

DPS100 User Manual

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1 Product Introduction

1.1 Product Features

DPS100 is a high-performance digital adjustable DC step-down stabilized power supply, which has the following main features:

- Type-C and DC input portSupport DC5~32V wide range power supply
- Hardware-controlled constant-current and constant-voltage output , output voltage adjustable from 0V, current adjustable from 0A
- Low ripple, high efficiency

- Supports 10 groups of preset outputs for direct recall very convenience
- Support input voltage and input current measurement, convenient to monitor the input status.
- Input support undervoltage protection and reverse connection protection
- The output supports over-voltage, over-current, overload, over-temperature, reverse polarity and other protections
- The output supports anti-backfill protection to avoid damage to the power supply equipment
- High resolution screen (320x240) , display rich and comprehensive content
- Multiple buttons, easy to operate
- Small size, easy to carry

Product Parameters

Input parameters	DC5.0~32V, 30mA~5A
Protocols supported by Type-C ports	PD3.0/2.0, BC1.2 etc...
Interface of output	4.0mm banana head connector
Output range	Voltage: 0~30V Current: 0~5A Power: 100W(Max)
Resolution of settings	Voltage: 10mV Current: 1mA
Accuracy of settings	Voltage: $\leq 0.1\% \pm 5\text{mV}$ Current: $\leq 0.1\% \pm 3\text{mA}$
Resolution of measurement	Input voltage: 10mV Input current: 1mA Output voltage: 10mV Output current: 1mA
Accuracy of measurement	Input voltage: $\leq 0.2\% \pm 10\text{mV}$ Input current: $\leq 0.1\% \pm 5\text{mA}$ Output voltage: $\leq 0.1\% \pm 10\text{mV}$ Output current: $\leq 0.1\% \pm 5\text{mA}$
Load regulation rate	Output voltage: $\leq 0.05\% \pm 5\text{mV}$ Output current: $\leq 0.1\% \pm 3\text{mA}$
Power regulation rate	Voltage: $\leq 0.05\% \pm 5\text{mV}$ Current: $\leq 0.1\% \pm 3\text{mA}$
Ripple and noise	Voltage: $\leq 2\text{mVrms}$, 10mVp-p Current: $\leq 1\text{mA rms}$, 3mA p-p
Output temperature coefficient	Voltage: $\leq 200\text{ppm}$ Current: $\leq 200\text{ppm}$
Full load efficiency	$\leq 97\%$ @100W(30V, 3.33A)
Working environment	0℃~40℃, 0~75%RH
Size/weight	110mm*70mm*20mm / 100g

1.2 Safety Precautions

1、The input voltage exceeding 36V may cause permanent damage and explosion of the device, please do not input the voltage beyond the withstand voltage range of the

instrument. It is recommended to use a 5V~32V power supply.

2、The input voltage source should be a DC power supply, and do not input AC power or reverse the polarity of the input port.

3、The DPS100 operates in buck mode and needs to ensure that the input voltage is higher than the output voltage. If the set output is greater than the input voltage, the output voltage will be maladjusted and is close to the input voltage.

4、When the device supplies power to inductive load and capacitive load, it is recommended to connect the load first, and then turn on the DP100 output!

5、When the equipment is high-voltage output (>20V), please do not perform the short-circuit test repeatedly, otherwise the equipment may be damaged!

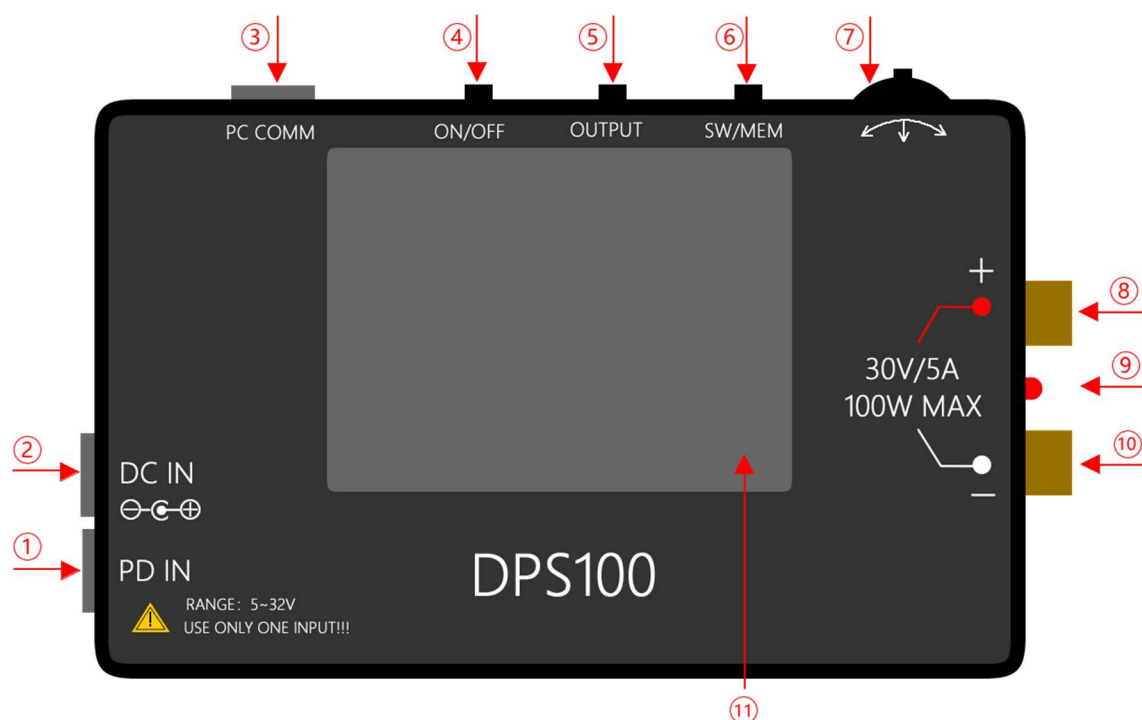
6、When the equipment is high-power output, there will be a certain degree of heating, which is a normal phenomenon, and it is recommended to use it in a well-ventilated environment.

7、The power supply interface (Type-C) supports PD fast chargers, and the default power supply voltage is the highest voltage that can be output by fast chargers.

8、Some PD fast charger requirements are stricter, if the internal input capacitor of the power supply is still stored, it will lead to the failure of deception, in this case, unplug the power supply, and wait for the power input capacitor discharge to complete (3~5 minutes), and then connect to the power supply to use.

2 Quick Start

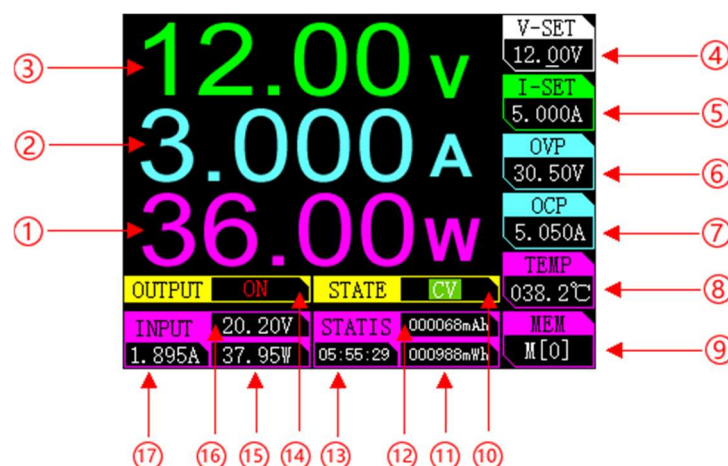
2.1 Description of appearance:



1. TYPE-C power supply interface

2. DC power supply interface (positive inside and negative outside, positive diameter Φ 2.5mm)
3. PC communication interface, which can be used to update the firmware.
4. Power switch button, short press to turn on in the shutdown state, short press to turn off in the boot state.
5. Output control button, short press to turn on/off output, long press to switch between digital and waveform interface.
6. Switch and preset edit buttons, switch between voltage setting, current setting, overvoltage setting and overcurrent setting under the main interface, and the white label is the current selection. Press and hold to enter the preset group editing interface.
7. Three-way buttons, multi-function buttons, have different functions in different interfaces.
8. 4mm banana socket, positive output.
9. Output indicator LED.
10. 4mm banana socket, negative output
11. 2.4-inch TFT LCD screen, resolution 320*240

2.2 Main interface



1. Output power, indicating the output power of the current device
2. Output current, which indicates the output current of the current device
3. Output voltage, which indicates the output voltage of the current device
4. The output voltage setting value, select the bit to be set through the three buttons, and then confirm to enter the setting state
5. Output constant current setting value,
6. Overvoltage protection (OVP) voltage setting value
7. Overcurrent protection (OCP) constant current setting value
8. The temperature of the position where the core power device of the equipment is located
9. The preset group currently in use. The device supports 10 sets of preset values, numbered from 0 to 9. Each set of preset values includes output voltage setting, output constant current setting, over-voltage protection setting, and over-current protection setting.
10. The current working state of the equipment. CV is displayed in constant voltage output mode and CC is displayed in constant current output mode. If a protective action occurs, the device shuts down the output and displays the error type at this location. Includes Over-

Voltage Protection (OVP), Over-Current Protection (OCP), Over-Power Protection (OPP), Over-Temperature Protection (OTP), Input Under Voltage Protection (UVP), Output Reverse Polarity Protection (RVP), Output Backfill Protection (RCP)

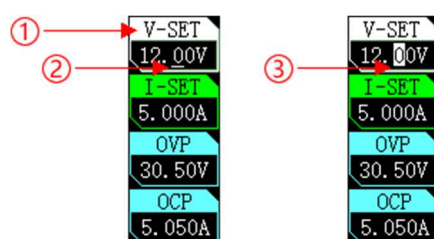
11. Output energy statistics, which is used to evaluate the energy consumption of the equipment from the start-up time
12. Output capacity statistics, when used as a charging device, it is used to evaluate the battery capacity.
13. The boot time represents the running time from boot to the present
14. Output status, ON means the output is on, OFF means the output is off
15. Input power, indicating the current input power of the device.
16. The input voltage represents the current input voltage of the device.
17. Input current, indicating the current input current of the equipment.

2.3 Setting of voltage and current

With the help of the toggle key (SW/MEM), three-way buttons and four tabs on the main interface, the output voltage, output current, over-voltage protection, over-current protection and other items can be set very intuitively and quickly.

2.3.1 Select the setting item

For example, if you click the toggle button (SW/MEM) to cycle between the output voltage, output current, overvoltage protection, and overcurrent protection, the selected settings will turn white, and the setting number in the tab will be underlined in white.



2.3.2 Select the setting digit

Toggle the direction button left and right, and the white underline will cycle through different digits.

2.3.3 Go into Settings

Tap the three-way button down, and the digit you just selected will be white, indicating that it has entered the setting state. In this state, the arrow keys are toggled left and right, and the corresponding number increases (fluctuates to the right) or decreases (fluctuates to the left).

If the output is turned on at this time, the output is updated in real time with the adjustment of the set value,

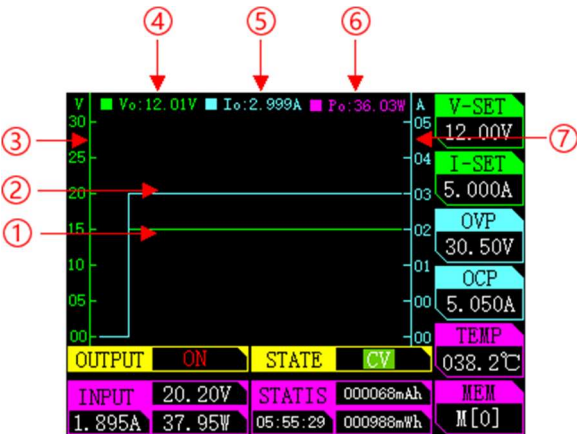
When there is a digital inversion to select the set state, press the down button of the three-way button, or press the switch key to exit the setting state

2.3.4 Enable output

Press the OUTPUT button to enable the output, and at the same time light up the output LED indicator

2.3.5 Interface switching

Press and hold the OUTPUT button to switch between digital interface mode and waveform interface mode, and the waveform mode is shown in the figure below. The following describes the contents of related item representations:



1. Output voltage waveform
2. Output current waveform
3. Output voltage coordinate axis
4. Output voltage value
5. Output current value
6. Output power value
7. Output current coordinate axis

2.4 Preset Group Operations

2.4.1 Introduction

As shown in the figure below, the device stores a total of 10 sets of preset values, numbered 0-9, and uses the left and right arrow keys to cycle through selection. Each set of preset values contains 4 parameters, from left to right: voltage setting (V-SET), over-voltage protection (OVP), constant current setting (I-SET), and over-current protection (OCP).

Key->	Exit	Load	Save	Key->	Exit	Load	Save
V-SET OVP I-SET OCP				V-SET OVP I-SET OCP			
MEM[0]:12.00V, 30.50V, 5.000A, 5.050A				MEM[5]:06.00V, 30.50V, 3.000A, 5.050A			
MEM[1]:02.00V, 30.50V, 1.000A, 5.050A				MEM[6]:07.00V, 30.50V, 3.500A, 5.050A			
MEM[2]:03.00V, 30.50V, 1.500A, 5.050A				MEM[7]:08.00V, 30.50V, 4.000A, 5.050A			
MEM[3]:04.00V, 30.50V, 2.000A, 5.050A				MEM[8]:09.00V, 30.50V, 4.500A, 5.050A			
MEM[4]:05.00V, 30.50V, 2.500A, 5.050A				MEM[9]:10.00V, 30.50V, 5.000A, 5.050A			
Preset Settings				Preset Settings			

2.4.2 Enter the editing interface

Under the main interface, press and hold the SW/MEM button to enter the preset group interface.

2.4.3 Load presets

If you want to directly call the ready-made output configuration, you can use the arrow keys to highlight the corresponding item, and then click the OUTPUT key (the function is LOAD at this time), then the current configuration will be loaded into the main interface, and the index value under the MEM label in the lower right corner of the main interface will change to the index number just selected. The following figure shows the display of the MEM label on the main interface after the preset value of No. 3 is selected.



2.4.4 Preset Editing

There are two ways to edit preset values: one is to edit directly on the preset group page, and the other is to load the items to be edited to the main interface for editing and automatically save them.

1、Edit in page of preset group

As shown in the image below, first toggle the arrow keys to highlight the item you want to use. Press the arrow key, the highlight disappears, and an underline appears under the item to be edited

Key->	Exit	Load	Save	Key->	Exit	Load	Save
V-SET OVP I-SET OCP				V-SET OVP I-SET OCP			
MEM[0]:12.00V, 30.50V, 5.000A, 5.050A				MEM[0]:12.00V, 30.50V, 5.000A, 5.050A			
MEM[1]:02.00V, 30.50V, 1.000A, 5.050A				MEM[1]:02.00V, 30.50V, 1.000A, 5.050A			
MEM[2]:03.00V, 30.50V, 1.500A, 5.050A				MEM[2]:03.00V, 30.50V, 1.500A, 5.050A			
MEM[3]:04.00V, 30.50V, 2.000A, 5.050A				MEM[3]:04.00V, 30.50V, 2.000A, 5.050A			
MEM[4]:05.00V, 30.50V, 2.500A, 5.050A				MEM[4]:05.00V, 30.50V, 2.500A, 5.050A			
Preset Settings				Preset Settings			

Toggle the arrow keys left and right to select the edit item of the set value, then press the arrow keys to change the long underscore to a short underline, and then toggle the arrow keys left or right to select which digit of the item to set. Press the arrow key when the underline is below the position to be set, then the color of the digit to be set is inverted, and then the number can be adjusted by topping the arrow keys left and right.

Once set, press the arrow keys or click ON/OFF (the Exit function indicated on the screen) to exit the editing state.

Key->	Exit	Load	Save
V-SET	OVP	I-SET	OCP
MEM[0]:	12.00V, 30.50V, 5.000A, 5.050A		
MEM[1]:	02.00V, 30.50V, 1.000A, 5.050A		
MEM[2]:	03.00V, 30.50V, 1.500A, 5.050A		
MEM[3]:	04.00V, 30.50V, 2.000A, 5.050A		
MEM[4]:	05.00V, 30.50V, 2.500A, 5.050A		
Preset Settings			

Key->	Exit	Load	Save
V-SET	OVP	I-SET	OCP
MEM[0]:	12.00V, 30.50V, 5.000A, 5.050A		
MEM[1]:	02.00V, 30.50V, 1.000A, 5.050A		
MEM[2]:	03.00V, 30.50V, 1.500A, 5.050A		
MEM[3]:	04.00V, 30.50V, 2.000A, 5.050A		
MEM[4]:	05.00V, 30.50V, 2.500A, 5.050A		
Preset Settings			

2、Load to the main interface to edit

The second method is to highlight the preset group you want to edit, and click the OUTPUT button (this is the Load function indicated on the screen) to load the preset group into the main interface as the current output setting. In this case, the parameter modification on the main interface will be saved to the corresponding preset group.

2.4.5 Preset value saving

In the edited parameters of the preset group screen, click the SW/MEM key (in this case, the save function indicated on the screen). The newly modified parameter value will be saved.

3 System Settings

3.1 Go Into System Settings Menu

Press and hold the three-way button on the main interface to enter the system settings interface, and click the Exit button to exit the system settings, as shown in the following figure.

Key->	Exit	Output	Switch
1.Over Pwr Prtc.		105.0W	
2.Over Tmp Prtc.		085℃	
3.Disp Mode		Waveform	
4.PD Voltage		20V	
5.Backlight		80%	
6.Beep Vol		80%	
System Settings			

Key->	Exit	Output	Switch
7.Language		EN	
8.Theme Color		White	
9.Temp Unit		Celsius	
10.Device info		V1.0_20240715	
11.Factory Def			
12.Calibrate			
System Settings			

3.2 System Settings Overview

Menu items	Function	Factory default settings	Adjustable range or options
1、Overpower protection	Set the output power protection value, more than this power will cut off the	105.0W	0.1~105W

	output		
2、Overheat protection	Set the device temperature protection value, beyond which the output will be cut off	85°C	40~85°C
3、Display mode	Select either digital mode or waveform mode	Digital mode	<ul style="list-style-type: none"> ◆ Digital ◆ Waveform
4、PD voltage	Set the output voltage of the PD device	The maximum voltage of the supported power supply device	<ul style="list-style-type: none"> ◆ 9V ◆ 12V ◆ 15V ◆ 20V
5、Backlight	Set the brightness of the screen backlight	80%	10%~100%, step 10%
6、Volume	Set the volume	80%	mute(0%)~100%, step 10%
7、Language	Interface language selection	English	<ul style="list-style-type: none"> ◆ English ◆ Chinese
8、Theme colors	Interface theme color selection	White	<ul style="list-style-type: none"> ◆ White ◆ Black ◆ Blue ◆ Green ◆ Red
9、Temperature unit	Set the temperature unit used by the system	Celsius	<ul style="list-style-type: none"> ◆ Celsius ◆ Fahrenheit
10、Version information	Current software version_release date		
11、Factory reset	Restore the configuration parameters to factory defaults		
12、Calibration	The displayed values are calibrated		
13、Exit	Exit system settings		

3.3 Overpower Protection

This function can set the maximum power allowed output of the device to protect the safety of the powered device. When the power consumption of the device exceeds the set value, the output will be cut off and an OPP error will be reported.

When adjusting the parameters, first toggle the three-way button left and right to highlight the over-power setting item, and then press the confirmation button to enter the position selection state, the selected digits will appear underlined, press the three-way button after selecting the digits to be edited, and the set bits will become inverted, at this time, the three-way buttons can be toggled left and right to modify the settings, and the range that can be set is 0.1W~105.0W.

In the editing state, click the three-way button continuously to exit the setting.

Key->	Exit	Output	Switch
1. Over Pwr Prtc.		105.0W	
2. Over Tmp Prtc.		085℃	
3. Disp Mode		Waveform	
4. PD Voltage		20V	
5. Backlight		80%	
6. Beep Vol		80%	
System Settings			

Key->	Exit	Output	Switch
1. Over Pwr Prtc.		105.0W	
2. Over Tmp Prtc.		085℃	
3. Disp Mode		Waveform	
4. PD Voltage		20V	
5. Backlight		80%	
6. Beep Vol		80%	
System Settings			

3.4 Over-temperature protection

This function can set the maximum allowable temperature of the core power device of the device to protect the safety of the device, when the power consumption of the device exceeds this set value, the output will be cut off and an OTP error will be reported. The parameterization method refers to overpower protection.

Key->	Exit	Output	Switch
1. Over Pwr Prtc.		105.0W	
2. Over Tmp Prtc.		085℃	
3. Disp Mode		Waveform	
4. PD Voltage		20V	
5. Backlight		80%	
6. Beep Vol		80%	
System Settings			

Key->	Exit	Output	Switch
1. Over Pwr Prtc.		105.0W	
2. Over Tmp Prtc.		085℃	
3. Disp Mode		Waveform	
4. PD Voltage		20V	
5. Backlight		80%	
6. Beep Vol		80%	
System Settings			

3.5 Settings for Other Miscellaneous Items

The settings of the other items may be similar to the previous two items, both of which are selected by clicking the arrow keys in the highlighted state, and then toggling the arrow keys left and right to adjust the parameters, and after the adjustment is completed, the parameters will automatically take effect and be saved after clicking Exit or the arrow keys to exit the editing state.