User Guide

PS2002H Series
Switching Mode DC Power Supply

Ningbo Jiuyuan Electronic Co., Ltd

Introduction

I. Quick Start

II. Specifications

III. Operation

IV. Calibration

Introduction

Thank you for selecting the QJE PS2002H Switching DC Power Supply, please read this user guide before the operation.

Safety

This manual contains important safety and operation instructions for correct use of power supply. Read through the manual and pay attention to the markings and labels of this unit to be connected.

Do not install the substituted spare parts or operate the modification without permission, please send the unit back for A/S to our authorized dealers or factory for guaranty of the stability of the unit.

Pay special attention to the information of WANRINGS or CAUTIONS to avoid the damage to power supply or connected equipment and human injured.

Please contact the trained technicians for repair service.

Safety Marks

WARNING:
Failure to observe this warning may cause injury to persons and damage to power supply or connected equipment.

CAUTION:
Failure to observe this warning may result in damage to equipment and improper functioning of power supply.

 Grounding

 High Voltage

 Attention on the Warning or Caution

Specification Compliance

PS2002H Switch mode DC Power Supply is compliance with the specification described in this manual.

The content or specification of this manual is subject to change, without prior notice.

Product Features

PS2002H is the single output switch mode DC power supply with max. 30V output voltage, 3.75A output current and max. output power as 50W.

PS2002H is integrating the AC/DC and DC/DC 2nd level voltage regulator technology, the AC/DC input is adapting the worldwide voltage range. The DC/DC is using the synchronous buck mode, which with the high efficiency and high speed dynamic response performance.

PS2002H can be set the voltage and current through the keypad of front panel and save the setting groups for further performance.

PS2002H also has the 4 digit voltage and current meter, as well as the fantastic handheld size. The PS2002H is perfect for solving a variety of loading conditions and applications.

Please find the following main features of PS2002H:

- Handheld design
- Without noise of fan
- 4 digits LCD display
- Output short circuit protection
- High speed dynamic response
- Once power cut-off, automatically protect under power off status
- The output has the automatic recognition of USB charging port
- Can be calibrated via software operation

I. Quick Start

This chapter describes the basic check points on PS2002H for making sure the proper operation, as well as the functions of PS2002H.

1.1 Front Panel Description

1 – Current Setting Indicator
2 – Voltage Setting Indicator
3 – Measured Value Display
4 – Keypad
5 – USB Charging Ports
6 – DC Output Terminals

QJE   H/H Switch power supply

1 —   ▣ 8.8.8.8 CC   8.8.8.8 CV
        ▸   mA   V

        ONOFF   8.8.8.8   ERR
        RECALL   REF
        STORE   W
        ⟷   8.8.8.8   V
                           mA

        PS-2002H

        ▣   V/A
        ▲
        ◀ SET   ▶
           ENTER
        ⟷   ▼   ⟳

        CE   ⚠

5 —   I ▭ 5V 2A   20V-2A
       II ▭ 5V 2A   ◯   ◯
                      +   −   — 6

        2 — (display CV)
        3 — (display W/V/mA)
        4 — (keypad)

1.2 Pre-Checking

Before the operation, please check the accessories are fully included, if any missing, please contact the local distributor.

☐ Power Cord – 1PC (Compliance with the standard voltage of the region)
☐ User Guide – 1PC

Connect with power and switch on PS2002H, the unit start the self-system checking, the LCD displays 0.5s, date of manufacturing, production lot, model number version number in turn.

1.3 Quick Start

OUT Button

Press and light **OUT** button, the power supply is under output status and read the measuring value of voltage or current in the display. Press again OUT button to exit output function.

UP Arrow Key + **DOWN Arrow Key**

Press **UP** arrow key to activate the LCD backlit

Press **DOWN** arrow key to exit the LCD backlit

LEFT Arrow Key + **RIGHT Arrow Key**

Press LEFT arrow key to decrease the contrast of LCD

Press RIGHT arrow key to increase the contrast of LCD

V/A Key

Press the V/A key to activate voltage measurement and read the voltage value from display.

Push the V/A key again to switch current measurement and read the current value from the display

USB Button

Push and light the USB button and adjust voltage to 5.2V and the current as 3A to enter USB power charging mode; then, push and light the OUT button, the PS2002H is working as power charger.

Push the USB button again and USB button lights out to exit USB power charging mode.

SET Button + V/A Button + Direction Arrow Keys

Push the SET button, by pressing the direction arrow keys to adjust the voltage value setting, Push the V/A button to switch the current value setting mode, by pressing the direction arrow keys to measured current value.

1.4 Output Checking

1.41 The output voltage regulation mode check

This is for checking the functions of power supply under non-load voltage stability.

1) Switch on the product, the power is off and the indicators of CC & CV are light off.
2) Push and light the **OUT** button, the indicator of CV is light on at LCD display.
3) Setting the voltage of power supply
   Push the **V/A** button and shift to voltage display mode, adjust various voltage values then, check the voltage value displayed at LCD is approaching the settled voltage value and within the tolerance, current value is showed as 0A.
4) Make sure the voltage can be adjusted from 0.3V to max. 30V.

1.42 The output constant current mode check
This is for checking the functions of power supply under constant current mode.

1) Switch on the product, the power is off and the indicators of CC & CV are light off.
2) Adjust voltage value as 30V.
3) Connect the resistance (3Ω/50W) between output terminals.
4) Push and light the **OUT** button, the indicator of CC is also light.

14

5) Setting the current of power supply
   Push V/A button and shift to current display mode, adjust various current values, then, check the current value displayed at LCD is approaching the settled current value and within the tolerance.
6) Make sure the current can be adjusted from 0A to the max. value.

1.43 The output short circuit protection check
This is for checking the function of short circuit protection of output.

1) Switch on the product, the power is off and the indicators of CC & CV are light off.
2) Adjust voltage value is over 5V and current value is over 1A.
3) Push and light the OUT button.
4) Connect the output terminals by wire for short circuit, the light of OUT button is off and output off.

1.44 The USB charging function check
This is for checking USB charging function.

1) Switch on the product, the power is off and the indicators of CC & CV are light off.
2) Push and light the USB button. Adjust the voltage as 5.2V and current as 2.5A.
3) Push and light OUT button.
4) Make sure the power supply under CV mode, the CV indicator is light in LCD.
5) Setting the current value and make sure the current value can be adjusted from 0A to the max. value of measuring range. Do not adjust voltage.

II. Specification

2.1 Major Specification

Input Voltage		90VAC~265VAC 43Hz~65Hz ±2Hz
Input Current		1A
Output Rating	Max. Voltage	0.3V~30V
	Max. Current	0~3.75A
Line Regulation ±%of output + offset	Voltage	CV≦0.01%+3mV
	Current	CC≦0.01%+3mA
Load Regulation ±%of output + offset	Voltage	CV≦0.02%+3mV
	Current	CC≦0.02%+3mA
Measurement Accuracy	Voltage	10mV
	Current	1mA
Measured Value Accuracy @ 25℃±%of output + offset	Voltage	≦0.05%+5mV
	Current	≦0.05%+5mA
Measurement Speed	Voltage	100ms/ones
	Current	100ms/ones
Setting Value Accuracy @ 25℃ ±%of output + offset	Voltage	≦0.05%+5mV
	Current	≦0.05%+5mV
Ripple and Noise 20HZ-20MHZ	Voltage	≦10mVrms/100mVp-p
	Current	≦10mVrms/100mVp-p
Temperature Coefficient @ 0~40℃ ±%of output + offset	Voltage	≦0.05%
	Current	≦0.1%
Dimensions		185x88x38 mm
Weight (Net)		370g

2.2 Supplementary Characteristic

Build-in EEPROM

Recommended Calibration Time ： 1 Time/Year

AC Input Power: 90-265VAC, 43 to 65 Hz

Operating Temperature: 0 to 40 ℃

Storage Temperature: -20 to 70 ℃

III. Operation

Check the rating label of the power supply and ensure that it complies with the AC mains voltage that is to be used.

Connect the power supply to the AC minas using the provided power cord.

3.1 Keypad Description

|	
OUT	Output check
V/A	Voltage & Current Shift
USB	5V Cell Phone Charging
SET/ENTER	Voltage & Current Setting/Enter
STORE/RECALL	Data Saving/Recall
UP DOWN LEFT RIGHT	Direction Arrow Keys

3.2 Front Panel

After power on, the panel operation mode is the default setting of power supply and all the functional buttons can be operated.

3.3 Voltage Setting

The voltage setting range is from 0.30V to 30V; follow the setting steps as below:

1. Switch on the power supply
2. Push the OUT button to stop the output setting and light off OUT button
3. Push and light the SET/ENTER button, the max. value position is flickering of voltage setting area

4. Push the **LEFT** or **RIGHT** arrow keys to move the cursors
5. Push the **UP** or **DOWN** arrow keys to change the settings
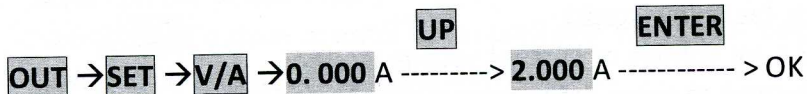6. Push **SET/ENTER** button and light off this button to exit voltage setting mode

                                   UP   **ENTER**

OUT → **SET** → **0 0.0 0** V ------------- >**3 0.0 0** V ---------------> OK
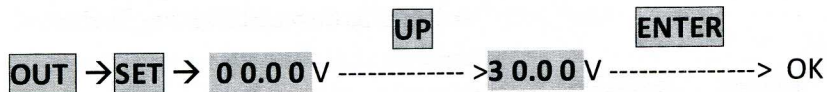
Remark:

I.   It is possible to set voltage values once the outputs are valid. However, for protection of the load, it is recommended to stop output before voltage setting.

II.   Due to the total power limit, current settings might be decreased automatically once
voltage setting increasing.

3.4 Current Setting

The current setting range is from 0.000A to 3.750A, follow the setting steps as below:

1. Switch on the power supply
2. Push the **OUT** button to stop the output setting and light off **OUT** button
3. Push and light the **SET/ENTER** button, the max. value position is flickering of voltage setting area.
4. Push the **V/A** button, the max. value position of current setting is flickering and current setting is activated
5. Push the **LEFT** or **RIGHT** arrow keys to move the cursors
6. Push the **UP** or **DOWN** arrow keys to change the settings
7. Push **SET/ENTER** button and light off this button to exit current setting mode

$$\text{OUT} \rightarrow \text{SET} \rightarrow \text{V/A} \rightarrow \textbf{0. 000} \text{ A} \xrightarrow{\text{UP}} \textbf{2.000} \text{ A} \xrightarrow{\text{ENTER}} \text{OK}$$

Remark:

I.   It is possible to set current values once the outputs are valid. However, for protection of the load, it is recommended to stop output before current setting.

3.5 Output Switch

Under the panel operating mode, by pushing **OUT** button to shift output status. Once **OUT** button lighted, the measured values displayed at LCD; push **OUT** button again to exit output mode.

3.6 Data Saving Operation

1. Under the voltage setting or current setting mode, push the **STORE** button to save the values of voltage or currents into memory of power supply for future recall purpose. (as below steps)
2. Refer 3.3 or 3.4 for voltage or current setting mode.
3. Push **STORE** button to enter data saving mode, the min. value position is flickering and displayed **STORE** icon in LCD.
4. Move **UP** or **DOWN** arrow keys to select storage group serial number.

5. Click **ENTER** button to confirm data saving, click **STORE** button to exit data saving mode.

UP
SET → **STORE** → → **1** → →**2** → →**ENTER** -----> OK

3.7 Recall Saving Operation

Under the panel operating mode, push the **RECALL** button for getting the saved data from memory; follow the setting steps as below:

1. Switch on the power supply
2. Push **RECALL** button to enter data recall mode, the min. value position is flickering and displayed **RECALL** icon in LCD.
3. Move **UP** or **DOWN** arrow keys to recall the stored group serial number, the default values from voltage or current setting mode displayed in LCD.

4. Click **ENTER** button to confirm data recall, click **STORE** button to exit data recall mode.

UP
RECALL →→**1** →→**2** →→**ENTER** --------> OK

3.8 USB Power Charging

Push the **USB** button and light the green indicator, the default setting is voltage @ 5.2V and current @ 2.5A, the LCD will display 5.2V, current value also can be as 0A. Connect the mobile phone via USB cable for power charging.

The USB ports are suitable for both android mobile phone and I Iphone, with automatic check function, the product can set the proper charging current automatically.

1. Push and light the **OUT** button to activate output mode.
2. Push the **USB** button and **USB** indicator is off to exit USB charging mode.
   USB → **OUT** → OK

IV Calibration

Follow the below chart, connect the 5 digit displayed volt meter, current meter, resistance (10Ω/100W) into the output terminals, calibration follow the steps start from point of zero voltage - voltage coefficient – current zero – current coefficient.
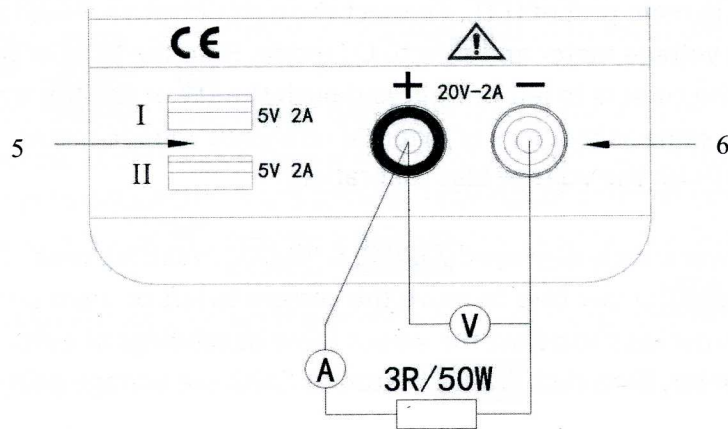
Hold the **SET** button to switch on power supply till **"REF"** displayed in LCD to enter calibration mode.

4.1 Voltage Calibration

At the power supply displayed **2.000A** & **05.00V** in setting area of LCD and ****.**V** displayed in main part of LCD. Connect the output terminal with an external reference voltage meter and shift to CV mode. Hold the **LEFT** or **RIGHT** arrow keys to move the cursors to left or right and push the **UP** or **DOWN** arrow keys to adjust the values same as readings of external reference voltage meter, then click **ENTER** button to finish the voltage bias calibration.

At the power supply displayed **2.000A** & **30.00V** in setting area of LCD, hold the **LEFT** or **RIGHT** arrow keys to move the cursors to left or right and push the **UP** or **DOWN** arrow keys to adjust the values same as readings of external reference voltage meter, then click **ENTER** button to finish the voltage gain calibration.

4.2 Current Calibration

Push the **V/A** button and power supply displayed **0.500A** & **30.00V** in setting area of LCD and ***.***A** displayed in the main part of LCD. Connect the output terminals with the external reference current meter and the load (5Ω/100W), shift to CC mode. Hold the **LEFT** or **RIGHT** arrow keys to move the cursors to left or right and push the **UP** or **DOWN** arrow keys to adjust the values same as readings of the external reference current meter, then click **ENTER** button to finish the current bias calibration.

At the power supply displayed **3.000A** & **30.00V** in the setting area of LCD, hold the **LEFT** or **RIGHT** arrow keys to move the cursors to left or right and push the **UP** or **DOWN** arrow keys to adjust the values same as readings of external reference voltage meter, then click **ENTER** button to finish the current gain calibration.

Push **OUT** button to exit and restart the power supply to complete the calibration function.