CNC DC Voltage rise and fall ZK-5KX

Constant voltage constant current adjustable stabilized voltage supply

Multiple protection

- ✓ Anti reverse connection
- ✓ Under voltage
- ✓ Over current
- ✓ anti-backflow
- ✓ Over voltage
- ✓ Over power

Solar c-harging

Modification of com-puter power supply

input voltage	6.0-36V
output voltage	0.6-36V

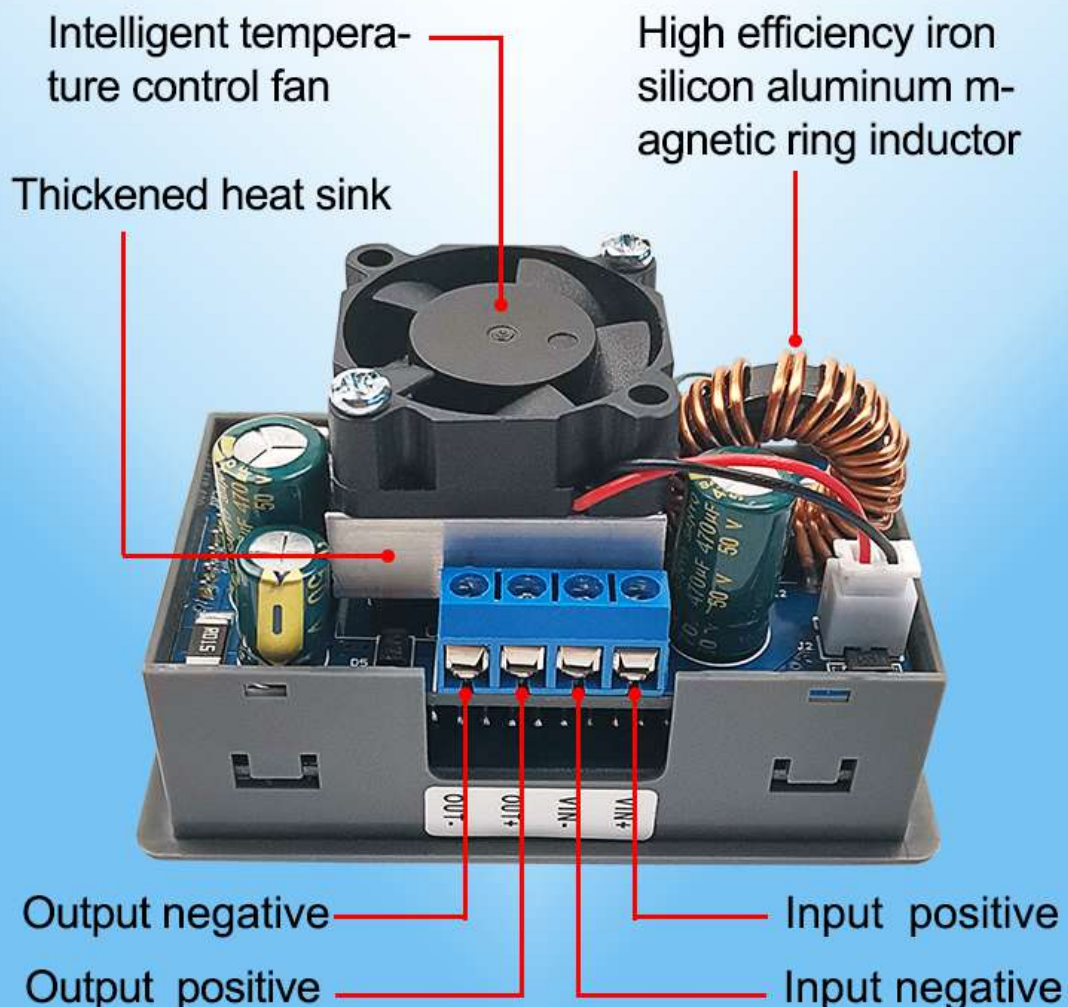| Output current	5A
output power	80W

highlights

1. LCD can display input/output voltage/temperature, output current/output power/output capacity/output time;
2. CNC adjustment, accurate and fast, can boost and lower voltage, output voltage can be adjusted at will from0.6-36 V, limit current 0-5A can be adjusted at will;
3. Anti-reverse connection protection of input end, which will not burn out;
4. Anti-reverse irrigation at the output end, no additional anti-reverse irrigation diode is needed to charge the battery;
5. The module can be set to open/close by default;
6. Multiple software protection mechanisms are available,and the protection threshold is adjustable.When the working parameters of the module exceed the protection threshold the output will be automatically closed.
7. Output ripple is small and PI filter is available;
8. Thicken radiator fins,two way ventilation, better heat dissipation effect.
9. Intelligent temperature control fan, automatic start and stop.When the temperature is greater than 50 ℃ or the current is greater than 1A, the fan will start automatically.

Intelligent temperature control fan

High efficiency iron silicon aluminum magnetic ring inductor

Thickened heat sink

Output negative

Output positive

Input positive

Input negative

Parameters

Input voltage: 6.0-36V

Output voltage: 0.6-36V

Output current: MAX 5A

Output power: 80W

Voltage display resolution: 0.01V

Current display resolution: 0.001A

Conversion efficiency: about 88%

Soft start: yes (with high power and load module may fail when starting)

Protection mechanism:

    Input anti-reverse connection;

    Output anti-reverse irrigation;

    Input undervoltage protection (5.8-36V adjustable, default 5.8V)

    Output overvoltage protection(0.6-36V adjustable, default 36V)

    Output overcurrent protection (0 -5A adjustable, default 5A)

    Overpower protection(0 -80W adjustable, default 80W)

    Overtemperature protection (80-110℃ adjustable, default 110℃)

    Timeout protection (0 -100h adjustable, off by default)

    Super capacity protection (0 -60Ah adjustable, off by default)

Operating frequency: 120KHZ

Dimensions: length * width * height 79mm*43mm*48mm
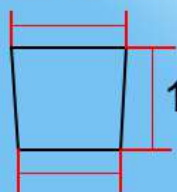
Weigh: about 119g (including package)

79mm

43mm

48mm

Card slot

72mm

39mm

Card slot size

12.40mm

12.17mm

12.14mm

For embedded installation, panel opening size is 75mm*39mm

Height of the slot 3.34mm

Net weight:about 95g

Key description

SW button

Constant current indicator

Output indicator

CC **ON**

OUT **12.00** V
0.000 A

Buck-Boost ZK-5KX ON/OFF

U/I button

Rotary encoder
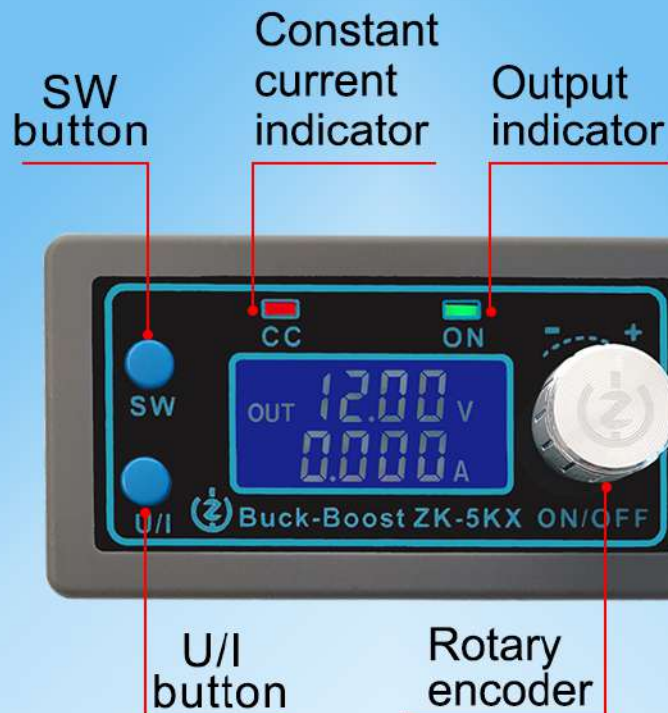
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display output(OUT)/input(IN)

Upstream displays input/output voltage/temperature

CC **ON**

SW OUT **12.00** V
0.000 A

U/I Buck-Boost ZK-5KX ON/OFF

Downlink display
Electric current A/Power W/Capacity Ah/Energy Wh/Time h

Upstream displays

OUT **23.84** V
0.986 A

IN **23.87** V
0.002 Ah

0110 ℃
0.986 A

output voltage (display OUT)

input voltage (display IN)

temperature (display ℃)

Downlink display

OUT **23.84** V
0.986 A

OUT **23.84** V
023.3 W

IN **23.87** V
0.002 Ah

IN **23.91** V
0:13 h

Output current(A)   output power(W)   Output capacity(Ah)   Output time(h)

Interface / KEY	normal interface	regulating voltage and constant current	Set the parameters
SW	Short press: Downlink switching Current a/power W/capacity ah/Time h Long press: LCD upstream switching Input voltage / output voltage	NULL	Short press: switch the parameters to be set Long press: null
U/I	Short press: enter the interface of regulating voltage constant current Long press: enter the interface of setting parameters	Short press: Switch between adjusting voltage value, adjusting constant current value and exiting regulation interface Long press: null	Short press: null Long press: exit setting parameter interface and return to normal interface
Rotary encoder	Short press: switch output on /off state Long press: Zero correction Left rotation: output voltage decreases Right rotation: output voltage increases	Short press:adjust the parameter shift accordingly Long press: null Left rotation:the corresponding bit of adjustment parameter decreases Right rotation:the corresponding bit of adjustment parameter increases	Short press: adjust parameter shift Long press: If the parameter allows turning on and off, switch the parameter to turn on and off Left rotation: the corresponding bit of adjustment parameter decreases Right rotation: the corresponding bit of adjustment parameter increases

Note: after the product triggers the protection mechanism, the output will automatically turn off, the LCD will display the protection code, and press any key to exit the protection interface.

Interface description

Normal Interface

output voltage	output voltage	intput voltage	intput voltage
OUT 23.84 V / 0.986 A	OUT 23.84 V / 023.3 W	IN 23.87 V / 0.002 Ah	IN 23.91 V / 01:13 h
output current	output power	output capacity	output time

Interface for setting voltage and constant current

OUT 12.00 V ← Set output voltage

SET 4.000 A ← Set limiting current

Interface to set parameters

Normally open	Normally closed	Under voltage	Over voltage	Over current
OPEN / SET ON	OPEN / SET OFF	05.80 V / SET LUP	31.00 V / SET OUP	OCP / SET 4.100 A

Over power	Over temperature	Overcapacity OFF	Overcapacity	Timeout OFF
OPP / SET 50.00 W	0110 ℃ / SET OrP	OAP / SET OFF	OAP / SET 60.00 Ah	OHP / SET OFF

Timeout	Calibration IN voltage	Calibration OUT voltage	Calibration OUT current
OHP / SET 99:59 h	IN 17.08 V / SET CAL	OUT 12.00 V / SET CAL	OUT CAL / SET 4.000 A

Protection Interface

Under voltage Protection	Under voltage Protection	Over current Protection	Over power Protection
LUP	OUP	OCP	OPP

Over capacity Protection	Timeout Protection	Over temperature Protection
OAP	OHP	OrP

1.Switch display parameters

In the normal interface, press SW to switch the display below the display screen, and switch the display content between current A power W capacity Ah time h.Long press SW button to switch the uplink display on the display screen and switch the display content between input voltage (IN) output voltage (OUT) temperature (℃).

Short press SW button:
Toggle screen downlink display, in turn loop toggle.

current A	power W	capacity Ah	time h

Long press SW button:
Switch the display on the top line

output voltage OUT	input voltage IN	temperature ℃

2.Set output voltage

Press U/I button in the normal interface to enter the interface of setting voltage constant current.It can be seen that a certain digit of the output voltage value is flashing. Rotate the encoder left and right to adjust the major and minor.Short press the rotary encoder to choose which bit of output voltage to set.After setting, press U/I button 2 times to return to the normal interface.Or automatically return to the normal interface after stopping operation for 10s.

Short press U/I button: Set output voltage

← Set output voltage

3.Set constant current value (that is, the maximum current value allowed to output by the module)

Press U/I button in the normal interface to enter the setting voltage constant current interface.Then press U/I button and switch to setting constant current value. You can see a bit of the setting constant current value flashing. Rotate the rotary encoder left and right to adjust the major and minor.Short press the rotary encoder to choose which bit to set the constant current value.After setting, press U/I to exit the setting voltage constant current interface and return to

Short press U/I button:
Enter the setting voltage constant current interface, and then press the U / I button

← Set limiting current

4.Set the default on/off state of module power-on

Long press U/I in the normal interface to enter the parameter setting interface.You can see that it shows "OPEN OFF" or "OPEN ON". "OPEN OFF" means the output is turned OFF by default when power is ON, and "OPEN ON" means the output is turned ON by default when power is ON.Long press rotate encoder to switch two states.After setting, long press U/I to return to the normal interface.

Long press U/I button:
Enter the parameter setting interface

OPEN ON
Normally open

OPEN OFF
Normally closed

5.Setting of protection parameters on state and threshold

Long press U/I to enter the parameter setting interface in the normal interface.Press SW until the protection you want appears.LUP -- undervoltage protection threshold;OUP -- overvoltage protection threshold;OCP -- overcurrent protection threshold;OPP -- over power protection threshold;OAP -- ultra-capacity protection threshold;OHP timeout protection threshold;OTP -- overtemperature protection threshold.Short press rotate encoder to select which bit you want to set the protection parameter.Long press the rotary encoder to set the protection parameters on or off (only timeout protection and supercapacity protection can be set to turn on/off, and other protection parameters are turned on by default.).Rotate the encoder left and right to make the parameters bigger and smaller.After setting, long press U/I to return to the normal interface.

Long press U/I button:
Enter the parameter setting interface

OPEN	OPEN
SET ON	SET OFF

Short press SW button:
Switch the protection parameters to be set

05.80 v	3.100 v	OCP	OPP
SET LUP	SET OUP	SET 4.100 A	SET 50.00 W
LUP	OUP	OCP	OPP
Under voltage	Over voltage	Over current	Over power

OAP	OAP	OHP	OHP
OFF	SET 60.00 Ah	OFF	SET 99:59 h
SET		SET	
OAP OFF	OAP	OHP OFF	OHP
Overcapacity OFF	Overcapacity	Timeout OFF	Timeout

0110 ℃
SET OTP
OTP
Over temperature

Calibration and zeroing

1.Current zero calibration

When the power module is empty, if there is a small current less than 100mA, the current zero calibration operation can be performed. The steps are as follows:

In the main interface, the current is displayed in the down line. If there is a small current display less than 100mA, press and hold the rotary encoder for more than 2S, the system will automatically carry out zero calibration.

2.Calibration output voltage

When the difference between the output voltage of the power module and the actual value is large, the output voltage can be calibrated. (pay attention to the caution of calibration, which requires certain professional knowledge or technology, and pay attention to the operation steps, so as to avoid serious errors and abnormal operation). Calibration requires calibration of two points and measurement of the actual output voltage using a multimeter or electronic load. Before calibration, set the output voltage below 20V.

The steps are as follows:

1、In the normal interface, press and hold the U / I key to enter the parameter setting interface. Press SW key briefly until the parameter interface with CAL1 appears. At this time, the lowest output voltage flickers. Short press rotary encoder to switch the selected bit.

Long press U/I button:
Enter the parameter setting interface

```
OPEN          OPEN
SET  ON       SET  OFF
```

Short press SW button:
Switch to interface with CAL1

```
OUT 12.00 V ──── Flashing here
SET CAL 1  ──── CRL1
```

2、Measure the current actual voltage with a multimeter, and adjust the rotary encoder to the actual voltage measured by the multimeter. Press and hold the rotary encoder to calibrate the first point. CAL2 is displayed on the screen

```
OUT 13.00 V
SET CAL 2  ──── CRL2
```

3、Repeat step 2. Measure the current actual voltage with a multimeter, and adjust the rotary encoder to the actual voltage measured by the multimeter. Press and hold the rotary encoder to calibrate the second point. If the number on the screen does not flash, it means that the calibration is successful and the calibration setting is completed. If the screen number still flashes, it means that the calibration has failed, and it is necessary to exit the setting and recalibrate.

3.Calibration output current

When the difference between the output current of the power module and the actual value is large, the output current can be calibrated. (pay attention to the calibration, pay attention to the operation steps, so as to avoid serious errors and abnormal operation). Calibration requires calibration of two points. A multimeter or electronic load is required to measure the actual output current.

It is better to adjust the setting current below 1A before calibration. Adjust the multimeter to the current level (greater than 5A), connect the output in series and short circuit the output.

The steps are as follows:

1、In the normal interface, press and hold the U / I key to enter the parameter setting interface. Press SW key briefly until the parameter interface below appears. At this time, the lowest output current flickers. Press the rotary encoder to switch the selected position.

Long press U/I button:
Enter the parameter setting interface

```
OPEN          OPEN
SET  ON       SET  OFF
```

Short press SW button:
Switch to the parameter interface below

```
OUT CAL 1
SET 0.500 A
```

2、Use a multimeter to measure the current actual current. Adjust the rotary encoder to the actual current measured by the multimeter. Press and hold the rotary encoder to calibrate the first point. The screen shows the following figure

```
OUT CAL 2
SET 1.000 A
```

3、Repeat step 2. Adjust the rotary encoder to the actual current measured by the multimeter. Press and hold the rotary encoder to calibrate the second point. If the number on the screen does not flash, it means that the calibration is successful and the calibration setting is completed. If the screen number still flashes, it means that the calibration has failed, and it is necessary to exit the setting and recalibrate.

Note: if the current is not accurate at constant voltage, the calibration can also be carried out under constant voltage. Adjust the setting current to the maximum of 5.000a, output voltage of 12.00v, adjust the load to change the output current. The first point is calibrated according to the appeals step, then the load is adjusted, the output current is changed, and second points are calibrated. Finally, the calibration is completed.

Cautions

1. Short connection between input IN and output OUT of the module is forbidden, or the constant current function will fail.

2. Please make sure that the power of the power supply is always greater than the power required by the output load!

3. If the module wants to output at full load, the input voltage should be above 8V. The maximum current value of the module is 5A, provided that the maximum output power is limited, such as 20V output, and the current should not be greater than 4A.

4. The module has input undervoltage protection function. The default value is about 5.8v (can be set). When the value is lower than this value, the output will be automatically disconnected (note that the voltage at the module port is lower than the undervoltage protection threshold. When the input current is relatively large, do not ignore the partial voltage on the input wire)