MPS High-Power Series DC power supply User Manual

Matrix Technology Inc.

Applicable models: MPS-1800S, MPS-3600S, MPS-6000S and MPS-7500S
MPS-10000S、MPS-12000S、MPS-15000S、MPS-1802S、MPS-3602S

Catalog

Foreword

Thank you for using Matrix Power Products!

Observe all warnings and operating instructions in this manual and on the machine, and keep this manual in good condition. Do not operate the machine until you have read all safety and operating instructions.

Inspection before receipt

1. Before receiving the goods, the customer shall check whether the package is complete and whether there is leakage, crack, dirt, dampness, etc.
2. Check whether the products received are consistent with the model and quantity of the goods signed in the contract. If there is any error, please do not open the box.
3. Check whether the accessories of the product are complete according to the product packing list.
4. In case of the above conditions, please fill in the product model, contact name, contact information and a brief description of the problem and contact our company or agent in time.

Copyright notice

All information in this manual has been fully corrected before printing. However, due to the continuous improvement of product quality by Matrix Technology Inc., our company has the right to modify the product specifications, characteristics and maintenance procedures in the future without prior notice.

Applicable model

MPS-1800S、MPS-3600S、MPS-6000S、MPS-7500S、MPS-10000S、MPS-12000S、MPS-15000S
MPS-1802S、MPS-3602S

Safety precautions

1.1 Operation safety

1. Before using this product, please read the "Safety Precautions" carefully to ensure correct and safe use, and keep the instructions properly.
2. When operating, please pay attention to all warning signs and operate as required.
3. Avoid using the equipment in direct sunlight, rain or humid environment.
4. This product should not be installed in an area near a heat source.
5. When placing the product, keep a safe distance to ensure ventilation. Please refer to the instructions for installation.
6. When cleaning, the surface of the machine is frosted, please use dry objects to wipe.

1.2 Electrical safety

Non-professionals are not allowed to open the enclosure, and authorized maintenance personnel are required to operate.

1. Before powering on, make sure that the ground is properly connected and check that the wiring is properly connected.
2. When the power supply needs to be moved or rewired, all electrical connections of the power supply should be disconnected to ensure that the power supply is completely shut down, otherwise there may still be electricity at the output end, which is dangerous for electric shock.
3. Please use the additional devices and accessories specified by Matrix Technology Inc.
4. Be careful of electric shock.
5. It is prohibited to directly shut down the machine under load.

1.3 Please pay attention to the safety of operation and wiring!

When servicing equipment powered by a power supply, disconnect the equipment from this power supply. When maintaining and installing the power input and output terminals, please turn off the power supply

and disconnect all connections of the power supply.

1.4 Use and maintenance

1.The use environment and storage method have a certain impact on the service life and reliability of this product. Please do not use it in the following working environment:

A.Exceed the technical specifications;

B.Places in high and low temperature and humid environment (temperature 0 ℃ ~ 40 ℃, relative humidity 20% ~ 90%);

C.Places subject to vibration and collision;

D.Locations with metallic dust, corrosive substances, salt and flammable gases;

If the power supply is not used for a long time, please store it in a dry environment with a storage temperature range of -25 ℃ ~ + 55 ℃. Before starting the power supply, the ambient temperature must be warmed up to above 0 ℃ and maintained for more than 2 hours.

Do not place liquid substances on the machine, so as not to accidentally pour them into the machine and cause damage to the machine.

If the machine is placed (used) in a harsh environment, such as a factory or a dusty, windy and sandy place, please pay special attention to maintenance.

1.5 Regular maintenance

It is very important to check, clean and maintain the machine regularly, because it can prolong the life of the machine. The frequency of cleaning depends on the environmental conditions, and the simple operation steps are as follows:

1. Turn off the power switch.
2. Use a soft cloth and mild cleaning agent to gently wipe the cabinet, upper cover and ventilation holes.
3. Visually inspect all power cords and terminals for bumps, looseness, heat corrosion, moisture, and insect bites. If there is any damage, please replace the power cord or terminal with the same specification and size in time.

Caution: Do not carry out maintenance work during machine operation.

Product introduction

2.1 Product introduction

DC stabilized voltage and current power supply is a high-performance power supply independently developed and produced by our company for scientific research and industrial applications. The high-frequency switching power supply technology is adopted to greatly reduce the heat, reduce the machine loss, improve the power supply efficiency and prolong the service life of the machine. The transformer is made of copper wire to reduce heating loss.The radiator adopts a custom-made high-density tooth radiator to improve the heat dissipation efficiency. The fan adopts a speed-regulating fan, which automatically adjusts the speed according to the output power, reduces the noise of the fan and prolongs the service life of the fan. Other components adopt high-quality components at home and abroad, which greatly improves the overall performance of the power supply.

This series of products have simple operation, small size, high efficiency, high precision, high stability and other performance, equipped with high-brightness digital tube, with perfect overvoltage, overcurrent, overtemperature, short circuit and other protection functions, so that users can use the products more assured, more stable and more reliable. It is the best choice for research units, laboratory testing, production line product testing and industrial application power supply.

2.2 Performance characteristics

Specification: output voltage 0 — 2000V rated voltage, output current 0 — 500A rated current, single maximum 15 KW;

Preset of voltage and current: the panel is equipped with preset keys, which can preset the voltage and current values;

Voltage and current stabilization: the voltage and current value can be adjusted continuously from zero to the rated value, and the voltage and current stabilization can be automatically switched;

Overvoltage protection: the overvoltage protection value can be set, and the output will be automatically turned off when the output voltage reaches or exceeds the overvoltage protection value;

Memory function: with memory function, shutdown to save preset voltage, current, overvoltage protection

value, etc.;

Intelligent: RS-485/RS-232 communication interface, using MODBUS RTU protocol, can realize the remote control of computer and PLC;

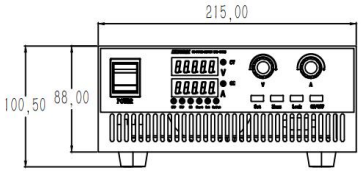
Voltage compensation: external voltage sampling line to reduce the voltage error caused by too long output wire and realize flexible switching of voltage sampling signal (optional);

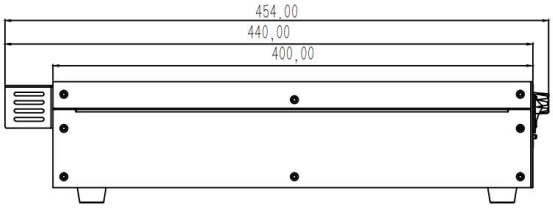
Analog signal: 0 ~ 5V or 0 ~ 10V or 4 ~ 20mA analog quantity can be selected to control the power supply output signal, and read the power supply output signal (optional).

2.3 Product size information

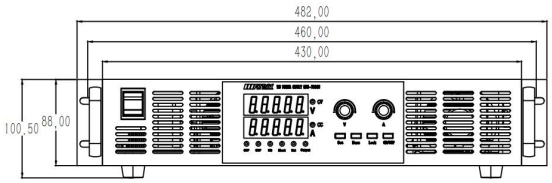
In order to facilitate the user's installation, the dimension drawing of the machine is provided for reference.

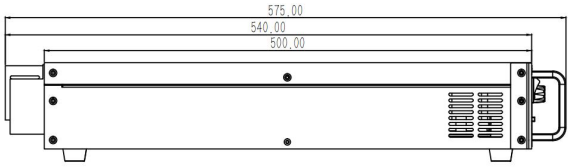
2 U 2U ½



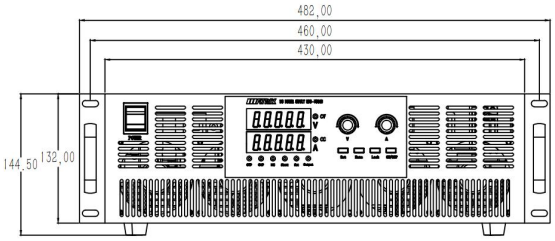


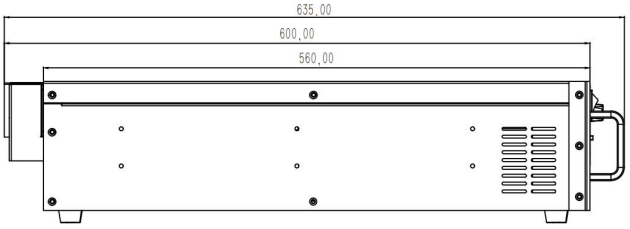
2 U-6 KW models





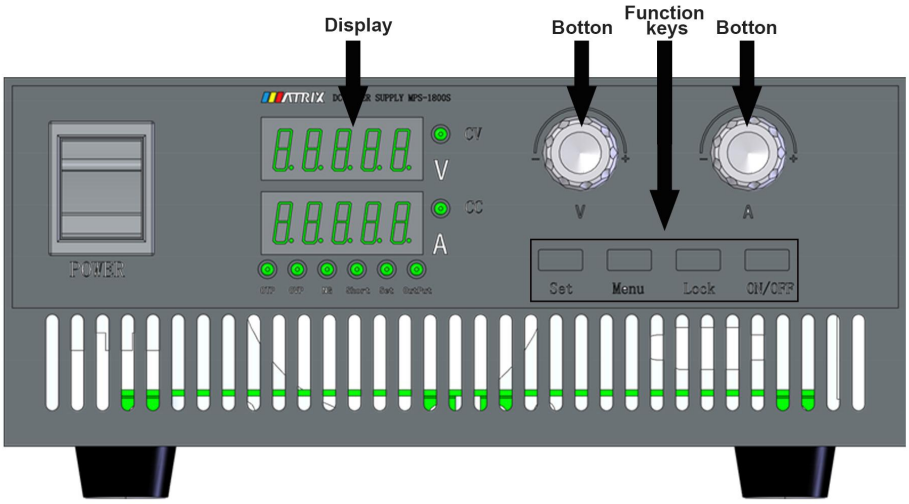
3 U models



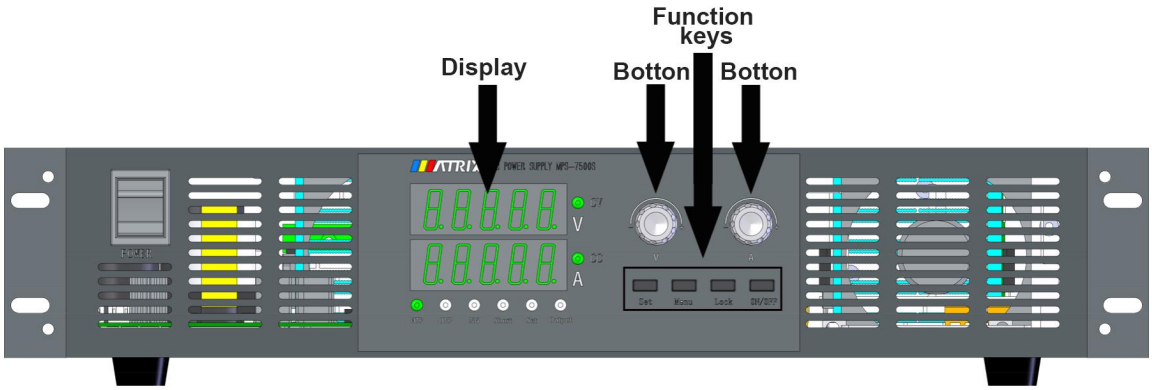


2.4 Front panel

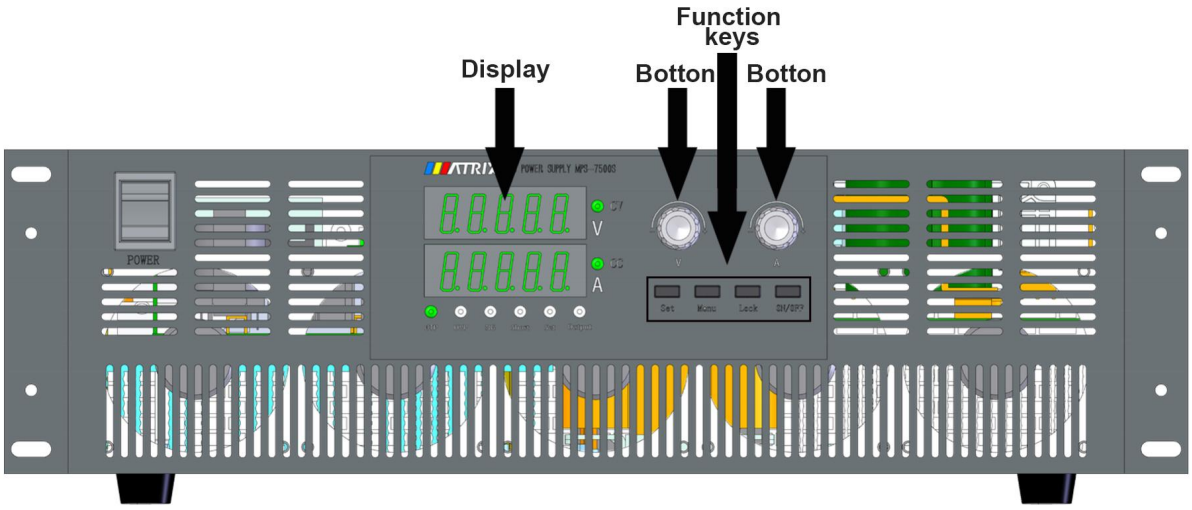
2 U 2U ½



2 U models



3 U models

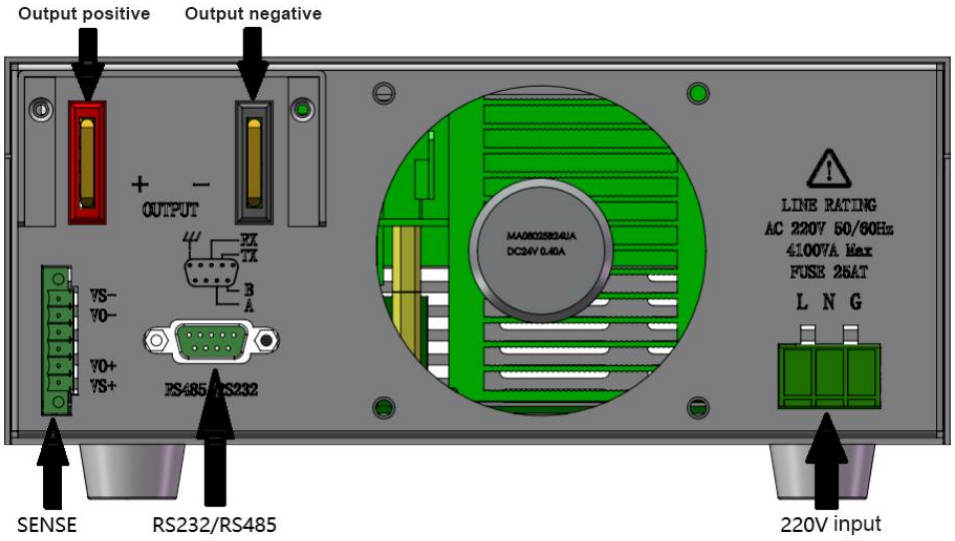


2.5 Introduction to function keys

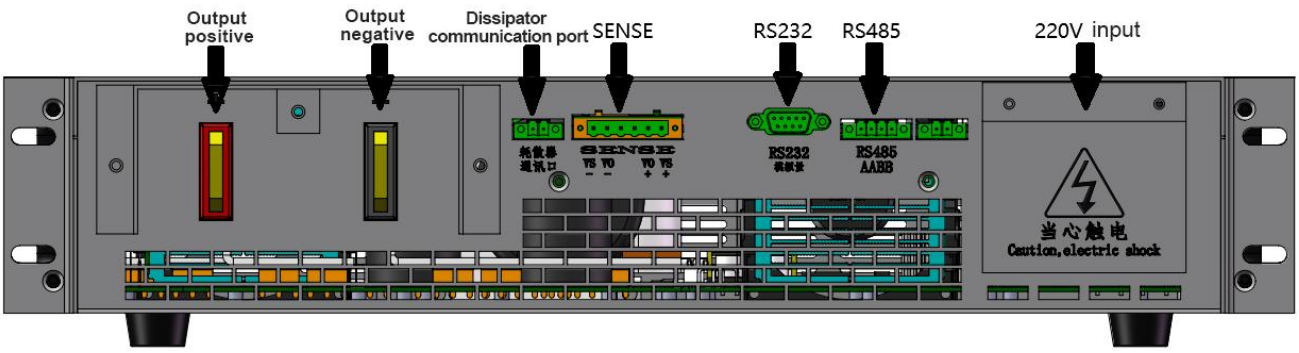
Function key	Action
Set	Voltage, current, overvoltage protection, overcurrent protection settings
MENU	Function menu key
LOCK	Lock key for local operation; switch to local mode when exiting remote operation mode
ON/OFF	Voltage and current output on/off key
Knob	Digital addition/subtraction, selection interface switching and push-down shift (voltage regulation on the left and current regulation on the right)

2.6 Rear panel

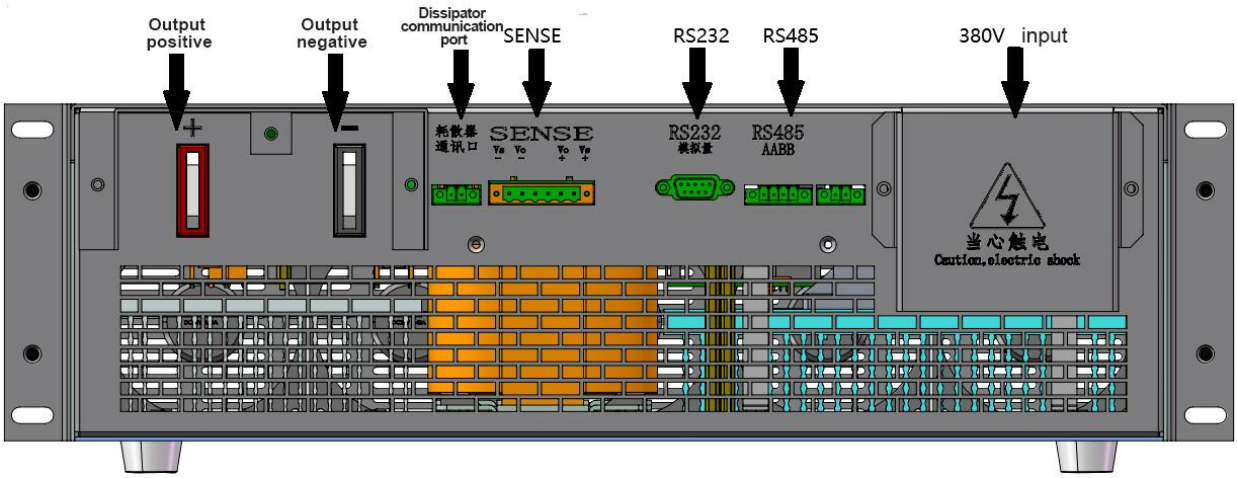
2 U 2U ½



2 U Low Voltage

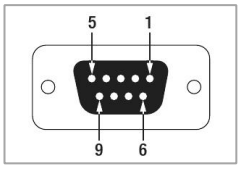


3 U models



2.7 DB9

The default communication interface of the power supply is DB9 female, and the line sequence is as shown in the following figure:



It can be configured into three functions of RS-485, RS-232 and analog quantity (optional).

Line sequence description is shown in the following table:

Pin number	RS-485	RS-232	Analog quantity
1			
2		Tx	
3		Rx	Vs et: output voltage setting line
4			Iset: output current setting line
5		GND	Vdisp: output voltage display line
6	B		Idisp: output current display line
7	A		ON: Power supply start and stop control passive signal line, when connected to GND, it represents start, and when not connected, it represents stop.
8			RM: passive signal line for external control of the power supply. It is detected when the power supply is started, and the change is invalid after starting. When it is connected to GND, it represents external control, and when it is not connected, it represents internal control of the power supply.
9			GND: common ground

Remarks: Iset, Vset, Idisp and Vdisp have three setting modes of 4-20 mA, 0-5V and 0-10V, which

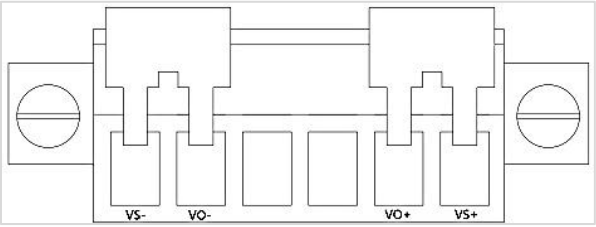
are optional before delivery;

Vset and Iset have three setting modes: only control voltage, only control current and control voltage and current, which are optional before delivery. Please select the wiring mode according to the customization requirements!

2.8 Voltage compensation

When the power supply outputs a large current or the wire is long or thin, a large voltage drop will be generated on the connecting wire between the load and the output terminal of the power supply. In order to ensure the normal use of the load, the power supply provides a remote measurement terminal on the rear panel. The user can use this terminal to measure the output terminal voltage of the load. The power supply increases the output to make the load terminal voltage reach the user's set value.

See the figure below for the wiring terminal:

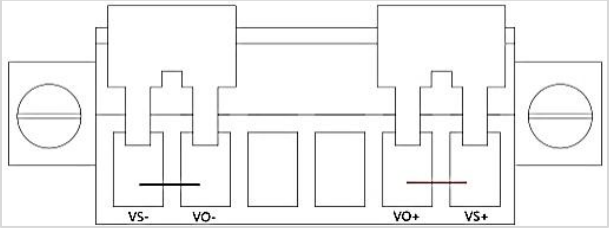


VS +: Remote measurement positive
VO +: output positive
VS-: Remote Measurement Negative
VO-: output negative

2.9 Local measurement

When the local measurement does not need to compensate the lead voltage drop, use the short circuit clamp on the back plate of the instrument, or directly install the lead between Vo + and Vs + and Vo- and Vs-.

Wiring diagram of local measurement is as follows:



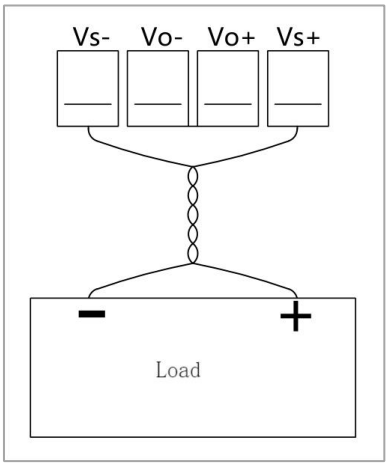
2.10 Remote Measurement

The remote metering function allows compensation for voltage drops on the wire between the power supply output terminals and the load. Use armored twisted-pair cable between the remote measurement of the power source and the load. Operation steps:

1. Remove any jumpers or shorting clips between the back panel terminal strip connectors Vo + and Vs + and between Vo- and Vs-.

2. Connect a pair of sense wires from Vs + and Vs- to the load side.

The wiring diagram of remote measurement is as follows:



Note: 1. The maximum voltage drop of voltage compensation is 5V.

2. Please pay attention to the positive and negative polarity when wiring, otherwise the instrument will be damaged!

3. Do not float the voltage sampling line without using the voltage compensation function.

Install the connection

This product is an economical DC power supply. In order to facilitate the use of the operator, this series of products are equipped with only voltage adjustment and current adjustment knobs for the operator to adjust, which can meet most of the user's requirements for DC power supply. The operation of this product is convenient and simple. Please follow the following operating procedures for specific use.

3.1 Initial Energization

1．Carefully check whether the output control line connection of the product is consistent with the requirements, and ensure that the connection is correct.

2．Carefully check whether the AC input voltage is consistent with the input voltage of the product, and make sure that the connection is correct.

3．Carefully check whether the connection between the load and the output end of the product is consistent, and make sure that the connection is correct.

3.2 Operation

It is allowed to start the machine only after checking that the input, output and other azimuth links of the machine are correct.

1．Push the air to open, press the power button to power on and start.

2．Preset state: enter the preset state after the power is started, and the nixie tube displays the preset value.

3.3 Operating Instructions for Rotary Encoder

1．The rotary encoder is equipped with a key switch, and the knob can be pressed as a key to realize related functions.

2．Current adjustment knob and voltage adjustment knob:

In the preset state, rotate clockwise, the number increases, step from the low level to the high level, and return to the lowest level when reaching the highest level, the value is 0-9 cycles, when the voltage

and current are adjusted to the rated maximum value, continue to rotate and do not continue to execute, rotate counterclockwise, the number decreases, step from the high level to the low level, and return to the highest level when reaching the lowest level, the value is 9-0 cycles. When the voltage and current are adjusted to the minimum, continue to rotate and do not continue to execute.

The default adjustment is to start from the first digit, indicating that the cursor is under the digit. When the knob is rotated, the digit is adjusted. When the knob is pressed down, the cursor moves to the next digit, and the corresponding knob is rotated for adjustment. In this way, the voltage and current are adjusted circularly to realize the functions of coarse adjustment and fine adjustment.

Power setting operation

Since the power supply is a highlight nixie tube, partial letters are not fully displayed, and there will be a difference between the display and the actual. The first row of nixie tubes is the function type display, and the second row of nixie tubes is the function status display.

4.1 Buzzer on

In the default state, the buzzer is turned on. Press the "MENU" key. The first item in the menu is the option of the buzzer by default. The buzzer is turned on when "BEEP ON" is displayed. To turn off the buzzer, it is necessary to turn the current adjustment knob. When the screen displays "BEEP OFF", the buzzeris turned off. To switch the buzzer state, press the current adjustment knob for confirmation.

4.2 Reboot settings

The voltage and current of the power supply in the default state are the factory default state when it is turned on again. Press the "MENU" key and turn the voltage adjustment knob. The screen displays "POWER RESET". At this time, the machine is in the default state when it is turned on again. If it is necessary to change to turn the current adjustment knob before shutdown, When the screen displays "POWER LAST",

the voltage and current when the power is turned on again are the settings before shutdown, and you need to press the current adjustment knob to confirm.

4.3 Communication port settings

When the machine is in the output stop state, connect the DB-9 cable to the DB-9 seat on the rear panel, press the "MENU" key, and turn the voltage adjusting knob. When the screen displays "PORT RS232", it is RS232 communication. If the communication port is modified, turn the current adjusting knob to switch, and press the current adjusting knob to confirm. There are RS232 (RS232) and RS485 (RS485) communication ports for selection.

4.4 Baud rate settings

After selecting the communication protocol, turn the voltage adjustment knob. When the screen displays "BAUD 9.6 K", the baud rate is 9600. The baud rate needs to be modified. Turn the current adjustment knob to switch, and press the current adjustment knob for confirmation. The power supply is available in five baud rates: 9600 (9.6K), 19200 (19.2K), 38400 (38.4K), 57600 (57.6K), 115200 (115.2K).

4.5 Address settings

When multiple machines communicate with the PC end (RS485 communication), it is necessary to number the equipment. When the machine output is turned off, press the "MENU" key and turn the voltage adjustment knob. When the screen displays "ADDR 001", the communication address of the equipment is Unit 1. If you change the communication address, turn the current adjustment knob and press the current adjustment knob to confirm that the maximum number of the machine is 247.

4.6 Communication protocol settings

When the power supply is in the off output state, press the "MENU" key to rotate the voltage adjustment knob. When the screen displays "COMMU", select the communication protocol. The default state is "SCPI". If the communication protocol is modified, rotate the current adjustment button and press the current adjustment knob to confirm. There are two options: SCPI (SCPI) and RTU (RTU).

4.7 Reset Settings

When the power supply is in the output ON or OFF state, turn the voltage adjustment knob. When the screen displays "RESET NO", if it is necessary to reset to the factory setting, turn the current adjustment knob "RESET YES", press the current adjustment knob for confirmation, and return to the power-on interface. The output is in the OFF state. The functions of buzzer, voltage setting, current setting, overvoltage protection and overcurrent protection will be restored to the factory state.

4.8 View Version

When the power supply is in the off output state, press the "MENU" key and rotate the voltage adjustment knob. The first line of the screen displays "VERSI". The second line of the screen displays the current software version. Rotate the current adjustment knob to view the upgrade date.

4.9 Voltage settings

The voltage setting range is between 0V and the maximum output voltage. When the power supply is powered on and in the voltage setting mode, the cursor will stay at the position of 0.001 V/0.01 V and flash. When in other interfaces, press the "Set" key to set the preset voltage, press the knob to switch the setting digit from low to high, and rotate the voltage adjusting knob to set the bit voltage. Press the "ON/OFF" key to output or turn off the power supply.

4.10 Current setting

The current setting range is between 0 A and the maximum output current. When the power supply is at the voltage setting, press the "Set" key, the interface will jump from the voltage setting interface to the current setting interface, and the cursor will stay at the position of 0.001 A/0.01 A and flash. Press the knob to switch the setting digit from low to high, and rotate the current adjusting knob to set the bit current. Press the "ON/OFF" key to output or turn off the power supply.

4.11 Overvoltage setting

Set the maximum voltage value within the output range of the machine according to different requirements. Press the "Set" key continuously. The first line of the interface displays the OVP mark, and the second line displays the set value of overvoltage protection. Rotate the current adjustment knob to set the overvoltage protection value; When the machine is under overvoltage protection, the screen will display "ERROR OVP", and the prompt lamps OVP, NG and Short will light up at the same time. To unlock the overvoltage protection, press the LOCK key.

4.12 Overcurrent settings

Set the maximum current value within the output range of the machine according to different requirements. Press the "Set" key continuously. The first line of the interface displays the OCP identification. The second line displays the setting value of overcurrent protection. Rotate the current adjustment knob to set the overcurrent protection value; When the machine is under overcurrent protection, the screen will display "ERROR OCP", and the prompt lamps OVP, NG and Short will be on at the same time. To unlock the overcurrent protection, press the LOCK key.

Summary of menu function display

BEEP（BEEP)	ON（ON)	The buzzer is on
	OFF（OFF)	The buzzer is off
POWER(POWER)	RESET（RESET)	Default settings
	LAST（LAST)	Set before shutdown
PORT(PORT)	RS232（RS232)	RS232 communication
	RS485（RS485)	RS485 communication
Baud(BAUD)	9.6K（9.6K)	Baud rate 9600
	19.2K（19.2K)	Baud rate 19200
	38.4K（38.4K)	Baud rate 38400
	57.6K（57.6K)	Baud rate 57600
	115.2K（115.2K)	Baud rate 115 200
ADDR（ADDR)	ADDR 001	The address of the machine at the time of communication is 1
RESET(RESET)	YES（YES)	Parameter reset on
	NO（NO)	Parameter reset off
COMMU(COMM	SCPI(SCPI)	SCPI instruction

U)	RTU(RTU)	MODBUS RTU command
VERSI(VERSI)	V1.005	Machine version is V1.005
	3.08.21	The machine upgrade time is August 21, 23.

Communication protocol

Protocol format

1．Serial port

Data bit: 8 bits, stop bit: 1 bit, check bit: none, baud rate: 9600, default value.

2．MODBUS protocol

This equipment uses MODBUS RTU communication format.

The device supports the following command codes: Read Multiple Writable Register Command (0x03), Read Multiple Read-Only Register Command (0x04), Write Multiple Registers Command (0x10), and Write Single Register Command. (0x06).

Read and write multiple registers. Registers with consecutive addresses can only be read and written once. If a register needs to be written, multiple register instructions can be written and the number of registers can be written to 1.

The register address is a 16-bit number in a word, as detailed in the following table.

The contents of the register are 1 word, 16 bits long, and the default is unsigned.

This device only supports fixed-point numbers, and the data related to voltage and current actually represent the number of words according to the displayed resolution, which requires the customer to change according to the number of decimal points displayed. Please check the display on the panel after the power supply is turned on for the decimal digits of voltage and current. The decimal digits are generated according to the power supply specifications and cannot be changed after leaving the factory.

For example: 50V300A power supply, 4-digit display, 2 decimal points for voltage and 1 decimal point for current. Voltage 5000 represents 50 V, current 3000 represents 300 A; 1000 V10A power supply, 5-digit display, voltage 1 decimal point, current 3 decimal points. Voltage 500 means 50 V and current 3000 means 3A.

3．MODBUS protocol interpretation

Read multiple registers

The upper computer sends			Power supply answer		
Data frame	Length	Content	Data frame	Length	Content
Device address	1 byte	1 ~ 100	Device address	1 byte	1 ~ 100
Read the instruction code	1 byte	0 x03 or 0 x04	Read the instruction code	1 byte	0 x03 or 0 x04
Register address	2 bytes	1000 ~ 2022	Number of data bytes	1 byte	Number of registers * 2
Number of registers	2 bytes	1 ~ 20	Data	N bytes	
Check code	2 bytes	CRC	Check code	2 bytes	CRC

Example 1: Take 50V300A power supply (2 decimal digits for voltage and 1 decimal digit for current. For other types of power supply, please check the decimal digits on the display interface) as an example. Query the actual output voltage and output current of the power supply. 0 X0ed8 is converted to 3800 decimal, and the voltage has 2 decimal places, representing 38 V. 0X0100 is converted to 256 decimal, and the current has 1 decimal point, representing 25.6A.

Host computer sends: 01 04 03 E8 00 02 F1 BB

Power Answer: 01 04 04 0e D8 01 00 78 C7

Write multiple registers

The upper computer sends			Power supply answer		
Data frame	Length	Content	Data frame	Length	Content
Device address	1 byte	1 ~ 100	Device address	1 byte	1 ~ 100
Write the instruction code	1 byte	0x10	Read the instruction code	1 byte	0x10

Register address	2 bytes	2000 ~ 2022	Register address	1 byte	2000 ~ 2022
Number of registers	2 bytes	1 ~ 20	Number of registers	2 bytes	1 ~ 20
Number of data bytes	1 byte	Number of registers * 2	Check code	2 bytes	CRC
Data	N bytes				
Check code	2 bytes	CRC			

Example 2: Take 50V300A power supply (2 decimal digits for voltage and 1 decimal digit for current. For other types of power supply, please check the decimal digits on the display interface) as an example. Set the voltage reference and current reference of the power supply to 38 V and 25.6A respectively. The voltage has 2 decimal places. 38 V is 3800 = 0 X0ed 8. Current has 1 decimal place, 25.6A is 256 = 0X0100.

Host computer sends: 01 10 07 D1 00 02 04 0e D8 01 00 9a 4C

Power Answer: 01 10 07 D1 00 02 10 85

Start the output

Host computer sends: 01 10 07 e00 01 02 FF FF C7 40

Power Answer: 01 10 07 e00 01 01 4B

5、CRC-16

CRC-16 adopts MODBUS RTU standard CRC algorithm, and the calculation formula is: X ^ 16 16 + X ^ 15 15 + X ^ 2 + 1.

Annex A: CRC-16 Calculation Code C is available for reference.

6. Device address

The power supply factory default device address is 0 X 01. Valid values are 1-247. 0 is the broadcast address. The method is changed by setting Register 2000.

List of register addresses and functions

Register address (decimal)	Attribute	Meaning	Notes
1000	Read only	Output voltage	
1001	Read only	Output current	
1007	Read only	Device status	See status mode
2000	Writable	Device address	
2001	Writable	Reference voltage	
2002	Writable	Reference current	
2003	Writable	Overvoltage value	
2007	Writable	Baud rate	Valid values: 0:9600, 1:19200, 2:38400 3:57600,4:115200
2014	Writable	Working mode	See operating mode
2015	Writable	Reserved	
2016	Writable	Output Control	0 is the stop output, and a non-zero value starts the output
2017	Writable	Reserved	
2020	Writable	Type of agreement	0: RTU default; 65: SCPI
2021	Writable	Reference voltage	Power-down save
2022	Writable	Reference current	Power-down save

Status, mode register

1007	**Working status**	
Number of digits	0 meaning	1 Meaning
0	Output off	Output start
1	Non-constant current mode	Constant current mode
2	Non-constant voltage mode	Constant pressure mode
3	Internal control mode	External control mode
4	Not overheated	Overheating
5	No overcurrent	Overcurrent
6	No overpressure	Overpressure
12	Reserved	Reserved
15	No fault	Breakdown

2014	**Working mode**	
Number of digits	0 meaning	1 Meaning
0	Overvoltage protection is prohibited	Overvoltage protection is allowed
2	Prohibit overcurrent protection	Allowable overcurrent protection
10	High range	Low range (custom)
11	Buzzer beeps (abnormal state)	The buzzer doesn't sound
12、13	Start without output	Direct output after all-1startup

List of instructions

[SOURce:]OUTPut[:STATe]

This command is used to turn the power supply output on or off.

Command syntax

[SOURce:]OUTPut [:STATe] <bool>

Parameter

0|1|ON|OFF

Query syntax

[SOURce:]OUTPut[:STATe]?

Return parameter

0|1

[SOURce:]CURRent

This command is used to set the power supply current value.

Command syntax

[SOURce:]CURRent <NRf>

Parameter

<NRf>

Unit

A

Query syntax

[SOURce:]CURRent?

Parameter

None

Return parameter

<NRf>

[SOURce:]CURRent:PROTection[:LEVel]

This command is used to set the upper limit current value of the overcurrent protection OCP. If the peak value of the output current is higher than the upper limit of the OCP, the output of the power supply will shut down and an alarm will sound.

Command syntax

[SOURce:]CURRent:PROTection[:LEVel]

Parameter

<NRf>

Unit

A

Query syntax

[SOURce:]CURRent:PROTection[:LEVel]?

Return parameter

<NR2>

[SOURce:]VOLTage

This command sets the value of the power supply voltage.

Command syntax

[SOURce:]VOLTage<NRf>

Parameter

<NRf>

Unit

V

Query syntax

[SOURce:]VOLTage?

Parameter

None

Return parameter

<NRf>

[SOURce:]VOLTage:PROTection[:LEVel]

This command is used to set the software voltage protection value of the power supply.

Command syntax

[SOURce:] VOLTage:PROTection <NRf>

Parameter

<NRf>

Unit

V mV uV

Query syntax

[SOURce:] VOLTage:PROTection ?

Parameter

None

Return parameter

<NRf>

[SOURce:] APPLy { < voltage value > | MIN | MAX } [, { < current value > | MIN | MAX }]

This command combines the VOLTage and CURRent commands. When the command is sent to the instrument, as long as the sent parameters are within the previously set range, the output voltage and current values are immediately output according to the parameters of the current command. The APPLy command takes effect only when the parameter is within the previously set range. If it is not within the set range, an execution error occurs.You can also use MIN or MAX as special parameters for the command: MIN will set the voltage and current to 0; MAX will set the voltage and current to the highest value of the previously set range.

Command syntax

[SOURce:]APPLy <NRf>,<NRf>

Parameter

<NRf>

Unit

V, A

Query syntax

[SOURce:]APPLy?

Return parameter

<NRf>,<NRf>

MEASure[:SCALar]:CURRent[:DC]?

This command reads the input current of the power supply.

Command syntax

MEASure[:SCALar]:CURRent[:DC]?

Parameter

None

Return parameter

<NRf>

Returns the parameter units

A

Example

MEAS:CURR?

MEASure[:SCALar]:VOLTage[:DC]?

This command reads the input voltage of the power supply.

Command syntax

MEASure[:SCALar]:VOLTage[:DC]?

Parameter

None

Return parameter

<NRf>

Returns the parameter units

V

Example

MEAS:VOLT?

MEASure:OUTPut:CONDition?

This command is used to measure the current power supply operating state, CV state, or CC state

Command syntax

MEASure:OUTPut:CONDition?

Parameter

None

Return parameter

CV | CC

Annex A: CRC-16 Calculation Code C

```
#define u8 unsigned char
#define u16 unsigned int
u16 CRC16(u8 *buf, u8 len)
{
    u16 crc = 0xFFFF;
    u8 i = 0;
    u8 j = 0;
    u8 Data = 0;

    for (j = 0; j < len; j++)
    {
        crc=crc^*buf++;
        for (i=0; i<8; i++)
        {
            if((crc&0x0001) > 0)
            {
                crc=crc>>1;
                crc=crc^0xa001;
            }
            else
            {
                crc=crc>>1;
            }
        }
    }

    return crc;
}
```

Appendix B: Power Supply Specifications and Wire Reference Table

Reference table for input lead and power supply:

Power supply power (KW)	Input power	Sectional area of input conductor (mm2)
1.5	AC 220V	1.0
1.5 - 2	AC 220V	2.5
2 - 4	AC 220V	4.0
4 - 6	AC 220V	6.0
4 - 7.5	AC 380V	4.0
7.5 - 15	AC 380V	6.0
15 - 25	AC 380V	10.0
25 - 35	AC 380V	16.0
35- 50	AC 380V	25.0

The power listed in the above table is the actual power consumption, power efficiency, power factor, etc. Please select the appropriate wire according to the actual situation. For reference only.

Output current and wire reference table:

Conductor cross-sectional area (mm 2)	1.5	2.5	4	6	10	16	25
Maximum carrying current (A)	15	23	32	40	63	85	100

The above table lists the current carrying capacity of a single GB copper conductor at an operating temperature of 30 ° C. Please select the appropriate wire according to the actual situation. For reference only.

Warranty Card

What the warranty covered:

If the machine break down due to its defectiveness, MATRIX will provide free maintenance during warranty period. If the machine break down due to wrong operation or carelessness, then Matrix provide paid service within warranty period.

How long does this warranty last:

This warranty lasts for 3 years from the date of original purchase of all MATRIX branded products.

Who is covered:

This warranty covers only the original purchaser of this product. This warranty is not transferable to subsequent owners or purchasers of this product.

What do customers need to do to get repairs/service under the warranty policy?

If the machine get problem, please contact our local distributor. If you cannot find the local distributor, you can contact us directly, our email is service@szmatrix.com, our telephone No. is 0086 755 2836 4276.

What information do customers need to supply?

Model No.	
Serial No.	
Problem description	
Picture	
Video if necessary	