User manual
Programmable power supply
ZXY - 6005S

Introduction

Safety information

Please don't install replaceable parts in the instrument by yourself, please send it to us to repair , to ensure its security features.

Brief introduction

ZXY-6005S is single output programmable switch power supply. Its specification is 60V, 5A, 300W. It designed by DC-DC modularization ,has a small size and a high output power. Besides, it has equipped with TTL serial interface, provide a serial communication protocol, allows user to secondary development, we can according to your design and test requirements to provide versatile solutions.

Main special features and advantages :

- Based on BUCK structure of switch power supply technology, the work frequency reach up to150 KHZ

- DC input voltage range : 13V~ 62V, which is suitable for multiple kinds of pre-stage input power supplies

- Operation key and multi-function encoder combine for the operation, it is convenient and easy to use

- High accuracy and high resolution: 10 mV / 10 mA

- Low ripple and low noise

- Indicator light:constant current(CC) ,constant voltage (CV) and output state (ON)

- LCD1602 display

- Adjust voltage and current by adjustment knob and keys

- Support measuring and displaying output voltage, output current, output power, output electric quantity (AH) and working time

- Intelligent temperature detection, can connect an external DC12V fan,and control its speed in level

- The minimum voltage difference 2V can still work steadily

- With output turn off function key ,flexible turn on or off output

- 10 groups of parameter settings of M0-M9, which can be conveniently called out at any moment

- Prompt for operation or alarm function of onboard buzzer

- Convenient and simple three-phase charge intelligent control function of storage battery

- With TTL serial communication, and improved communication protocol so as to be convenient for centralized control

Chapter 1   Constitution of Instrument

1 Constitution of power supply
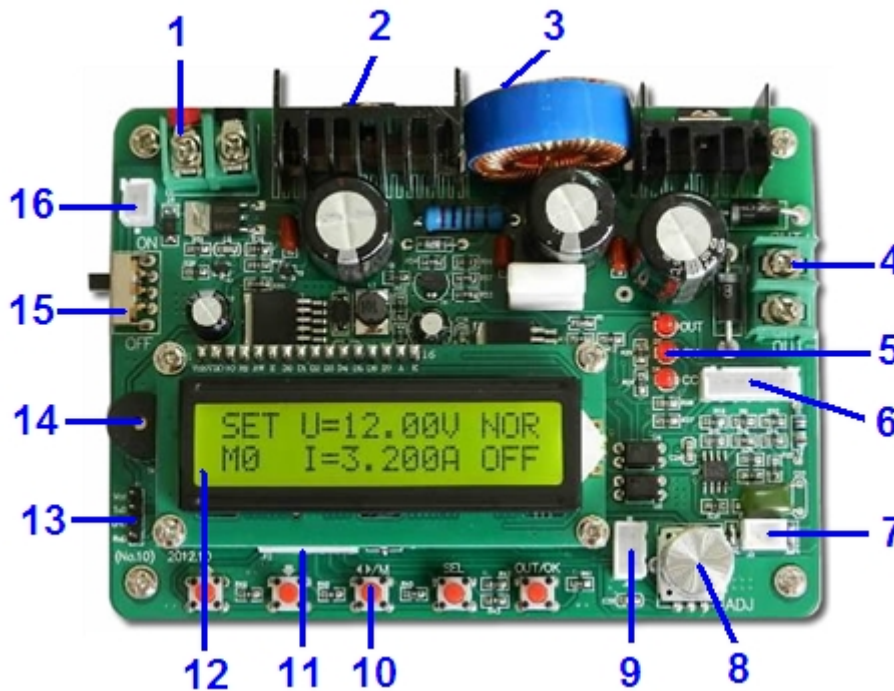
1.DC input   **2.**Power MOS transistors   **3.**Filter inductance   **4.**DC output

5.Indicator light   **6.**Indicator light extended interface   **7.**Voltage detection extended interface

8.Encoder switch   **9.**Encoder switch extended interface   **10.**Operation key

11. Operation key extended interface   **12.**LCD   **13 .**Serial communication   interface

14. Buzzer   **15.**Power switch   **16.**The power switch extended interface

2 Introductions for keys
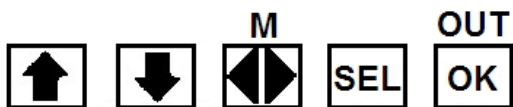
key description shown in the following list

key	Name and function
⬆	page up key, rapidly setting voltage and current values
⬇	page down key, rapidly setting voltage and current values
<>/M	storage/call, cursor moves the key left and right
SEL	option key, setting preferences
OUT/OK	Enter key

3 Dimension

130mm(length)*95mm（wide）*37mm（high）

Chapter 2　Technical　Specifications

　　This chapter introduces the rated voltage, rated current, rated power and other main technical parameters of ZXY-6005S, and the use storage environment and temperature of ZXY-6005S.

Category	Data
Input Voltage	13V～62V
Output Voltage	0～60V
Output Current	0～5A
Output power	0～300W
Setup resolution of output voltage	10mV
Setup resolution of output current	10mA

Source regulation	CV is less than 0.5% + 10 mV CC is less than 1% + 5 mA
Load regulation	CV is less than 0.5% + 10 mV CC is less than 1% + 5 mA
Output ripple	< 50mVpp (Input 54 V, 12 V output, current 3A)
Volatility transmission ratio of 100 Hz	< 1/10000
Typical Efficiency	Input 54 V, 36 V, output current 3 A
The display precision of Voltage, Current	10mV、10mA
Display error of Voltage	±1%+50mV
Display error of Current	±2%+20mA
Response time	< 50ms
Memory operation	10 groups of parameter storage of M0-M9
Protection type	OVP、OCP、OPP、OAH、OFT
Heat-dissipating method	heat dissipater and fan (optional)
Operating ambient temperature	0～40℃
Storage ambient temperature	-20～70℃
use ambient	For indoor use , maximum humidity of 80%

Chapter 3 Operating Instructions

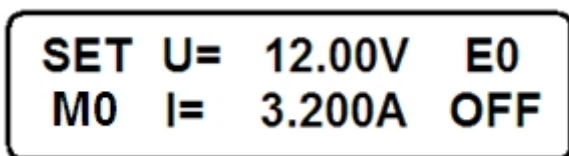This chapter introduces the use method of power supply in detail.

1. Quick start guide

This chapter briefly introduces the operation method of the power supply with output of 24.5V, 5A as a case to ensure that user can rapidly grasp a conventional method of the power supply.

2.Start

The input voltage range of this model is 13 V ~ 62 V, the voltage of the pre-stage input power

supply is enabled to be within the range, otherwise, the power supply cannot possibly work or is damaged, notably, the power supply is a BUCK power supply, if the voltage of 24.5V is needed to be output, the voltage of more than 26V is input (voltage difference of more than 1V is ensured), then the output of a pre-stage power supply is connected to input terminal behind the machine, and reversing of positive and negative poles is paid attention to. After correct input correction of the power supply is ensured, the above power supply switch can be turned on, and now display screen is lightened and voltage and current preset interface appears.
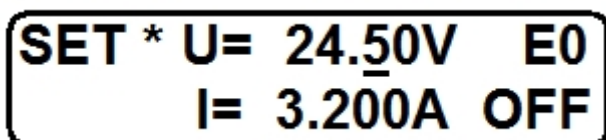
```
SET  U=  12.00V   E0
M0   I=   3.200A  OFF
```

Displayed M0 indicates that preset value stored in M0 is called in currently, if parameters pre-stored in other positions are needed to be called out, <>/M keys can be repeatedly pressed to call the parameters from M1 to M9 out, OFF indicates that the power supply is in off state and E0 indicates that the power supply is normally turned off.
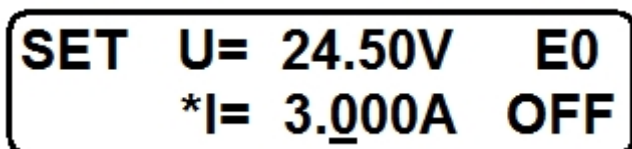
3.Setting the voltage and current value

Press the SEL key, the cursor stays in a set value of the voltage , rotary encoder, regulate the voltage to 24.00 V, then press the "< >" key, change the cursor position, regulate the voltage value of 24.50V, as shown in the figure below.

```
SET * U=  24.50V   E0
          I= 3.200A  OFF
```

Press the SEL key again, cursor stays in the set value of the current, rotary encoder, regulate the the current to 3.000A.

```
SET   U=  24.50V   E0
      *I=  3.000A  OFF
```

Press the SEL key again, the cursor will disappears.

4.The operation of output state

Connect load, press OUT key, the machine will output normally , when the load resistance is larger, the current will less than 3A , the machine is in CV mode, the CV and ON indicator lamps will light.

```
24.53V    2.280A
55.92W    10mAH CV
```

Change the load,when the current increase to reach to 3A, the instrument is in constant current (CC)state, at this time the voltage is reduced, the CC and the ON indicator lamps will light.

```
18.26V    2.998A
54.74W    86mAH CC
```

It is observed that the power is the product of voltage and current, AH is a cumulative amount,which gradually increase over time.

Under output state, when the cursor is not displayed, press the ↓ key can clear the AH. Press the ↑ key to switch into the time display, as shown below:

```
18.26V    2.998A
TIME:00:10:18    CC
```

5. Output off

If you don't need to output, you can press OUT key to cut off the output.

Chapter 4   Detail operating instructions

This section will detail introduce the use method of power supply.

1. General Introduction

When output is not performed and the cursor is not displayed, press↑↓key or rotary encoder to switch different function options, as shown below:

(1)SET   U-CAL   Calibration voltage measurement value.

(2)SET I-CAL   Calibration current measurement value.

(3)SET OVP(E1)   Set regulating voltage upper limit

(4)SET OCP(E2)   Set regulating current upper limit

(5)SET OPP(E3)   Set overpower protection value

(6)SET OAH(E4)   Set overcharge capacity protection value

(7)SET OFFTIME(E5)   Set overtime protection value

(8)---SAVE DATA! ---   Save set parameter

(9)Start up：OFF   Set whether output is on or off when starting up

(10)System Recover   Recover system

(11)Sound Enable：ON   Set sound

(12)Save Parameter：   Save parameter

(13)Set Addr. Code   Set the address code

(14)Set BaudRates   Set the baud rate

(15)Charge Mode：OFF   Set whether charge function is started or not

2. Voltage and current calibration function (1) and(2), save set parameter function (8), and recover the factory setting function (10)

Function (1), (2) and function (8) is to calibrate voltage and current value and save the parameters, we have calibrated it before delivery ,calibration is not needed under general condition,if necessary, please contact us. If you set the wrong parameter, you can use the function (10), press the OK key to restore factory Settings.

3. OVP and OCP setting function (3) and (4)

Function (3) and (4) is to set the maximum voltage and current regulation, The maximum voltage and current of this model are respectively are 120V,10A, if you do not need large upper limit of setting regulation, for example, the upper limit of voltage and current you need is 30V,5A, after setting the OVP and OCP , when you operate the machine the output does not exceed the set values.

In the function(3), press OK key can enter the voltage upper limit setting, as shown below,

```
SET OVP VALUE
OVP=        0.00V
```
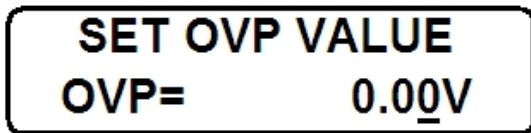
Press the ◀▶key can adjust the position of cursor ,then rotate the adjusting knob to regulate the voltage to 30.00V.

The current limit setting is similar to voltage, after setting, we can use function (12) to save parameters in M0, the setting parameters will be automatically called in at the next time.

4. OPP, OAH and OFFTIME setting functions (4), (5) and (6)

The three functions is over power protection, over AH protection and overtime protection, the setting method is similar, and with the OPP (overpower protection) as a case, the function of the setting of the OPP is described. After entering OPP setting, the screen display the OPP.

```
SET OPP VALUE
OPP=        0.00W
```
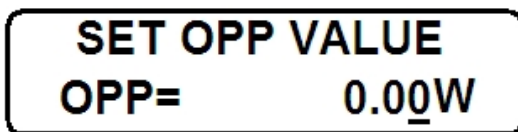
The default setting is 0,indicating that the OPP function is not started, set non-zero data can start it, for example, set the maximum power of 20W,you can press the◀▶ key to select the cursor position, and the adjusting knob or press ↑↓key to regulate the OPP value of 24.50V , after setting, open output, when the actual output power over than 20W it will be cut off output,then it will send an alarm and the screen display error code E3.

OAH protection function is mainly used for setting upper limit when charging the battery, the machine will work continuously when it is 0, the OAH protection function will work when it is not 0,when the actual output AH is over than the setting value the it will be cut off   output,then it will send an alarm and the screen display error code E4.

OFFTIME protection function can enable the power supply cut off the output after setting time, the machine will work continuously when the OFT=0;and if set to be non-0 time,when the working time over the setting time it will be cut off output, then it will send an alarm and the screen display error code E5.

The three functions also need to use function (12) to save parameters in the M0 .

6.Output setting function (10)

The output is default closed when the machine is turned ON , presses the OUT key to open the output , if you need directly output after start, you can use function (9), makes the Start up: ON ,then it will directly output after starting .you need to use function (12) to save the parameters in M0.

7.Sound set function (12)

The default operation sound is open , if you needn't the operation voice prompt and alarm , you can set function (11), makes the Sound Enable: OFF, you need to use function (12) to save the parameters in M0 .

8. Storage parameter function (12)

The setting function introduced above from item 3 to 7 will be lost after power off, if you need to save, you need to use the function (12), press OK to save the setting parameters in M0,therefore every operation can automatically call relevant set parameters in. This machine has 10 storage positions from M0 to M9, if you need to save parameters in the M1 ~ M9, press the ＜＞ / M key to select the store location you need ,then press OK key to save.If you need call in M1 or others ,you can repeatedly press the ＜＞ / M key when the machine is not output and the LCD has no cursor .

9.Communication parameter setting function (13) (14)

Function (13) and (14) is setting the address code and communication baud rate, this will introduce in another documents

10.Charging mode function (15)

Open the charging mode, the power supply performs charging according to the three-stage mode of common charging for industry, when the battery is full, after buzzer rings out, it automatically enters trickle charge mode, and the charging mode can simultaneously set OTP or OAH and other protect function at the same time .

Specific to a 48V12AH lead-acid battery as an example to explain the process of three-stage charging,

① Setting voltage of 58.5 V, current of 1.8 A, open the charging mode in the function (15) and save in M0.

② Connect the battery, press OUT key, because the voltage of the battery is low, it can be seen that the battery is in constant current (CC) mode and the current is 1.8A, which is the first stage.

③ When the voltage increase to 58.5 V, the current starts falling,the system is in constant voltage CV

mode, which is the second stage.

④ With continuous charging, the current is gradually reduced, when the current is reduced to 1/10 of set value 1.8A, namely, 180mA, and now buzzer rings out, the voltage set value is reduced to 93.75% that of original value, namely 54.8V. Under this voltage, the power supply charges the storage battery in trickle charge mode, which is the third stage.

12.Other important notices

①Storage position M0 is parameter automatically called in during default starting-up, and is automatically called in every starting-up.

② The storage range of each storage position of this power supply is wider, comprising voltage and current set values, various protection setting values, and automatic on or not of starting-up, sound options and others, which are stored in corresponding storage positions, and all storage positions are mutually independent without being mutually influenced.