



PDF Series Programmable DC Power Supply

Product Brochure

Guangzhou Idealplusing information technology co., LTD

IDEALPLUSING



IDEALPLUSING

<http://www.IDELPLUSING.com>

Company Profile

We IDEALPLUSING are proud to be a solution provider rather than a pure manufacturer.

We have established close cooperation with many power supply manufacturers, with a special focus on Chinese manufacturers with less sales or less experience in overseas markets.

We IDEALPLUSING not only provide products, but also strive to provide customers with suitable power supply solutions and quotations, and help customers evaluate

Company's main products :

AC/DC, DC/DC, AC/AC, DC/AC series switching power supplies;

AC DC Power Supply, voltage from 0 to 200kv, current from 0-20k amps;

DC AC Inverter, dc voltage from 12vdc to 2000vdc, and power from 100w to 500kw;

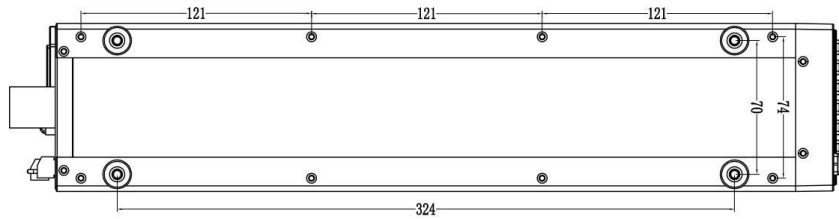
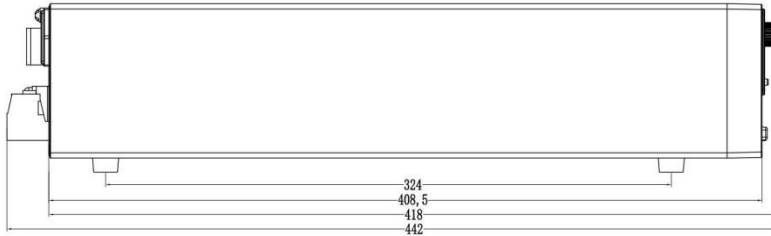
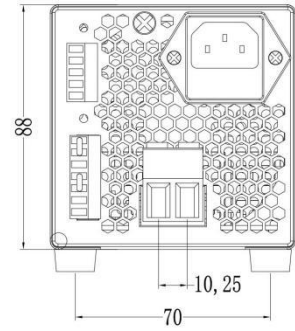
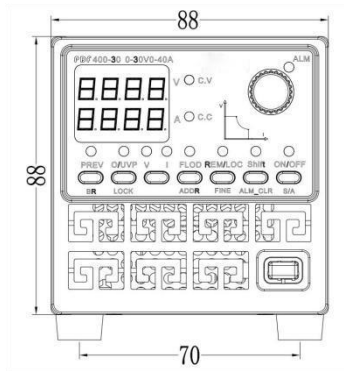
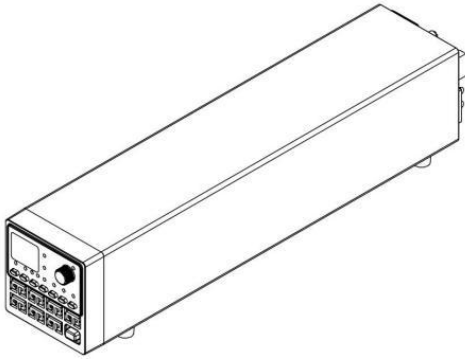
AC AC Power Source, single phase or 3 phases, 10-500hz, power supply from 1kva to 500kva;

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contents

- **IPS-PDF Series Outline Drawing** **A**
- **Overview of IPS-PDF** **1-2**
- **PDF Programmable DC Power Supply Panel Introduction** **3-4**
- **Installation of IPS-PDF** **5-6**
- **Functions and features of IPS-PDF** **7-11**
- **Sequence of IPS-PDF** **12-13**
- **Remote Operation of IPS-PDF** **14-19**
- **Technical Specifications of IPS-PDF** **20-29**

•IPS-PDF Series Outline Drawing



● Overview of IPS-PDF

Overview

This manual mainly introduces the installation, operation instructions and technical specifications of the PDF series

programmable DC power supply.

Introduction

About PDF Series 400W, 600W, 800W, 1000W

PDF series programmable DC power supplies have the widest voltage range in their class The

current utilization rate greatly increases the

application range.

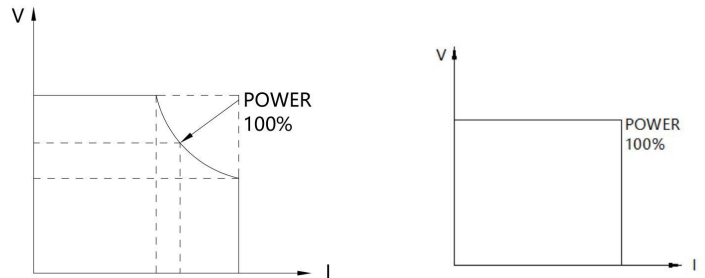
Take PDF400-30 as an example, the power is 400W, the output value is

Adjustable within 30V/40A, automatic control, voltage and current change rate,

The power ratio is three times as much. One machine can replace the previous

30V×13A/10V×40A/20V×20A and other models, reducing your repeated investment.

The PDF series 1200W power provides a full power range.



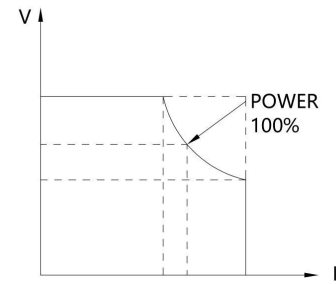
PDF Series Detailed Introduction

- 2U height 2U width light and ultra-small
- Programmable DC power supply
- High precision: built-in 12-bit/AD, D/A converter
- Fold-back current protection function
- Optional voltage/current soft start
- 4 sets of sequence files, 20 steps each
- Ultra-small body covers 400W, 600W, 800W, 1000W, 1200W
- 400W-1000W constant power output
- 1200W standard power output
- Adopt the heat dissipation design with front air intake and rear exhaust
- Automatic, safe start function

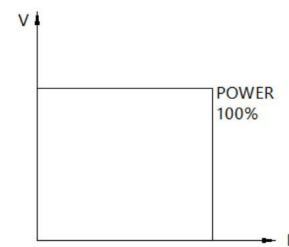


●Product model list

Output voltage	Output power and current				
	400W	600W	800W	1000W	1200W
0-30VDC	0-40A	0-40A	0-40A	0-40A	0-40A
0-40VDC	0-30A	0-30A	0-30A	0-30A	0-30A
0-50VDC	0-24A	0-24A	0-24A	0-24A	0-24A
0-60VDC	0-20A	0-20A	0-20A	0-20A	0-20A
0-80VDC	0-15A	0-15A	0-15A	0-15A	0-15A
0-100VDC	0-12A	0-12A	0-12A	0-12A	0-12A
0-150VDC	0-8A	0-8A	0-8A	0-8A	0-8A
0-200VDC	0-6A	0-6A	0-6A	0-6A	0-6A
0-300VDC	0-4A	0-4A	0-4A	0-4A	0-4A
0-400VDC	-	-	-	-	-
0-500VDC	-	-	-	-	-
0-600VDC	-	-	-	-	-



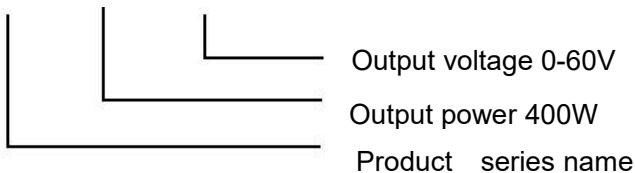
400W-1000W



1200W

●Model naming method

IPS-PDF 400 -60

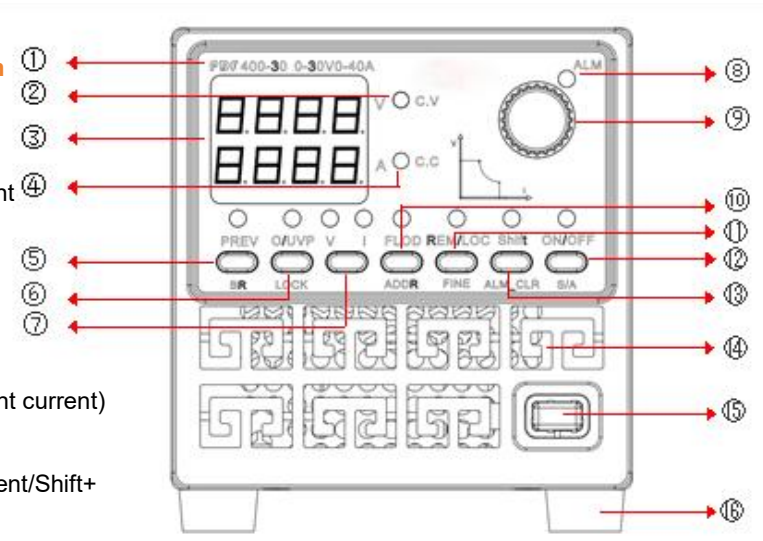


●Applications

Can be used in the manufacture of electronic components, inspection processes, reliability and durability tests, aging tests, semiconductor aging tests, and various experimental power supplies.

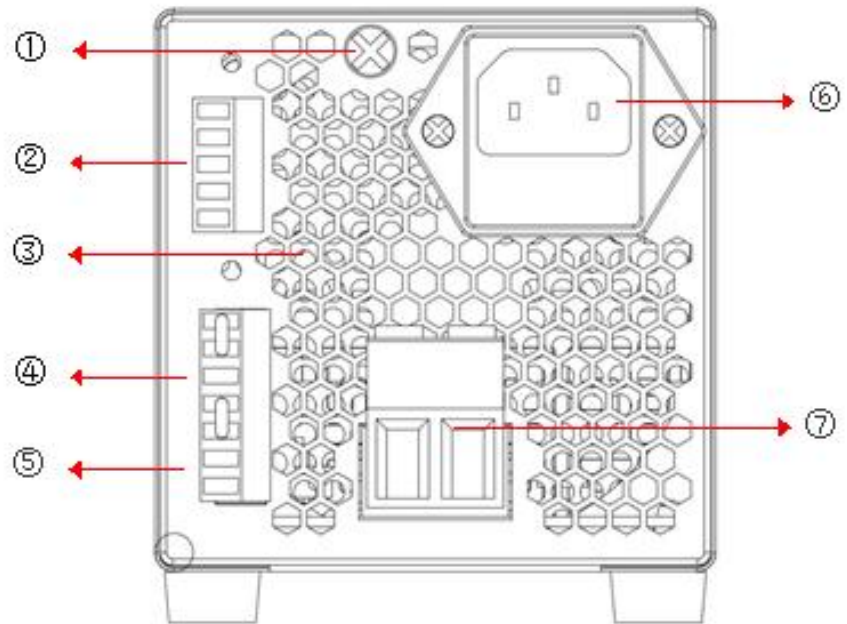
●PDF Programmable DC Power Supply Panel Introduction

PDF Programmable DC Power Supply Front Panel Introduction

- 
- ①: Product Model
- ②: CV Status Indicator (This light is on when working with constant voltage)
- ③: Voltage/Current Display (indicated by 4-digit LED)
- ④: CC Status Indicator (This light is on when working with constant current)
- ⑤: PREV Button (Displays the set values of voltage and current/Shift+ This Button can enter the baud rate setting)
- ⑥: O/UVP Button (Can switch between overvoltage protection (OVP) and output voltage lower limit Suppression (UVP) setting modes/Shift+This button can lock/unlock the front panel)
- ⑦: V/I Button (Can switch the voltage and current adjusted by the encoder)
- ⑧: ALM Indicator (Alarm Indicator)
- ⑨: Encoder (to adjust voltage and current or baud rate selection or communication address selection or switch power-on mode)
- ⑩: FLOD button (ON/OFF switch for foldback current protection/Shift+this button can display the communication address status)
- ⑪: REM/LOC button (remote local switch/Shift+voltage and current settings can be fine-tuned)
- ⑫: ON/OFF button (to switch ON/OFF for output/Shift+this button can switch power-on mode)
- ⑬: Shift button (to turn on auxiliary functions, stop operating for 5S after turning on to automatically turn off / Shift+this button can clear the alarm status)
- ⑭: Power air inlet
- ⑮: POWER power switch (ON/OFF control of AC input voltage)
- ⑯: Power rubber pad (users can remove it during fixed installation, and can use M3*8 for fixed installation)

●PDF Programmable DC Power Supply Rear Panel Introduction

- ①: Grounding stud
- ②: Communication interface (RS485 interface, A/B/GND, TRI is external trigger input, TRO is external trigger output)
- ③: Cooling vents
- ④: Voltage sampling configuration port (voltage sampling configuration port for output voltage compensation, set to local sampling at the time of shipment)
- ⑤: Parallel interface
- ⑥: AC input terminal
- ⑦: DC output terminal



● Installation

This chapter explains how to install the IPS-PDF series programmable DC power supply, and also introduces the power-on inspection procedure and application precautions.

Inspection

After receiving the IPS-PDF programmable DC power supply, please check the device as follows:

- Check whether there is any damage during transportation

If the packaging box or protective pad is seriously damaged, please contact your supplier.

If there is any missing or damaged, please contact your supplier.

- Check the whole machine

If the IPS-PDF programmable DC power supply box is damaged or working abnormally, please contact your supplier.

Cleaning

Always clean the device housing with a dry cloth, never the inside of the instrument.

Installation

The IPS-PDF programmable DC power supply dissipates heat through its heat sink. When installing, please ensure that the top and surrounding of the IPS-PDF programmable DC power supply are 20 cm away from other objects. Leave at least one meter of space to allow air circulation.

AC Input Requirements

Confirm whether the input AC voltage specification of the IPS-PDF programmable DC power supply meets the power supply voltage of your country or region. Phase AC185-265V/47-63HZ, after confirming that it is correct, power on the product.

Quick Start

5

Before turning on the IPS-PDF series programmable power supply, please confirm the following:

Whether the AC input socket meets the AC input requirements;

The power cord is connected to the AC input socket.

After pressing the power switch POWER, the screen will display the startup screen.

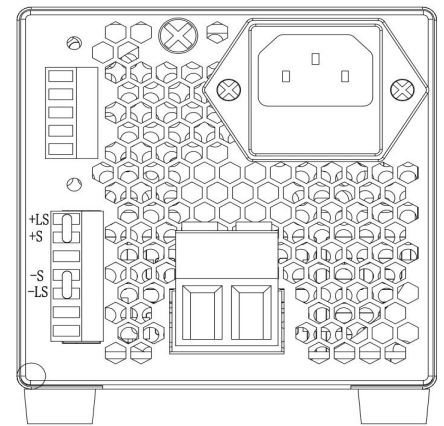
Communication connection method

The "A" and "B" terminals on the rear panel of the IPS-PDF series programmable power supply are connected to the 485 adapter card. Pay attention to the polarity of the connection when making input connections.

Remote Sampling

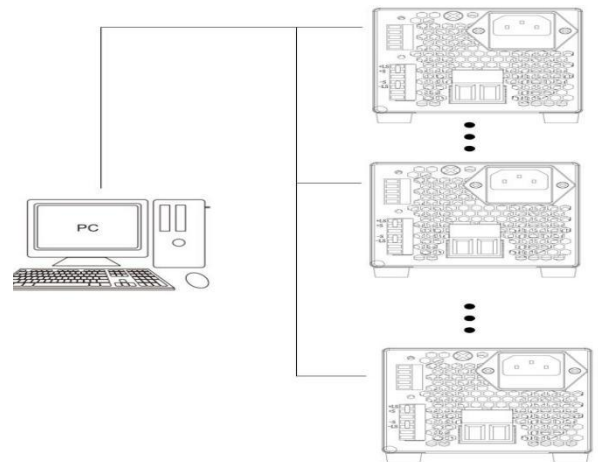
When the power supply is working, the output current will generate a voltage drop on the connecting cable, which will affect the voltage measurement accuracy of the power supply. The IPS-PDF series programmable DC power supply provides a voltage remote sampling function to compensate for the voltage drop between the

load input and the power supply output. To use voltage remote sampling, remove the +LS and +S, -LS and -S short wires in the voltage sampling configuration port on the rear panel, and connect +S and -S to the positive and negative poles of the load respectively.



Communication cascade

Communication cascading can expand the output power and support up to 30 power supplies of the same model. After connecting, the user needs to connect the PC through an adapter card: the echo information of the entire cascade group can be viewed on the PC screen; set up the entire cascade group like setting up a single power supply.

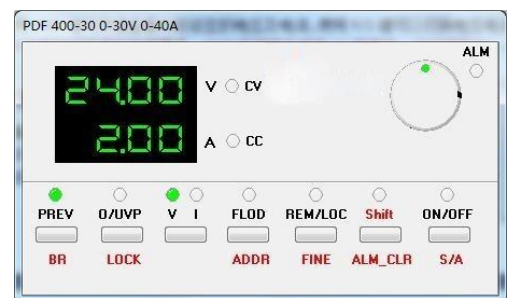


●Functions and features

This chapter describes the main functions and features of the IPS-PDF programmable DC power supply. Have a deeper understanding of IPS-PDF programmable DC power supply.

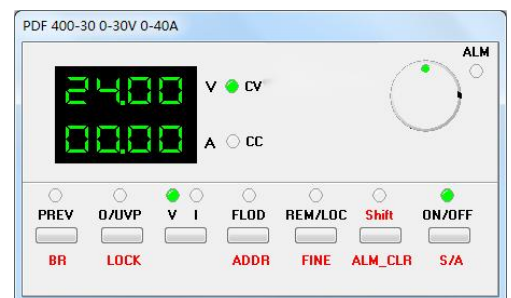
Preset voltage and current

Use the PREV key to quickly view the currently set voltage and current, use the V/I key to switch the voltage and current, and use the encoder to adjust the voltage or current. (If you do not perform any operation after using the PREV function, the PREV function indicator will go out after 5S and exit directly)



Output state adjustment voltage and current

In the output state, use the encoder to adjust the output voltage or current (when adjusting the current, press the V/I key to make the indicator light in the I state). The adjusted voltage or current is the current output voltage or current, which can be viewed using PREV.

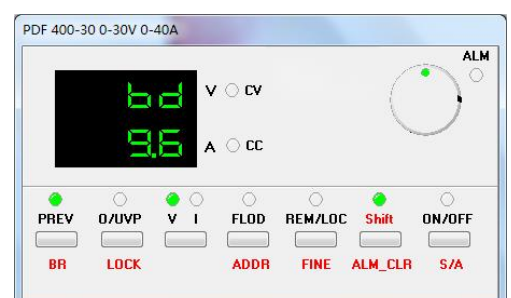


Secondary Function

The Shift key is a combination key used in conjunction with other function keys to switch to the second function. If you need to quickly exit the Shift function, press the encoder.

Baud rate

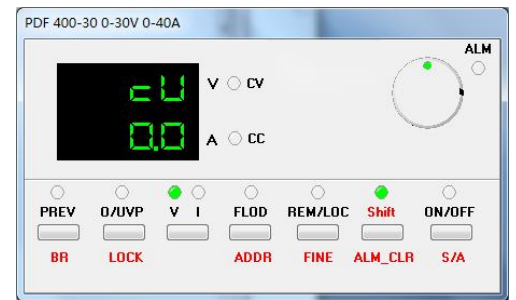
Use Shift+BR keys to set the baud rate. The baud rate is the rate at which the PDF programmable DC power supply communicates with the computer in the serial port. Please set the programmable power supply and the PC software to the same baud rate. Select the corresponding baud rate by rotating the encoder (common baud rates are 1200, 2400, 4800, 9600, 14400, 19200, 38400, 56000, 57600, 115200). After selecting the baud rate, press the encoder to confirm (automatically save after 5S without any operation).



Button Lock

Use Shift+LOCK to lock the buttons, and all buttons will be invalid (to unlock the buttons, press Shift+LOCK again). (If Shift is pressed for 5S without any operation, the light will go out and exit directly)

This function can prevent voltage and current changes caused by accidentally touching the power button and encoder.

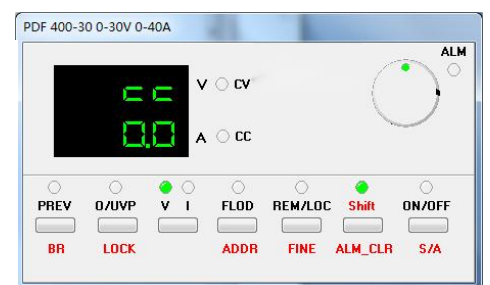


Soft start method

Use Shift+V/I to set voltage soft start or current soft start, rotate the encoder to select voltage soft start or current soft start, and press the encoder to select the soft start time.

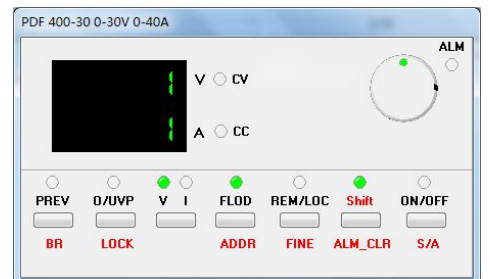
Set voltage soft start, start range: 0.0-10.0s (0 means no delay output)

Set current soft start, start range: 0.0-10.0s (0 means no delay output)



Address Setting

Use Shift+ADDR to open the address setting. Use the encoder to quickly adjust the address. The address range is between 0-255, and 0 is the broadcast address. The device address is the microcontroller or computer communicating with the IPS-PDF programmable DC power supply. (If Shift is pressed for 5S without any operation, it will go out and exit directly)

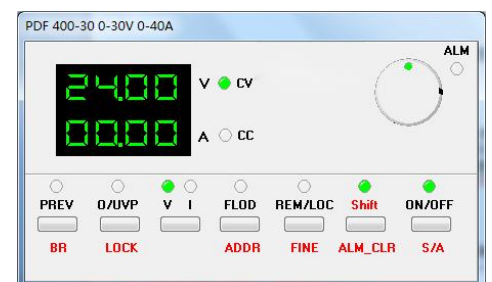


Coarse and fine adjustment

In the preset state and output state, the Shift+FINE function can be used to quickly adjust the voltage or current using the encoder. To adjust the voltage, the FINE indicator light must be in the V state, and to adjust the current, the VI indicator light must be in the I state. (After pressing Shift for 5 seconds without any operation, it will go out and exit directly)

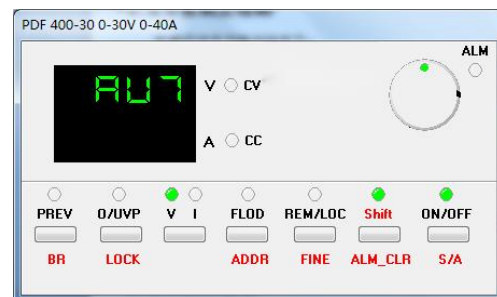
When coarse adjustment, the set value jumps according to 0.5% of the specification range.

When fine adjustment, the set value jumps according to the last word on the display.



Clear alarm

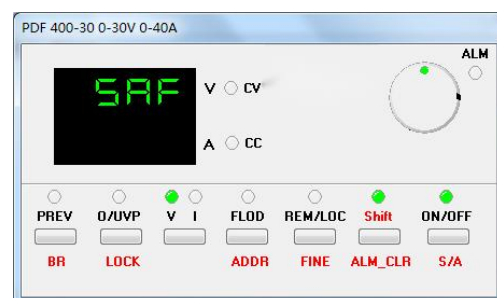
Use Shift+ALM_CLR keys to clear the alarm.



Startup Mode

Use the Shift+S/A function, and use the encoder to adjust to the AUT (memory mode) state in the figure above. The power supply is in the output state. At this time, turn off or power off. After restarting or powering on, the power supply will remain in the output state. There is no need to press the ON/OFF button. The power supply is in the non-output state. At this time, turn off or power off. After restarting or powering on, the power supply will remain in the non-output state. (After pressing Shift for 5S without any operation, it will go out and exit directly)

Use the Shift+S/A function, and use the encoder to adjust to the SAF (safety mode) state in the figure above. Regardless of whether the power supply is in the output state, turn off or power off at this time. After restarting or powering on, the power supply will remain in the OFF state. (After pressing Shift for 5S without any operation, it will go out and exit directly)



Protection features

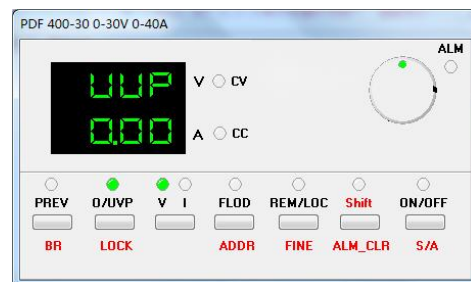
IPS-PDF programmable DC power supply provides a full range of protection functions to protect the power supply itself and the load.

Overvoltage protection and undervoltage limit

Using OVP and UVP during use can better protect your tested product

Use the OVP function to press O/UVP to adjust the encoder to set the overvoltage protection value. The overvoltage protection value must be one word greater than the preset voltage value or the output voltage value (after the voltage is set, the overvoltage value can only be set by adding one word to the set voltage value) (It is recommended to set the overvoltage value to exceed the voltage setting value by more than 5 words to avoid false operation)

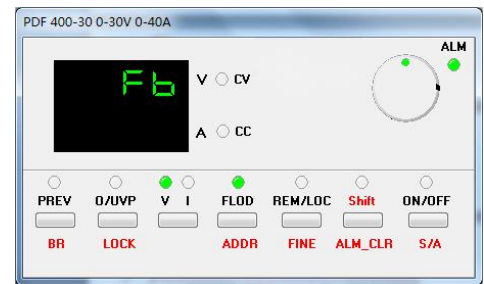
Use the UVP function to press O/UVP twice, and the encoder can set the UVP limit protection value. This lower limit protection value must be one word less than the set voltage value or the output voltage value (after the voltage is set, the lower limit protection value can only be set by subtracting one word from the set voltage value).



Foldback current protection

Use the FLOD function, press the FLOD button, when the output current reaches or exceeds the set current, the FLOD function is activated, the output is turned off, and the ALM alarm light is on. When the FLOD alarm is triggered, the ALM alarm light is on and the output is turned off. To release it, press Shift or ON/OFF twice or shut down and restart.

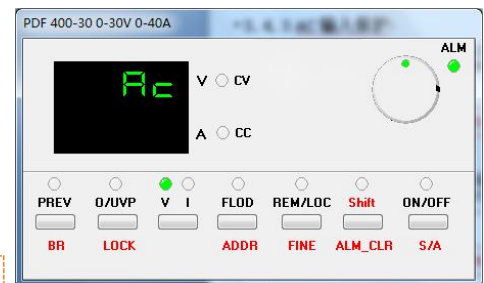
This function can be effectively used when the set current is not allowed to exceed



AC input protection

This function does not require turning on a button. When the input AC voltage is lower than 185V or higher than 265V or the machine is turned off, this function is turned on, the output is turned off, and the alarm ALM light comes on. After eliminating the problem of input AC voltage being too low or too high, turn the machine on

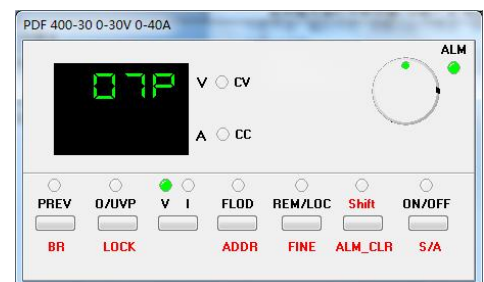
This function is a self-protection function. Do not use high voltage test



Over temperature protection

This function does not require turning on a button. When the internal temperature of the power supply exceeds 85°C, this function is turned on. The high temperature should be eliminated before use. When the OTP alarm is triggered, the ALM alarm light comes on and the output is turned off. To release it, press Shift or ON/OFF twice or shut down and restart (after cooling down).

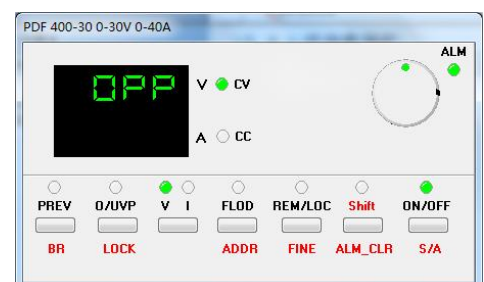
This function is a self-protection function. Do not use high temperature test



Over power protection

This function does not require turning on a certain button. When the power output reaches or exceeds 110% of the rated power, the power automatically turns on protection, turns off the output, and the ALM alarm light comes on. When the OPP alarm comes on, the ALM alarm light comes on and the output is turned off. If you need to release it, press Shift or ON/OFF twice or shut down and restart (after reducing the power).

This function is a self-protection function. Do not exceed the rated power for a long time.



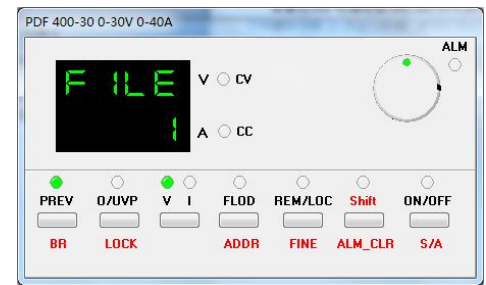
Sequence output function

The sequence test function can simulate complex voltage and current waveforms and is often used in automotive electronics testing, motor operation testing, engine start testing, etc.

The functions supported by the IPS-PDF programmable DC power sequence file include: sequence length, number of runs, changing output voltage, changing output current, and running time. Users use the above instructions to edit the sequence file to output complex waveforms. The sequence test also supports the loop run function to expand the number of file run instructions.

Sequence

This chapter describes the sequence of the PDF programmable DC power supply. There are 4 sequence files in total, and each sequence file supports up to 20 steps of operation data. The sequence file also supports the number of operations, set voltage, set current, and operation time.



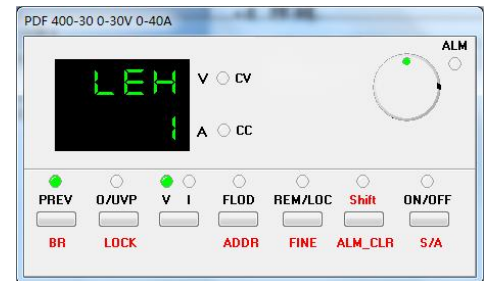
Editing interface

Press and hold the PREV key for 5 seconds to enter the sequence file, sequence length, and run times settings

Select the file, range 1-4, press the encoder to confirm and jump to the sequence length selection

Select the length, range: 1-20, press the encoder to confirm and jump to the run times selection

Select the run times, range: 0-9999 (0 for unlimited runs)



Sequence settings

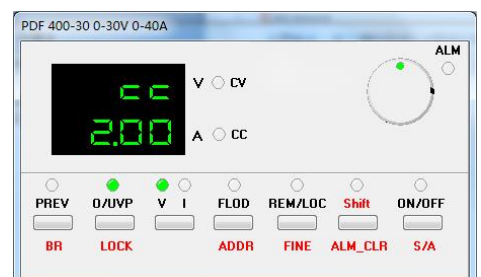
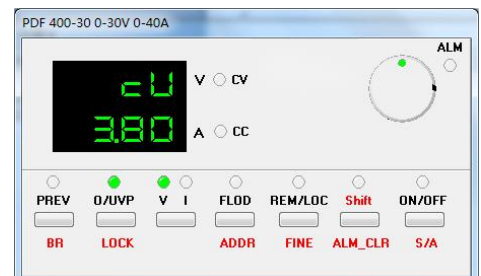
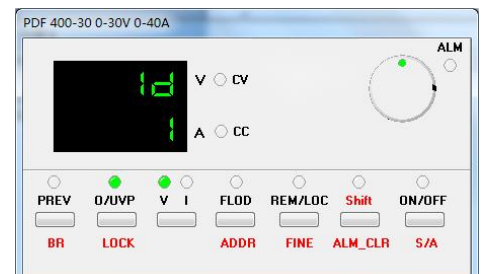
Press and hold the O/UVP key for 5 seconds to enter the voltage, current, and running time settings. Repeat the following steps to reach the sequence length value and complete all step settings.

Set the number, range: 1-20, press the encoder to confirm and jump to the voltage setting

Set the voltage, rotate the encoder to change the voltage value, press the encoder to confirm and jump to the current setting

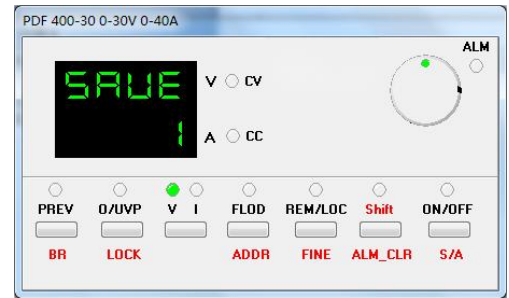
Set the current, rotate the encoder to change the current value, press the encoder to confirm and jump to the time setting

Set the time, range: 0-9999s



Sequence file saving

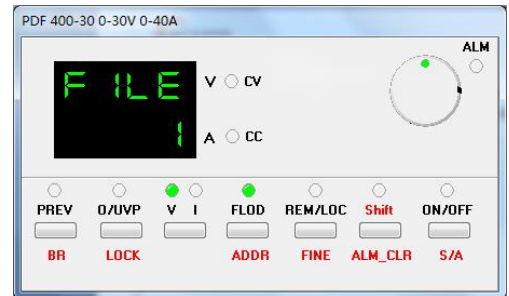
After completing all settings, press and hold the V/I key for 5 seconds to save, and select the file to be saved by rotating the encoder.



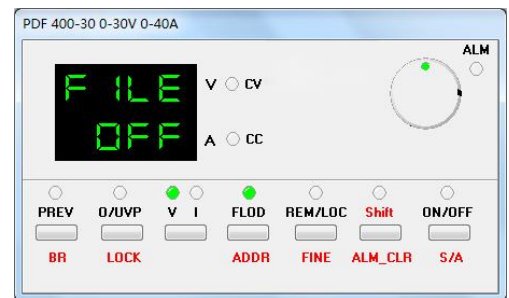
Sequence run and exit

Press and hold the FLOD button for 5 seconds to enter the sequence operation setting, select the file to be run, there are 4 files in total, after selecting the file, enter the operation mode;

Then press the ON/OFF button to run/shut down.



Press and hold the FLOD button for 5 seconds again to turn it on and exit the sequence mode.

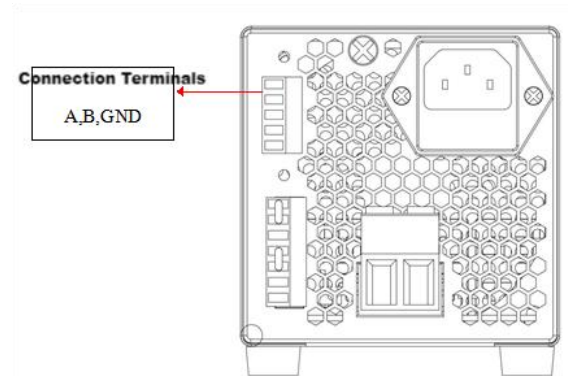


● Remote Operation

This chapter describes the remote operation of the PDF programmable DC power supply. After reading this chapter, you will be able to operate the PDF programmable DC power supply more conveniently and quickly.

Communication interface

On the five-bit green terminal with a spacing of 3.81 on the back panel, A/B/GND is the RS485 interface, A is positive and B is negative. Please use a standard modbus communication line (usually a twisted pair shielded line). Set the corresponding address and baud rate.



Switch to local operation

During external communication, the REM/LOC indicator light is on (except for the REM/LOC button, other buttons are invalid). At this time, pressing REM/LOC will switch to local operation.

Communication Settings

Before performing communication operations, you should match the parameters of the power supply and PC.

Baud rate:

9600

(1200/2400/4800/9600/14400/19200/38400/56000/57600/1152

00), the communication baud rate can be set through the panel.

Data bit: 8

Stop bit: 1

Parity: (NONE, EVEN, ODD)

NONE: No parity

EVEN: Even parity

ODD: Odd parity

Local address: (0~255, factory setting value is 1)

Communication Protocol

IPS-PDF programmable DC power supply adopts RTU transmission mode of Modbus protocol. Each 8-bit byte in the message is transmitted according to the original value without processing, such as 63H, RTU will directly send 01100011. The main advantages of this method are: there is no interval between data frame transmission, the density of data transmission is higher than ASCII at the same baud rate, and the transmission speed is faster.

Address	Function code	Register Address	Data	CRC Check
1Byte	1Byte	2Byte	N	2Byte



Note: The Modbus communication protocol is coded in the format of high bit first and low bit last. (CRC is coded in the format of low bit first and high bit last)

Detailed explanation of programming commands

The following programming instructions take a 40V30A programmable power supply as an example, with a voltage accuracy of 2 digits and a current accuracy of 2 digits.

Read read-only register (0x04)

Register address (decimal)	Property	Meaning	Notes
1000	Read only	Output voltage	
1001	Read only	Output current	
1007	Read only	Device status	See Status Mode

Use the read register command (function code 0x04) to read the sampling voltage, sampling current, status and other registers to obtain the sampling information of the power supply. Users can use one read command to read multiple consecutive registers; or use multiple read commands to read the sampling registers separately. Example: The power supply address is: 1, read 8 registers from register 1000 (decimal) continuously

Send (hexadecimal): 01 04 03 E8 00 08 71 BC

Return (hexadecimal): 01 04 10 09 C4 03 20 00 00 00 00 00 00 00 00 00 05 EB 49

Voltage: $0x09C4/10^2=2500/100=25.00V$; Current: $0x0320/10^2=800/10=8.00A$

Status $0x0005=0b0000000000000101$ indicates constant voltage mode output

Read writable register (0x03)

Register address (decimal dec)	Attributes	Meaning	Notes
2000	Writable	Device address	
2001	Writable	Set voltage	
2002	Writable	Set current	
2003	Writable	Overvoltage value	
2004	Writable	Undervoltage value	
2005	Writable	Overcurrent value	
2006	Writable	Undercurrent value	
2014	Writable	Working mode	See Status Mode
2016	Writable	Power on/off	0x0000 for shutdown, 0xFFFF for startup

Use the read register command (function code 0x03) to read the device address, set voltage, set current and other registers to obtain the power setting information. Users can use one read command to read multiple consecutive registers; or use multiple read commands to read writable registers separately.

Example: The power address is: 1, read 2 registers from register 2001 (decimal)

Send (hexadecimal): 01 03 07 D1 00 02 95 46

Return (hexadecimal): 01 03 04 09 C4 03 20 B9 7A

Description: Read set voltage: $0x09C4/10^2=2500/100=25.00V$; set current: $0x0320/10^2=800/10=8.00A$

Write to writable register (0x10)

Use the write register command (function code 0x10) to write device addresses, set voltages, set currents and other registers for setting operations. Users can use one read command to write to multiple consecutive registers; or use multiple write commands to write to registers separately. The following example sets voltage, current, and output on operations.

Example: The power supply address is: 1, from register 2001 (decimal), write 2 registers continuously

Send (hexadecimal): 01 10 07 D1 00 02 04 09 C4 03 20 5A 46

Return (hexadecimal): 01 10 07 D1 00 02 10 85

Description: Set voltage: $0x09C4/10^2=2500/100=25.00V$; current: $0x0320/10^2=800/10=8.00A$

Example: The power supply address is: 1, from register 2016 (decimal), write 0xFFFF

Send (hexadecimal): 01 10 07 E0 00 01 02 FF FF C7 40

Return (hexadecimal): 01 10 07 E0 00 01 01 4B

Description: 0xFFFF turns on the power output, 0x0000 turns off the power output

State Pattern

1007	Device Status	
Number of digits	0 Meaning	1 Meaning
0	Output OFF	Output ENABLE
1	Non-constant current mode	Constant current mode
2	Non-constant pressure mode	constant pressure mode
3	Internal control mode	External control mode
4	Not overheated	Overheated
5	No overcurrent	overcurrent
6	Not overvoltage	overvoltage
7	Not short circuited	short circuited
8	Not in boost stage	boost stage
9	Not in the step-down phase	step-down phase
10	Not under voltage	undervoltage
11	Not underflow	underflow
12-15	reserve	reserve

2014	Working Mode	
Number of digits	0 Meaning	1 Meaning
0	Disable overvoltage protection	Allow overvoltage protection
1	Disable undervoltage protection	Allow undervoltage protection
2	Disable overcurrent protection	Allow overcurrent protection
3	Disable undercurrent protection	Allow undercurrent protection
4	Disable multi-stage mode	Allow multi-stage mode
5	Disable multi-stage constant voltage mode	Allow multi-stage constant current mode
6	Disable timed aging mode	Allow timed aging mode
7	Disable soft start	Allow soft start
8	Disable constant current shutdown	Allow constant current shutdown
14	Disable output	Allow output surge
15	Disable overvoltage protection	Replace with Oxefef
9-13	reserve	reserve

Programming Examples

The programming example is copied to the CD and is written using the VS2010 development tool. It sets the voltage to 25V and the current to 8A; reads the set voltage and current values; turns on the output; and reads back the output value example code.

Example Code

```
int _tmain(int argc, _TCHAR* argv[])
{
HANDLE gHandlePC;
DWORD nBytesRead=0;
unsigned long lrc=0;
char txlength=0;
unsigned char rxbuffer[128];
unsigned char txbufferdebug[128];
unsigned char
txbuffer_voltcurr_wt[]={0x01,0x10,0x07,0xD1,0x00,0x02,0x04,0x09,0xC4,0x03,0x20,0x5A,0x46}
;
unsigned char txbuffon[]={0x01,0x10,0x07,0xE0,0x00,0x01,0x02,0xFF,0xFF,0xC7,0x40};
unsigned char txbuffer_voltcurr_rd[]={0x01,0x03,0x07,0xD1,0x00,0x02,0x95,0x46};
unsigned char txbuffermeasure[]={0x01,0x04,0x03,0xE8,0x00,0x08,0x71,0xBC};
DCB dcb;
gHandlePC=CreateFile(TEXT("COM3"),GENERIC_READ|GENERIC_WRITE,0,NULL,OPEN_E
XISTING,0,0);
if (gHandlePC==INVALID_HANDLE_VALUE)
{
return 0;
}
GetCommState(gHandlePC,&dcb);
dcb.BaudRate=CBR_9600;
dcb.ByteSize=8;
dcb.Parity=NOPARITY;
dcb.StopBits=ONESTOPBIT;
if(!SetCommState(gHandlePC,&dcb))
{ CloseHandle(gHandlePC);return 0;}
```

```
txlength=13;
WriteFile(gHandlePC,txbuffer_voltcurr_wt,txlength,&lrc,NULL);
printf_buffer(txbuffer_voltcurr_wt,lrc);
ReadFile(gHandlePC,rxbuffer,RX_MAX_COUNT,&nBytesRead,NULL);
printf_buffer(rxbuffer,nBytesRead);
txlength=8;
WriteFile(gHandlePC,txbuffer_voltcurr_rd,txlength,&lrc,NULL);
printf_buffer(txbuffer_voltcurr_rd,lrc);
ReadFile(gHandlePC,rxbuffer,RX_MAX_COUNT,&nBytesRead,NULL);
printf_buffer(rxbuffer,nBytesRead);
txlength=11;
WriteFile(gHandlePC,txbuffon,txlength,&lrc,NULL);
printf_buffer(txbuffon,lrc);
ReadFile(gHandlePC,rxbuffer,RX_MAX_COUNT,&nBytesRead,NULL);
printf_buffer(rxbuffer,nBytesRead);
txlength=8;
WriteFile(gHandlePC,txbuffermeasure,txlength,&lrc,NULL);
printf_buffer(txbuffermeasure,lrc);
ReadFile(gHandlePC,rxbuffer,RX_MAX_COUNT,&nBytesRead,NULL);
printf_buffer(rxbuffer,nBytesRead);
if (gHandlePC!=INVALID_HANDLE_VALUE)
{
CloseHandle(gHandlePC);
}
getchar();
exit(EXIT_SUCCESS);
return 0;}
```

● Technical specifications

IPS-PDF Series 400W Model Specifications (Please read the application manual before use)

Models Specifications	IPS-PDF	400-30	400-40	400-50	400-60	400-80	400-100	400-150	400-200	400-300
1. Rated output voltage(*1)	V	30	40	50	60	80	100	150	200	300
2. Rated output current(*2)	A	40	30	24	20	15	12	8	6	4
3. Rated output power(*3)	W	400	400	400	400	400	400	400	400	400
4. efficiency(220V)	%	85	85	86	86	88	88	88	88	88
5. Power factor (full load)	-	0.65								
6. Input voltage range/frequency	-	Single Phase AC185-265V/47-63HZ								
7. Input Current(220V)	-	2.2A (rms)								
8. Input surge current(220V)	-	Less than 10A								
9. Output hold time	-	More than 20ms , input voltage 220 VAC								

Constant voltage mode(CV)

1. Maximum input regulation	mV	6	6	6	8	10	12	17	32	40
2. Maximum load regulation	mV	6	6	6	8	10	12	17	32	40
3. Ripple and Noise (Peak-to-peak value,	mV	60	68	70	60	75	75	75	130	160
4. Ripple(Effective value, 5Hz-1 MHz)	mV	8	8	9	7	7	8	8	20	30
5. Telemetry maximum compensation	V	2	2	3	3	4	5	5	5	5
6. Temperature coefficient	-	Rated output voltage 50PPM/°C (Connect to power 30Minutes later)								
7. drift	-	Rated output voltage 0.01%(At a certain input voltage-load · Power on at ambient temperature 30Minutes later, 8Hour)								
8. Output voltage response time rise	ms	80	80	80	80	150	150	150	150	250
Full load descent	ms	50	80	80	80	150	150	150	150	250
No-load descent	ms	1000	1000	1000	1100	1200	1500	2000	2500	3000
9. Transient response time	-	The output voltage returns to the rated voltage 0.5% The output current variation value is the rated 10-90% Output Voltage setting range: 10-100% . Local sampling. 100V The following output models: less than 1ms , greater than 100V of Output model: less than 2ms								

Constant current mode(CC)

1. Maximum input regulation	mA	5.8	4.5	3.9	3.25	2.95	2.75	2.5	2.25	2.13
2. Maximum load regulation	mA	12.6	10	8.8	7.5	6.9	6.5	6.0	5.5	5.26
3. Ripple(Effective value, 5Hz-1 MHz)	mA	50	45	30	15	10	10	8	6	4
4. Temperature coefficient	-	Rated output current 70PPM/°C (Connect to power 30Minutes later)								
5. drift	-	Rated output current 0.01%(At a certain input voltage-load · Power on at ambient temperature 30Minutes later, 8Hour)								
6. Warm-up temperature drift	-	Less than the rated output current 0.1% , power on or output voltage or load changes 30Within minutes								

Protection function

1. Overcurrent protection(OCP)	-	0-110%, constant current limit								
2. Foldback overcurrent protection	-	Power supply from constant voltage CV Switch to constant current CC, the output is turned off.(User-presettable) (FLOD)								
3. Overvoltage protection(OVP) (*4)	-	Power off, manual reset								
4. Overvoltage Trigger Point	V	0-110%(User configurable)								

*1: Rated voltage refers to the adjustable output voltage range when the maximum power is $\leq 400W$.

*2: Rated current refers to the adjustable output current range when the maximum power is $\leq 400W$.

*3: Rated power refers to the maximum power value output at this voltage.

*4: Press Shift+Shift to clear the alarm or turn the AC input back on or the ON/OFF button or the communication port command

Programming and reading back (RS-485 interface)										
Rated output voltage	V	30	40	50	60	80	100	150	200	300
1. Output voltage programming (12 bits)										
Resolution (0.05% of rated output)	mV	10	10	20	20	20	100	100	100	100
Accuracy	mV	15	15	25	25	25	150	150	150	150
2. Output current programming (12 bits)										
Resolution (0.2% of rated output)	mA	10	10	10	10	10	10	2	1	1
Accuracy	mA	76	50	38	25	19	15	10	5.0	2.6
3. Output voltage readback										
Resolution	mV	10	10	20	20	20	100	100	100	100
Accuracy	mV	15	15	25	25	25	150	150	150	150
4. Output current readback										
Resolution	mA	10	10	10	10	10	10	2	1	1
Accuracy	mA	76	50	38	25	19	15	10	5.0	2.6
5. Overvoltage protection (OVP) / undervoltage limit (UVL) programming										
Resolution (0.1% of rated output voltage)	mV	20	30	40	60	80	100	150	300	600
Accuracy (1% of rated output voltage)	mV	200	300	400	600	800	1000	1500	3000	6000

Environmental conditions		
1. Working environment temperature	-	0-+50°C, Full load
2. Storage environment temperature	-	-20-+70°C
3. Working environment humidity	-	30-90%RH (No condensation)
4. Maintain environmental humidity	-	10-95%RH (No condensation)
7. Sea level	-	Maximum 3000 meters. Above 2000 meters, the output current is reduced by 2% for every 100 meters

Mechanical properties		
1. Cooling method	-	Forced air cooling: from front to back, no ventilation holes on the top and bottom of the power supply: automatic speed control fan
2. Weight	-	2.5kg
3. Dimensions (W*H*L)	mm	88*88*442(See the appearance diagram)

IPS-PDF Series 600W Model Specifications(Please read the application manual before use)

Models Specifications	IPS-PDF	600-30	600-40	600-50	600-60	600-80	600-100	600-150	600-200	600-300
1. Rated output voltage(*1)	V	30	40	50	60	80	100	150	200	300
2. Rated output current(*2)	A	40	30	24	20	15	12	8	6	4
3. Rated output power(*3)	W	600	600	600	600	600	600	600	600	600
4. efficiency(220V)	%	86	86	87	88	89	89	89	89	89
5. Input voltage range/frequency	-	Single Phase AC 185-265V/47-63HZ								
6. Input current (220V)	-	3.2A (rms)								
7. Input surge current (220V)	-	Less than 10A								
8. Output hold time	-	More than 20ms, input voltage 220VAC								

Constant voltage mode(CV)										
1. Maximum input regulation	mV	6	6	6	8	10	12	17	32	40
2. Maximum load regulation	mV	6	6	6	8	10	12	17	32	40
3. Ripple and Noise (Peak-to-peak value,	mV	60	68	70	60	75	75	75	130	160
4. Ripple(Effective value, 5Hz-1 MHz)	mV	8	8	9	7	7	8	8	20	30
5. Telemetry maximum compensation	V	2	2	3	3	4	5	5	5	5
6. Temperature coefficient	-	Rated output voltage 50PPM/°C (Connect to power 30Minutes later)								
7. drift	-	Rated output voltage 0.01%(At a certain input voltage · load · Power on at ambient temperature 30Minutes later, 8Hour)								
8. Output voltage response time rise	ms	80	80	80	80	150	150	150	150	250
Full load descent	ms	50	80	80	80	150	150	150	150	250
No-load descent	ms	1000	1000	1000	1100	1200	1500	2000	2500	3000
9. Transient response time	-	The output voltage returns to the rated voltage 0.5% The output current variation value is the rated 10-90% Output Voltage setting range: 10-100% . Local sampling. 100V The following output models: less than 1ms , greater than 100V of Output model: less than 2ms								

Constant current mode(CC)										
1. Maximum input regulation	mA	5.8	4.5	3.9	3.25	2.95	2.75	2.5	2.25	2.13
2. Maximum load regulation	mA	12.6	10	8.8	7.5	6.9	6.5	6.0	5.5	5.26
3. Ripple(Effective value, 5Hz-1 MHz)	mA	50	45	30	15	10	10	8	6	4
4. Temperature coefficient	-	Rated output current 70PPM/°C (Connect to power 30Minutes later)								
5. drift	-	Rated output current 0.01%(At a certain input voltage · load · Power on at ambient temperature 30Minutes later, 8Hour)								
6. Warm-up temperature drift	-	Less than the rated output current 0.1% , power on or output voltage or load changes 30Within minutes								

Protection function										
1. Overcurrent protection(OCP)	-	0-110% , constant current limit								
2. Foldback overcurrent protection	-	Power supply from constant voltage CV Switch to constant current CC, the output is turned off.(User- presettable) (FLO D)								
3. Overvoltage protection(OVP) (*4)	-	Power off, manual reset								
4. Overvoltage Trigger Point	V	0-110%(User configurable)								
5. Output undervoltage limit(UVP)	-	Preset via front panel or communications port. Prevents output voltage from being adjusted below the lower voltage limit.								
6. Overheat protection(*4)	-	The power supply is turned off when the temperature is higher than 85°C, and a manual reset is required when the temperature drops.								

*1: Rated voltage refers to the adjustable output voltage range when the maximum power is ≤600W.

*2: Rated current refers to the adjustable output current range when the maximum power is ≤600W.

*3: Rated power refers to the maximum power value output at this voltage.

*4: Press Shift+Shift to clear the alarm or turn the AC input back on or the ON/OFF button or the communication port command

Programming and reading back (RS-485 interface)										
Rated output voltage	V	30	40	50	60	80	100	150	200	300
1. Output voltage programming (12 bits)										
Resolution (0.05% of rated output)	mV	10	10	20	20	20	100	100	100	100
Accuracy	mV	15	15	25	25	25	150	150	150	150
2. Output current programming (12 bits)										
Resolution (0.2% of rated output)	mA	10	10	10	10	10	10	2	1	1
Accuracy	mA	76	50	38	25	19	15	10	5.0	2.6
3. Output voltage readback										
Resolution	mV	10	10	20	20	20	100	100	100	100
Accuracy	mV	15	15	25	25	25	150	150	150	150
4. Output current readback										
Resolution	mA	10	10	10	10	10	10	2	1	1
Accuracy	mA	76	50	38	25	19	15	10	5.0	2.6
5. Overvoltage protection (OVP) / undervoltage limit (UVL) programming										
Resolution (0.1% of rated output voltage)	mV	20	30	40	60	80	100	150	300	600
Accuracy (1% of rated output voltage)	mV	200	300	400	600	800	1000	1500	3000	6000

Environmental conditions		
1. Working environment temperature	-	0-+50°C, Full load
2. Storage environment temperature	-	-20-+70°C
3. Working environment humidity	-	30-90%RH (No condensation)
4. Maintain environmental humidity	-	10-95%RH (No condensation)
7. Sea level	-	Maximum 3000 meters. Above 2000 meters, the output current is reduced by 2% for every 100 meters

Mechanical properties		
1. Cooling method	-	Forced air cooling: from front to back, no ventilation holes on the top and bottom of the power supply: automatic speed control fan
2. Weight	-	2.5kg
3. Dimensions (W*H*L)	mm	88*88*442(See the appearance diagram)

IPS-PDF Series 800W Model Specifications(Please read the application manual before use)

Models Specifications	IPS-PDF	800-30	800-40	800-50	800-60	800-80	800-100	800-150	800-200	800-300
1. Rated output voltage(*1)	V	30	40	50	60	80	100	150	200	300
2. Rated output current(*2)	A	40	30	24	20	15	12	8	6	4
3. Rated output power(*3)	W	800	800	800	800	800	800	800	800	800
4. efficiency(220V)	%	86	86	87	88	89	89	89	89	89
5. Input voltage range/frequency	-	Single Phase AC185-265V/47-63HZ								
6. Input current (220V)	-	4.5A (rms)								
7. Input surge current (220V)	-	Less than 14A								
8. Output hold time	-	More than 20 ms, input voltage 220 VAC								

Constant voltage mode(CV)

1. Maximum input regulation	mV	6	6	6	8	10	12	17	32	40
2. Maximum load regulation	mV	6	6	6	8	10	12	17	32	40
3. Ripple and Noise (Peak-to-peak value,	mV	60	68	70	60	75	75	75	130	160
4. Ripple(Effective value, 5Hz-1MHz)	mV	8	8	9	7	7	8	8	20	30
5. Telemetry maximum compensation	V	2	2	3	3	4	5	5	5	5
6. Temperature coefficient	-	Rated output voltage 50PPM/°C (Connect to power 30 Minutes later)								
7. drift	-	Rated output voltage 0.01%(At a certain input voltage·load · Power on at ambient temperature 30 Minutes later, 8Hour)								
8. Output voltage response time rise	ms	80	80	80	80	150	150	150	150	250
Full load descent	ms	50	80	80	80	150	150	150	150	250
No-load descent	ms	1000	1000	1000	1100	1200	1500	2000	2500	3000
9. Transient response time	-	The output voltage returns to the rated voltage 0.5% The output current variation value is the rated 10- 90% Output Voltage setting range: 10-100% . Local sampling. 100V The following output models: less than 1ms , greater than 100V of Output model: less than 2ms								

Constant current mode(CC)

1. Maximum input regulation	mA	5.8	4.5	3.9	3.25	2.95	2.75	2.5	2.25	2.13
2. Maximum load regulation	mA	12.6	10	8.8	7.5	6.9	6.5	6.0	5.5	5.26
3. Ripple(Effective value, 5Hz-1MHz)	mA	50	45	30	15	10	10	8	6	4
4. Temperature coefficient	-	Rated output current 70PPM/°C (Connect to power 30 Minutes later)								
5. drift	-	Rated output current 0.01%(At a certain input voltage·load · Power on at ambient temperature 30 Minutes later, 8Hour)								
6. Warm-up temperature drift	-	Less than the rated output current 0.1% , power on or output voltage or load changes 30 Within minutes								

Protection function

1. Overcurrent protection(OCP)	-	0-110% , constant current limit								
2. Foldback overcurrent protection	-	Power supply from constant voltage CV Switch to constant current CC, the output is turned off.(User- presettable) (FLOD)								
3. Overvoltage protection(OVP) (*4)	-	Power off, manual reset								
4. Overvoltage Trigger Point	V	0-110%(User configurable)								
5. Output undervoltage limit(UVP)	-	Preset via front panel or communications port. Prevents output voltage from being adjusted below the lower voltage limit.								
6. Overheat protection(*4)	-	The power supply is turned off when the temperature is higher than 85°C, and a manual reset is required when the temperature drops.								

* 1: Rated voltage refers to the adjustable output voltage range when the maximum power is ≤800W.

*2: Rated current refers to the adjustable output current range when the maximum power is ≤800W.

*3: Rated power refers to the maximum power value output at this voltage.

*4: Press Shift+Shift to clear the alarm or turn the AC input back on or the ON/OFF button or the communication port command

Programming and reading back (RS-485 interface)										
Rated output voltage	V	30	40	50	60	80	100	150	200	300
1. Output voltage programming (12 bits)										
Resolution (0.05% of rated output)	mV	10	10	20	20	20	100	100	100	100
Accuracy	mV	15	15	25	25	25	150	150	150	150
2. Output current programming (12 bits)										
Resolution (0.2% of rated output)	mA	10	10	10	10	10	10	2	1	1
Accuracy	mA	76	50	38	25	19	15	10	5.0	2.6
3. Output voltage readback										
Resolution	mV	10	10	20	20	20	100	100	100	100
Accuracy	mV	15	15	25	25	25	150	150	150	150
4. Output current readback										
Resolution	mA	10	10	10	10	10	10	2	1	1
Accuracy	mA	76	50	38	25	19	15	10	5.0	2.6
5. Overvoltage protection (OVP) / undervoltage limit (UVL) programming										
Resolution (0.1% of rated output voltage)	mV	20	30	40	60	80	100	150	300	600
Accuracy (1% of rated output voltage)	mV	200	300	400	600	800	1000	1500	3000	6000

Environmental conditions		
1. Working environment temperature	-	0-+50°C, Full load
2. Storage environment temperature	-	-20-+70°C
3. Working environment humidity	-	30-90%RH (No condensation)
4. Maintain environmental humidity	-	10-95%RH (No condensation)
7. Sea level	-	Maximum 3000 meters. Above 2000 meters, the output current is reduced by 2% for every 100 meters

Mechanical properties		
1. Cooling method	-	Forced air cooling: from front to back, no ventilation holes on the top and bottom of the power supply: automatic speed control fan
2. Weight	-	2.5kg
3. Dimensions (W*H*L)	mm	88*88*442(See the appearance diagram)

IPS-PDF Series 1000W Model Specifications(Please read the application manual before use)

Models Specifications	IPS-PDF	1000 - 30	1000 -40	1000-50	1000-60	1000-80	1000-100	1000-150	1000-200	1000-300
1. Rated output voltage(*1)	V	30	40	50	60	80	100	150	200	300
2. Rated output current(*2)	A	40	30	24	20	15	12	8	6	4
3. Rated output power(*3)	W	600	600	600	600	600	600	600	600	600
4. efficiency(220V)	%	88	88	88	89	89	90	90	91	91
5. Input voltage range/frequency	-	Single Phase AC185-265V/47-63HZ								
6. Input current (220V)	-	5.2A (rms)								
7. Input surge current (220V)	-	Less than 16A								
8. Output hold time	-	More than 20 ms, input voltage 220 VAC								

Constant voltage mode(CV)										
1. Maximum input regulation	mV	6	6	6	8	10	12	17	32	40
2. Maximum load regulation	mV	6	6	6	8	10	12	17	32	40
3. Ripple and Noise (Peak-to-peak value,	mV	60	68	70	60	75	75	75	130	160
4. Ripple(Effective value, 5Hz-1 MHz)	mV	8	8	9	7	7	8	8	20	30
5. Telemetry maximum compensation	V	2	2	3	3	4	5	5	5	5
6. Temperature coefficient	-	Rated output voltage 50PPM/°C (Connect to power 30Minutes later)								
7. drift	-	Rated output voltage 0.01%(At a certain input voltage-load · Power on at ambient temperature 30 Minutes later, 8Hour)								
8. Output voltage response time rise	ms	80	80	80	80	150	150	150	150	250
Full load descent	ms	50	80	80	80	150	150	150	150	250
No-load descent	ms	1000	1000	1000	1100	1200	1500	2000	2500	3000
9. Transient response time	-	The output voltage returns to the rated voltage 0.5% The output current variation value is the rated 10-90% Output Voltage setting range: 10-100% . Local sampling. 100V The following output models: less than 1ms , greater than 100V of Output model: less than 2ms								

Constant current mode(CC)										
1. Maximum input regulation	mA	5.8	4.5	3.9	3.25	2.95	2.75	2.5	2.25	2.13
2. Maximum load regulation	mA	12.6	10	8.8	7.5	6.9	6.5	6.0	5.5	5.26
3. Ripple(Effective value, 5Hz-1 MHz)	mA	50	45	30	15	10	10	8	6	4
4. Temperature coefficient	-	Rated output current 70PPM/°C (Connect to power 30Minutes later)								
5. drift	-	Rated output current 0.01%(At a certain input voltage-load · Power on at ambient temperature 30 Minutes later, 8Hour)								
6. Warm-up temperature drift	-	Less than the rated output current 0.1% , power on or output voltage or load changes 30Within minutes								

Protection function										
1. Overcurrent protection(OCP)	-	0-110% , constant current limit								
2. Foldback overcurrent protection	-	Power supply from constant voltage CV Switch to constant current CC, the output is turned off.(User- presettable) (FLOD)								
3. Overvoltage protection(OVP) (*4)	-	Power off, manual reset								
4. Overvoltage Trigger Point	√	0-110%(User configurable)								
5. Output undervoltage limit(UVP)	-	Preset via front panel or communications port. Prevents output voltage from being adjusted below the lower voltage limit.								
6. Overheat protection(*4)	-	The power supply is turned off when the temperature is higher than 85°C, and a manual reset is required when the temperature drops.								

*1: Rated voltage refers to the adjustable output voltage range when the maximum power is ≤1000W.

*2: Rated current refers to the adjustable output current range when the maximum power is ≤1000W.

*3: Rated power refers to the maximum power value output at this voltage.

*4: Press Shift+Shift to clear the alarm or turn the AC input back on or the ON/OFF button or the communication port command

Programming and reading back (RS-485 interface)										
Rated output voltage	V	30	40	50	60	80	100	150	200	300
1. Output voltage programming (12 bits)										
Resolution (0.05% of rated output)	mV	10	10	20	20	20	100	100	100	100
Accuracy	mV	15	15	25	25	25	150	150	150	150
2. Output current programming (12 bits)										
Resolution (0.2% of rated output)	mA	10	10	10	10	10	10	2	1	1
Accuracy	mA	76	50	38	25	19	15	10	5.0	2.6
3. Output voltage readback										
Resolution	mV	10	10	20	20	20	100	100	100	100
Accuracy	mV	15	15	25	25	25	150	150	150	150
4. Output current readback										
Resolution	mA	10	10	10	10	10	10	2	1	1
Accuracy	mA	76	50	38	25	19	15	10	5.0	2.6
5. Overvoltage protection (OVP) / undervoltage limit (UVL) programming										
Resolution (0.1% of rated output voltage)	mV	20	30	40	60	80	100	150	300	600
Accuracy (1% of rated output voltage)	mV	200	300	400	600	800	1000	1500	3000	6000

Environmental conditions		
1. Working environment temperature	-	0-+50°C, Full load
2. Storage environment temperature	-	-20-+70°C
3. Working environment humidity	-	30-90%RH (No condensation)
4. Maintain environmental humidity	-	10-95%RH (No condensation)
7. Sea level	-	Maximum 3000 meters. Above 2000 meters, the output current is reduced by 2% for every 100 meters

Mechanical properties		
1. Cooling method	-	Forced air cooling: from front to back, no ventilation holes on the top and bottom of the power supply: automatic speed control fan
2. Weight	-	2.5kg
3. Dimensions (W*H*L)	mm	88*88*442(See the appearance diagram)

IPS-PDF Series 1200W Model Specifications(Please read the application manual before use)

Model Specifications	IPS-PDF	1200-30	1200-40	1200-50	1200-60	1200-80	1200-100	1200-150	1200-200	1200-300
1. Rated output voltage	V	30	40	50	60	80	100	150	200	300
2. Rated output current	A	40	30	24	20	15	12	8	6	4
3. Rated output power	W	1200	1200	1200	1200	1200	1200	1200	1200	1200
4. Efficiency (220V)	%	89	89	89	90	90	91	91	92	92
5. Power factor (full load)	-	0.73								
6. Input voltage range/frequency	-	Single phase AC185-265V/47-63HZ								
7. Input current (220V)	-	6.5 A (rms)								
8. Input surge current (220V)	-	Less than 18A								
9. Output hold time	-	10ms, input voltage 220VAC								

Constant voltage mode(CV)										
1.Maximum input regulation	mV	6	6	6	8	10	12	17	32	40
2.Maximum load regulation	mV	6	6	6	8	10	12	17	32	40
3. Ripple and Noise (Peak-to-peak value,	mV	60	68	70	60	75	75	75	130	160
4.Ripple(Effective value,5 Hz- 1MHz)	mV	8	8	9	7	7	8	8	20	30
5.Telemetry maximum compensation	V	2	2	3	3	4	5	5	5	5
6.Temperature coefficient	-	Rated output voltage50PPM/°C(Connect to power 30Minutes later)								
7.drift	-	Rated output voltage0.01%(At a certain input voltage-load · Power on at ambient temperature 30Minutes later, 8Hour)								
8.Output voltage response time rise	ms	80	80	80	80	150	150	150	150	250
Full load descent	ms	50	80	80	80	150	150	150	150	250
No-load descent	ms	1000	1000	1000	1100	1200	1500	2000	2500	3000
9.Transient response time	-	The output voltage returns to the rated voltage 0.5% The output current variation value is the rated10-90% OutputVoltage setting range: 10-100% . Local sampling. 100V The following output models: less than 1ms , greater than 100V of Output model: less than 2ms								

Constant current mode(CC)										
1.Maximum input regulation	mA	5.8	4.5	3.9	3.25	2.95	2.75	2.5	2.25	2.13
2.Maximum load regulation	mA	12.6	10	8.8	7.5	6.9	6.5	6.0	5.5	5.26
3.Ripple(Effective value,5 Hz- 1MHz)	mA	50	45	30	15	10	10	8	6	4
4.Temperature coefficient	-	Rated output current70PPM/°C(Connect to power 30Minutes later)								
5.drift	-	Rated output current0.01%(At a certain input voltage-load · Power on at ambient temperature 30Minutes later, 8Hour)								
6.Warm-up temperature drift	-	Less than the rated output current 0.1% , power on or output voltage or load changes 30Within minutes								

Protection function		
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3.Overvoltage protection(OVP) (*4)	-	Power off, manual reset
4.Overvoltage Trigger Point	V	0-110%(User configurable)
5.Output undervoltage limit(UVP)	-	Preset via front panel or communications port. Prevents output voltage from being adjusted below the lower voltage limit.
6. Overheat protection(*4)	-	The power supply is turned off when the temperature is higher than 85°C, and a manual reset is required when the temperature drops.

*1: Rated voltage refers to the adjustable output voltage range when the maximum power is ≤1200W.

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Accuracy	mV	15	15	25	25	25	150	150	150	150
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7. Sea level	-	Maximum 3000 meters. Above 2000 meters, the output current is reduced by 2% for every 100 meters

Mechanical properties		
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3. Dimensions (W*H*L)	mm	88*88*442(See the appearance diagram)