustment of slave output.

(9) Constant voltage mode indicator light for master output.

(10) Constant current mode indicator light for master output.

(11) Constant voltage mode indicator light for slave output.

(12) Constant current mode indicator light for slave output and & twice current output indicator light in parallel mode.

(13) Independent, Series and Parallel selector switch.

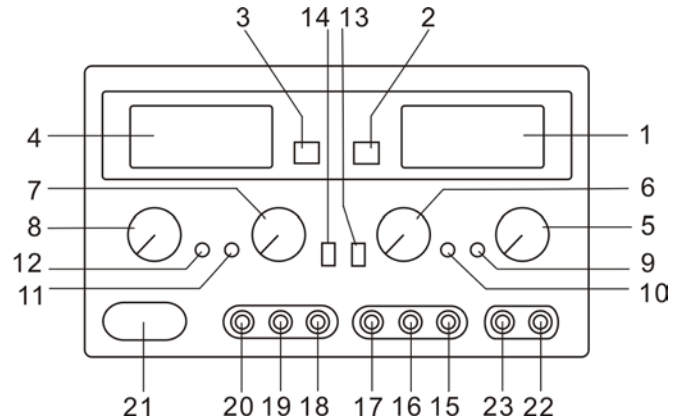
(14) Independent, Series and Parallel selector switch.

(15) Positive output terminal of master output.

(16) Ground connection terminal of case.

(17) Negative output terminal of master output.

(18) Positive output terminal of slave output.



- (19) Ground connection terminal of case.
- (20) Negative output terminal of slave output.
- (21) Mains power on/off switch.
- (22) Fixed 5V positive output terminal.
- (23) Fixed 5V negative output terminal.

## 2.2 USING METHOD

### 2.2.1 DUAL POWER SUPPLY USED IN INDEPENDENT MODE

#### 2.2.1.1 Move switches 13 & 14 to the up position

2.2.1.2 For constant voltage mode, adjust controls 6&8 clockwise to the maximum position. Move switches 2&3 to the voltage display position. Switch on the power ON/OFF switch and adjust controls 5 & 7 to the desired voltage for the master and slave outputs.

2.2.1.3 For constant current mode, switch on the power ON/OFF switch and adjust controls 5&7 clockwise to the maximum position. Adjust controls 6&8 anti-clockwise to the minimum position. After connecting the load, move switches 2&3 to the current display position. Adjust controls 6&8 to give the desired current at the master or slave outputs.

2.2.1.4 For current limit protection mode (DC power supply: Output voltage less than 50V, or Output current less than 10A), switch on the power ON/OFF switch and adjust controls 6 & 8 anti-clockwise to the minimum position. Adjust controls 5&7 to give the desired output voltage and then connect output terminals 15 with 17 and 18 with 20 respectively. Move switches 2&3 to the current display position. Adjust controls 6&8 clockwise to set the desired value of current limit for

the master or slave outputs. Remove the connection between 15 & 17 and 18 & 20, and connect the load.

**NOTE:** For current limit protection mode (DC power supply: Output voltage no less than 50V, or Output current no less than 10A), switch on the power ON/OFF switch, adjust controls 6 & 8 clockwise to the maximum position, adjust controls 5 & 7 clockwise to set the desired output voltage level, connect the variable load to the output terminals 15 with 17 and 18 with 20 respectively, then adjust the load to set the output current at the desired level for restricted current protection, Adjust controls 6 & 8 to set constant current mode indicator light in critical state.

## 2.2.2 DUAL POWER SUPPLY USED IN SERIES MODE

2.2.2.1 Select switch 14 to the in positions and switch 13 to the out position. Adjust controls 6&8 clockwise to the maximum position. Adjust control 5 (master voltage control) to the desired output voltage. The voltage of the master output should be tracked by the slave output. The highest output voltage is the sum of the value of both master and slave outputs when connecting the load to terminals 15&20.

2.2.2.2 In series mode, current adjustment is independent. If control 8 is not at the maximal position, but at a current limiting position then the voltage of the slave output will not track the master output.

2.2.2.3 In series mode, terminals 17&18 should be connected together with a thick conductive wire to prevent damage to the unit in the event of an overload.

2.2.2.4 In series mode, remove any connection between the master or slave negative terminals

and the ground connection terminals otherwise it is possible to short-circuit the slave output.

### 2.2.3 DUAL POWER SUPPLY USED IN PARALLEL MODE.

2.2.3.1 Select switches 13&14 to the in position, the master and slave outputs will now be in parallel mode. Adjust control 5 to the desired output voltage and the voltage of the master and slave outputs should change identically.

2.2.3.2 In parallel mode, the output current is adjusted by the master control 6 and slave control 8 has no effect. The maximum output current is the sum of the master and slave output currents.

2.2.3.3 In parallel mode, terminals 15&18, 17&20 should be connected respectively with thick conductive wire to prevent damage to the unit in the event of an overload.



## **3 CAUTION:**

3.1 In the event of a short circuit at the output the current will limit at the value set by the current controls, however the unit should be turned off and the short circuit removed before continuing use.

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

3.3 The unit should be stored in a dry and well ventilated place and the power cord removed if storing for long periods.

## **4 ACCESSORIES**

4.1 Power cord-----one piece

4.2 Instruction manual-----one piece