DESCRIPTIONS

1000W，AC-DC Converter



RoHS

3 Years Warranty

c UL us CE Report UK CA Report

UL62368-1 EN62368-1 BS EN62368-1

FEATURES

- Universal 85 - 305VAC or 180 - 430VDC input voltage
- Accepts AC or DC input (dual-use of same terminal)
- Semi-potted process, fanless design
- Operating ambient temperature range: -40℃ to +85℃
- Low Ripple & Noise, efficiency up to 96%
- Active PFC
- High I/O isolation test voltage up to 4000VAC
- Output short circuit, over-current, over-voltage, over-temperature protection
- Operating altitude up to 5000m

APPLICATIONS

- Industrial Control
- Lighting
- Power
- Security
- Communicate
- Smart Home

Selection Guide

Certification	Part No.	Rated Output Power (W)*	Nominal Output Voltage and Current (Vo/Io)	Output Voltage Adjustable Range ADJ (V)	Efficiency at 230VAC (%) Typ.	Capacitive Load (μF) Max.
EN/BS EN	AEFUH1000-12	960	12V/80A	12-14.4	94	40000
	AEFUH1000-24	1008	24V/42A	24-28.8	95	20000
	AEFUH1000-36		36V/28A	36-43.2	95.5	16000
UL/EN/BS EN	AEFUH1000-48		48V/21A	48-57.6	96	12000

Note: 1. *Under any conditions, the total power of the product should not exceed the rated output power, and the output current should not exceed the rated output current.

2. The product picture is for reference only, for details, please refer to the actual product.

Specifications

Product characteristics	Item		Operating Conditions		Min.	Typ.	Max.	Unit
Input Specifications	Input Voltage Range		AC input		85	--	305	VAC
			DC input		180	--	430	VDC
	Input Voltage Frequency				47	--	63	Hz
	Input Current		115VAC		--	10.1	--	A
			230VAC		--	5.3	--	
	Inrush Current		115VAC	Cold start	--	15	--	
			230VAC		--	35	--	
	Power Factor		115VAC	25℃, full load	0.99	--	--	--
			230VAC		0.95	--	--	
	Leakage Current		240VAC	Contact leakage current	< 0.75mA			
	Hot Plug				Unavailable			
Output Specifications	Output Voltage Accuracy		Full load range		--	±1	--	%
	Line Regulation		Rated load		--	±0.5	--	
	Load Regulation		230VAC		--	±0.5	--	
	Ripple & Noise*		20MHz bandwidth (peak-to-peak value), 25℃	12V	--	--	120	mV
				24V/36V	--	--	200	
				48V	--	--	240	
	Stand-by Power Consumption		25℃, 230VAC input		--	--	12	W
	Temperature Coefficient				--	±0.03	--	%/℃
	Short Circuit Protection		Constant current limit		Turn off output after delay 3s, recover after restart.			
	Over-current Protection		Room temperature		>110% Io, constant current protection, turn off output after delay 3s, recover after restart.			
	Over-voltage Protection		12V		14.5 - 16.5V		Output voltage turn off	
			24V		29 - 33V			
			36V		43.5 - 49V			
			48V		59 - 66V			
	Minimum Load				0	--	--	%
	Hold-up Time		25℃, full load, 115VAC/230VAC		--	15	--	ms
	Over-temperature Protection**		Full load	Over-temperature protection start	55	--	--	℃
				Over-temperature protection release	50	--	--	
General Specifications	Isolation	Input - output	Electric strength test for 1min., leakage current <5mA		4000	--	--	VAC
		Input - ⏚	Electric strength test for 1min., leakage current <10mA		2000	--	--	
		Output - ⏚	Electric strength test for 1min., leakage current <5mA		1750	--	--	

General Specifications	Insulation Resistance	Input - output	Environment temperature: 25±5℃ Relative humidity: <95%RH, non-condensing Testing voltage: 500VDC			100	--	--	MΩ
		Input - ⏚							
		Output - ⏚							
	Operating Temperature					-40	--	+85	℃
	Storage Temperature					-40	--	+85	
	Operating Humidity		Non-condensing			20	--	90	%RH
	Storage Humidity					10	--	95	
	Output Power Derating	Operating temperature derating	110VAC input, with aluminum plate or 23.5CFM fan*	12V/24V/36V/48V	+40℃ to +85℃	1.67	--	--	%/℃
			230VAC input, with aluminum plate or 23.5CFM fan	12V	+45℃ to +85℃	2	--	--	
				24V/36V/48V	+50℃ to +85℃	2.5	--	--	
			110VAC input, without aluminum plate	12V (60% start derating)	+40℃ to +85℃	1	--	--	
				24V/36V/48V (70% start derating)	+40℃ to +85℃	1.167	--	--	
			230VAC input, without aluminum plate	12V (60% start derating)	+45℃ to +85℃	1.2	--	--	
				24V/36V/48V (70% start derating)	+50℃ to +85℃	1.75	--	--	
		Input voltage derating		85VAC-180VAC		0.33	--	--	%/VAC
	Leakage current		240VAC			<0.5mA RMS			
	Safety Class					CLASS I			
	MTBF		MIL-HDBK-217F@25℃			≥300,000 h			
Mechanical Specifications	Case Material		Metal (AL5052, SGCC)						
	Dimensions		240.00 × 115.00 × 41.00mm						
	Weight		1625g (Typ.)						
	Cooling Method		Free air convection						

Note:1. *The "Tip and barrel method" is used for ripple and noise test, output parallel 47uF electrolytic capacitor and 0.1uF ceramic capacitor, please refer to enclosed Switching Power Supply Application Notes for specific information;

2. *Output voltage turn off, self-recovery after fault conditions is removed;

3. *In order to optimize the heat dissipation performance, when the aluminum plate is used for auxiliary heat dissipation, please note: 1. The size of the aluminum plate is 450mm × 450mm × 3mm; 2. The surface of the aluminum plate must be coated with thermal grease; 3. The product must be tightly attached to the aluminum plate.

Electromagnetic Compatibility (EMC)

Electromagnetic Compatibility (EMC)	Emissions	CE	CISPR32/EN55032 CLASS B	
		RE	CISPR32/EN55032 CLASS B	
		Harmonic current	IEC/EN61000-3-2 CLASS A	
		Voltage flicker	IEC/EN61000-3-3	
	Immunity	ESD	IEC/EN61000-4-2 Contact ±8KV/Air ±15KV	Perf. Criteria A
		RS	IEC/EN61000-4-3 10V/m	Perf. Criteria A
		EFT	IEC/EN61000-4-4 ±2KV	Perf. Criteria A
		Surge	IEC/EN61000-4-5 Line to line ±2KV/line to PE ±4KV	Perf. Criteria A
		CS	IEC/EN61000-4-6 10Vr.m.s	Perf. Criteria A
		PFMF	IEC/EN61000-4-8 30A/m	Perf. Criteria A
		Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11 95% dip 0.5 periods, 30% dip 25 periods, >95% interruptions 250 periods	Perf. Criteria B

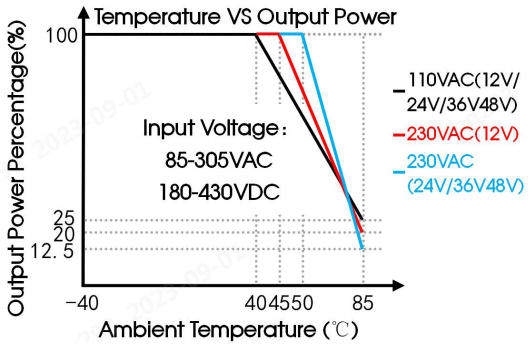
Functional Specifications

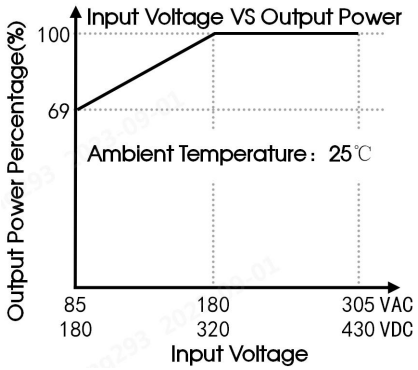
Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Regulation			Output voltage adjustable to 50-120% of rated voltage			
Output Current Regulation			Output current adjustable to 20-100% of rated current			
Remote Control Switch	Power on: short circuit		0	--	0.5	V
	Power off: or open circuit		2	--	5	
DC OK Signal	Sending TTL signal	Power on	4.5	--	5.5	
		Power off	-0.1	--	0.5	
Auxiliary Power*	12V/0.5A	Voltage accuracy	±10% (With short-circuit protection function)			
		Ripple	150mVp-p (With short-circuit protection function)			

Note: *The auxiliary power supply needs to be derated when operating at 70℃ to 85℃;

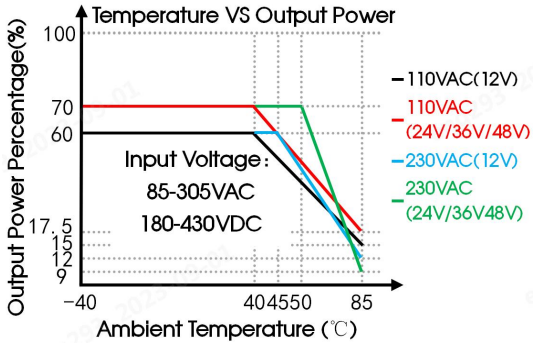
Characteristic Curve

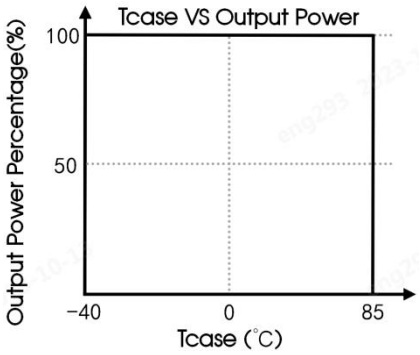
With aluminum plate for heat dissipation or 23.5CFM





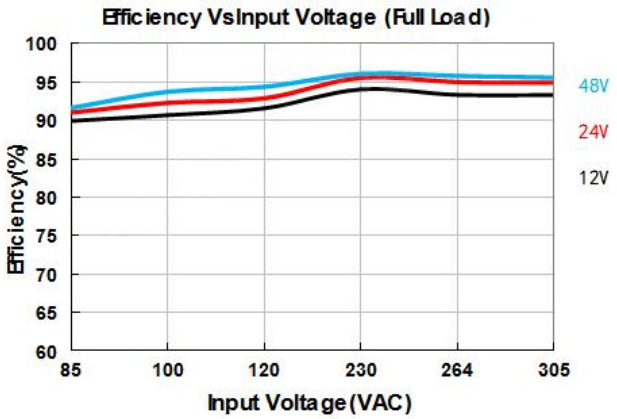
No aluminum plate for heat dissipation

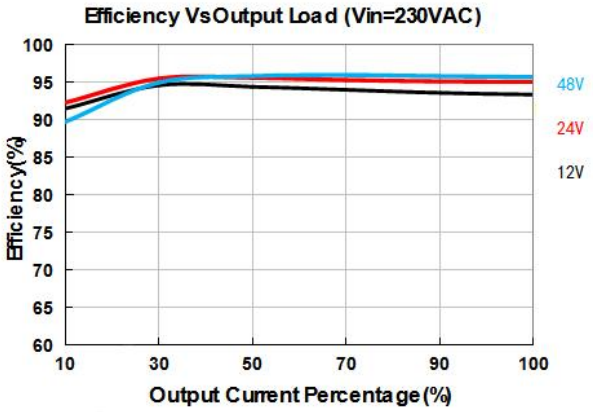




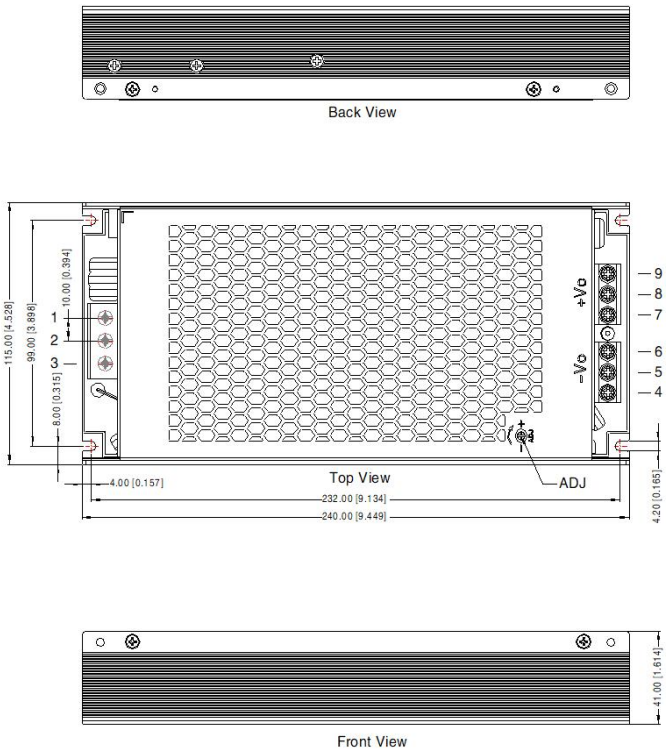
Note: 1. With an AC input voltage between 85-180VAC/180-320VDC, the output power must be derated as per the temperature derating curves;

2. This product is suitable for applications using natural air cooling;

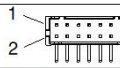




Dimensions and Recommended Layout



Pin–Out	
Pin	Mark
1	⏚
2	N
3	L
4	–Vo
5	–Vo
6	–Vo
7	+Vo
8	+Vo
9	+Vo



JP902

Pin	Mark	Product Connector	Customer Connector
1,3	PV	JST S14B-PHDSS or equivalent	JST B14B-PHDSS or equivalent
2	PV-DIS		
4,8,10,12	GND-signal		
5	+12v-AUX		
6	GND-AUX		
7	Remote ON-OFF		
9	DC-OK		
11	PC		
13	Vccs		
14	PC-DIS		

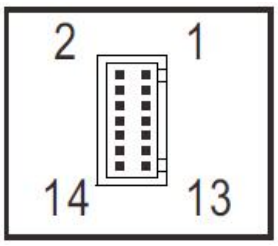
Connector wires range

Pro. No	Input connector	Output connector	Output connector (triple wires) Pic.
12V	14AWG	12AWG	+Vo triple wires
24V		14–12AWG	
36V/48V		16–12AWG	
Screw/torque	M4.0, Max 0.9N · m	M4.0, Max 0.9N · m	-Vo triple wires

Note:
Unit: mm[inch]
LED: Output status indicator LED
ADJ: Output adjustable resistor
General tolerances: ± 1.00[± 0.039]

Client Terminal（JP902）

Pin	Function	Description
1, 3	PV	Output voltage adjustable pin
2	PV-DIS	If the output voltage programming function is not active, please short PV (pin1) and PV-DIS (pin2)
4, 8, 10, 12	GND (Signal)	Negative output voltage signal
5	+12V-AUX	The auxiliary output voltage to GND-AUX (pin6) is 10.8-13.2V, and the maximum load current is 0.5A. This output is not controlled by the "remote control ON/OFF" signal
6	GND-AUX	Auxiliary output voltage GND, this signal loop is isolated from the main output (+V&-V)
7	Remote ON-OFF	The output can be turned on/off by electrical signal or dry contact between remote on/off; Short circuit (0-0.5V): power on; open circuit (2-5V): power off; the maximum output voltage is 5.5V
9	DC OK	Low level signal (-0.1-0.5V): When the output voltage is ≤80%±5% High level signal (4.5-5.5V): When the output voltage is ≥80%±5% The maximum sink current is 10mA
11	PC	Constant current value adjustable pin
13	Vccs	Positive output voltage signal
14	PC-DIS	If the output current programming function is not active, please short Vccs (pin13) and PC-DIS (pin14)



Note:

1. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity <75%RH with nominal input voltage and rated output load;
2. The room temperature derating of 5℃/1000m is needed for operating altitude greater than 2000m;
3. All index testing methods in this datasheet are based on our company corporate standards;
4. In order to improve the efficiency at high input voltage, there will be audible noise generated, but it does not affect product performance and reliability;
5. We can provide product customization service, please contact our technicians directly for specific information;
6. Products are related to laws and regulations: see "Features" and "EMC";
7. The out case needs to be connected to PE (⏚) of system when the terminal equipment in operating;
8. The output voltage can be adjusted by the ADJ, clockwise to increase;
9. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
10. The power supply is considered a component which will be installed into a terminal equipment. All EMC tests should be confirmed with the final equipment.
11. The image certification marks are for reference only; please refer to the selection table for actual specifications. Certification is based on the physical mark or packaging label.

AEFUH1000-xx Series Power Supply Application Note

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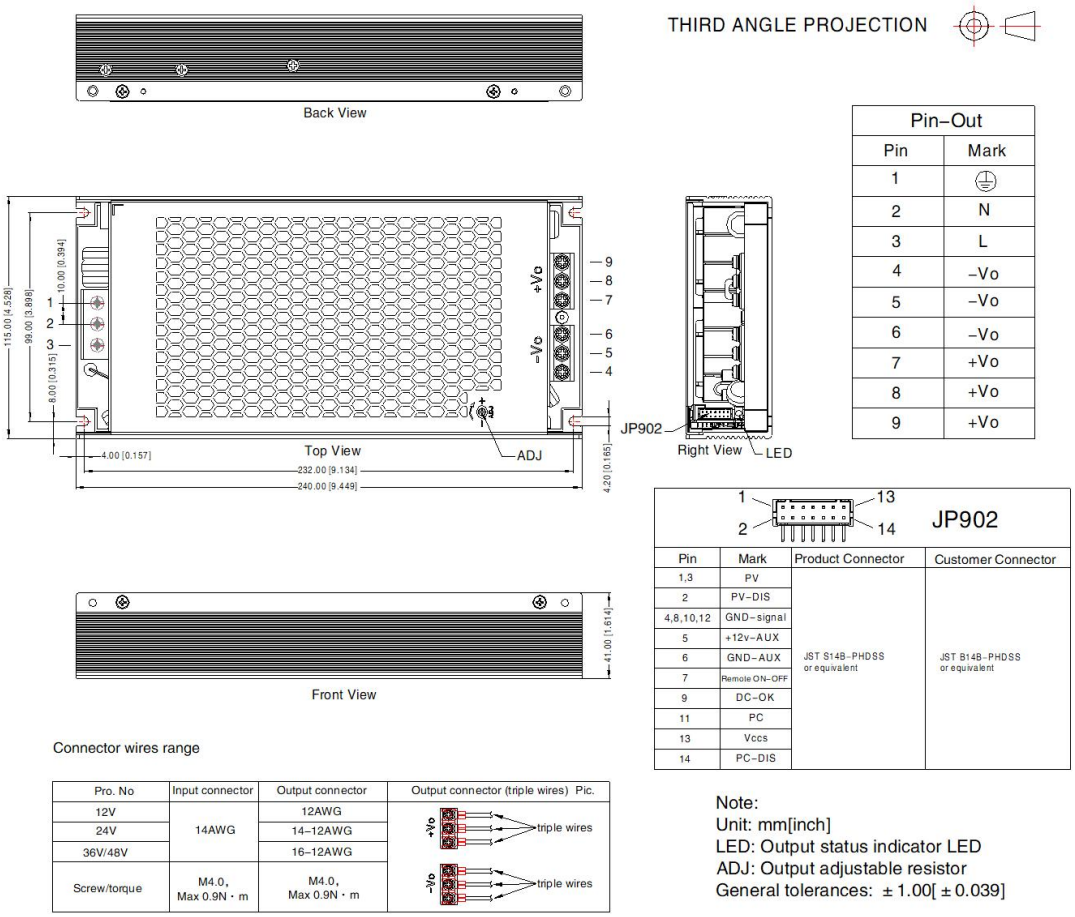
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1. Overview

1.1 Dimensions draw



Pin–Out	
Pin	Mark
1	⏚
2	N
3	L
4	–Vo
5	–Vo
6	–Vo
7	+Vo
8	+Vo
9	+Vo

JP902

Pin	Mark	Product Connector	Customer Connector
1,3	PV	JST S14B-PHDSS or equivalent	JST B14B-PHDSS or equivalent
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4,8,10,12	GND–signal		
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9	DC–OK		
11	PC		
13	Vccs		
14	PC–DIS		

Connector wires range

Pro. No	Input connector	Output connector	Output connector (triple wires) Pic.
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24V		14–12AWG	
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Screw/torque	M4.0, Max 0.9N · m	M4.0, Max 0.9N · m	–Vo triple wires

Note:
Unit: mm[inch]
LED: Output status indicator LED
ADJ: Output adjustable resistor
General tolerances: ± 1.00[± 0.039]

2. Function Manual

2.1 Input requirements

The AC input voltage and DC input voltage must be within the defined voltage range (refer to data-sheet), otherwise the power supply may not work properly or even malfunction.

2.2 Output requirements

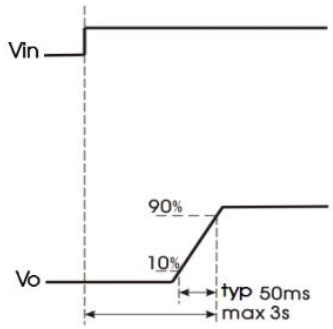
Main output

At any voltage value, the maximum output current and power must not exceed the rated/specified value. The output current must not exceed the maximum output current value. (Refer to the output Feature and Common Feature table for details)

Auxiliary output

The auxiliary circuit supports a maximum current of 0.5A.

2.3 Start-up timing



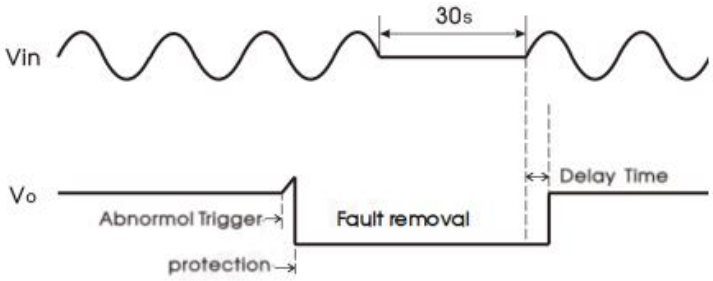
Item	Operating Conditions		Min.	Typ.	Max.	Unit
Power-off Hold Time	Room temperature, full load	115VAC	--	15	--	ms
		230VAC	--	15	--	
Start Delay Time	230VAC, full load		--	--	3	s

2.4 Output over-voltage protection (OVP)

Main output

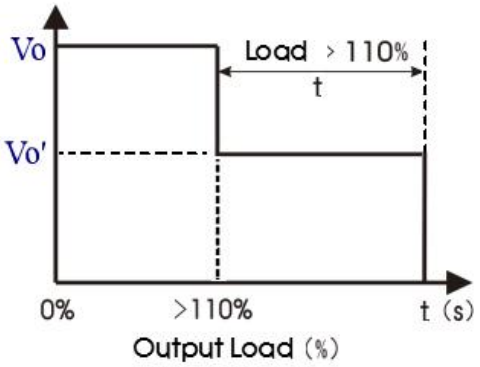
The over-voltage protection function is to close the main output when the output voltage reaches the protection voltage value. When the main circuit over-voltage protection occurs, the main circuit output voltage of the module will be shut off, and the auxiliary circuit output will not be affected. The main circuit

output can be restored after disconnecting the input power for at least 30 seconds.



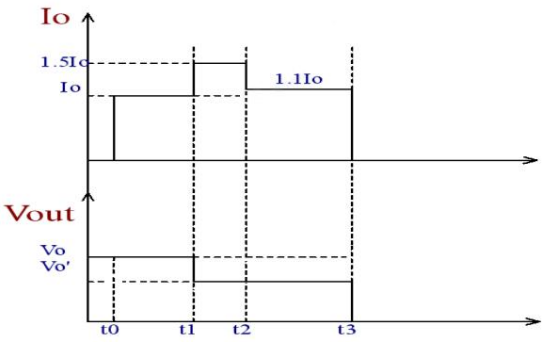
2.5 Output Over-Current (OCP), peak power

Over-current (OCP)



When the main output current exceeds 110% (min.) of the rated current, the output is closed after the constant current output is 3s (typ.), recover after restart, does not affect the output voltage of the auxiliary circuit.

Peak power:



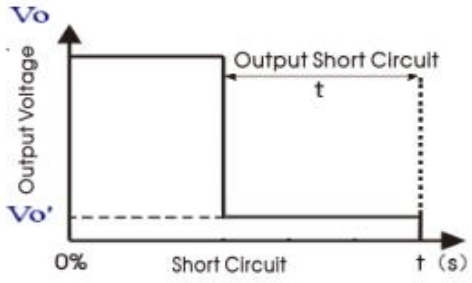
t0--t1 time: output current nominal Io, output voltage nominal Vo;

t1--t2 time: output current Io 'is 150%Io output voltage Vo' <Vo, maintenance time is 10ms;

t2--t3 time: 110% Io constant current output 3s (typ.) after the output is turned off, recover after restart.

2.6 Output short circuit protection (SCP)

When the main circuit output is short-circuited, turn off output after delay 3s, recover after restart.



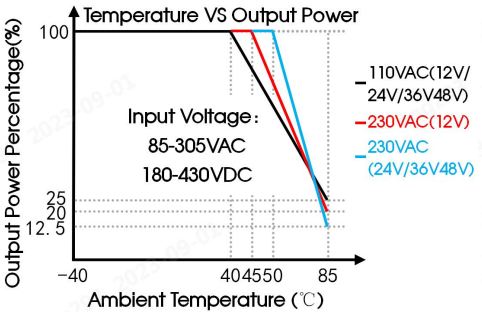
2.7 Over-temperature protection (OTP)

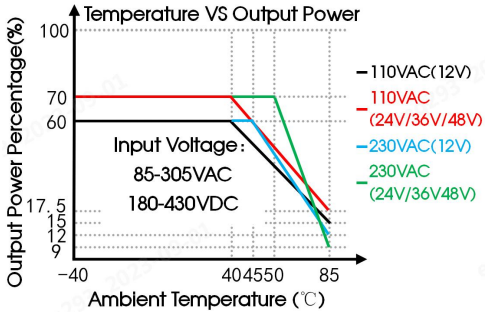
When the ambient temperature of the power supply exceeds 55℃ for a period of time at full load operation, the power supply will be shut down and the power supply will return to normal operation after the ambient temperature is reduced to 50℃.

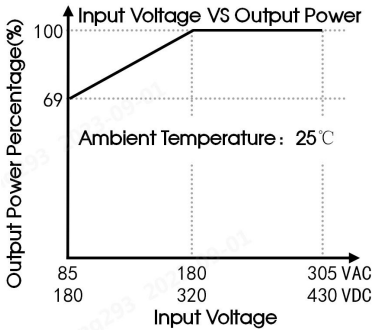
2.8 Output power derating

When the input voltage is greater than 180VAC (or 320VDC), only need to derate according to the temperature derating curve.

When the input voltage is lower than 180VAC (or 320VDC), the output power will be derated according to the following input voltage derating curve after temperature derating.



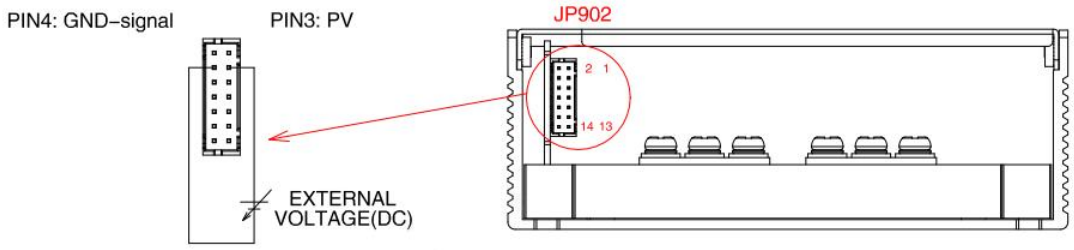


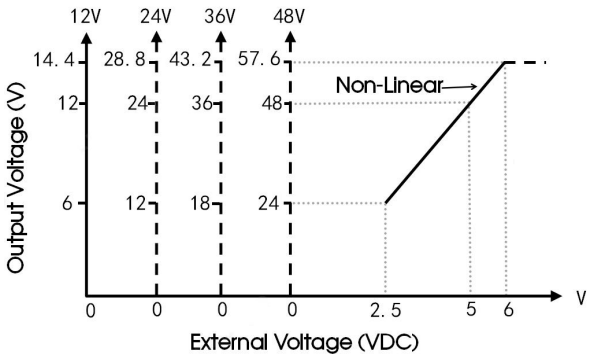


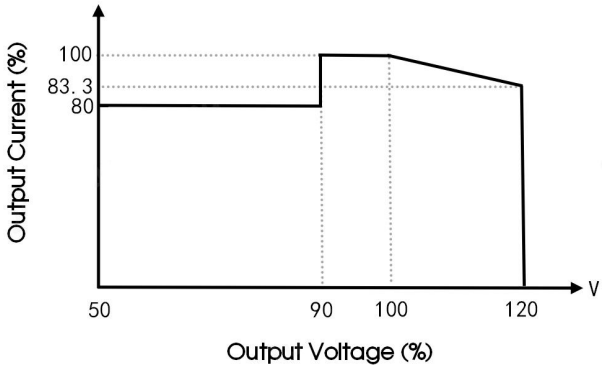
2.9 Output voltage adjustable

Output voltage adjustable (or PV/ Remote voltage adjustment/Remote adjustment/margin adjustment/dynamic voltage adjustment)

Note: In addition to adjustment by internal potentiometer, the output voltage can also be adjusted by external voltage







*Note 1: By factory default, the output voltage adjustment function is not activated, and PV (Pin1) and PV-DIS (Pin2) are shorted. When this function is not required, keep the PV (pin1) and PV-DIS (Pin2) short-circuited.

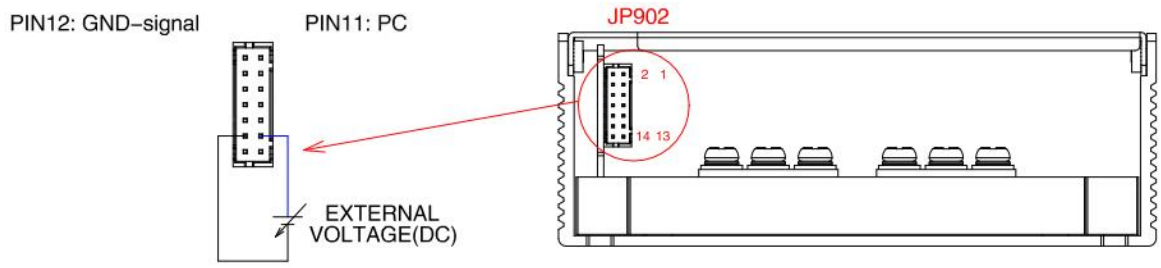
Otherwise, the power supply will have no output

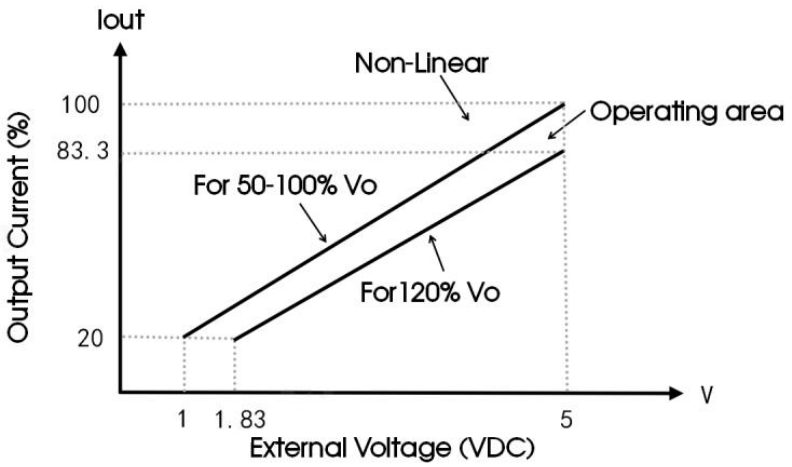
*Note 2: Keep PV (pin1) and PV-DIS (Pin2) open when this function is required

2.10 Constant current value adjustment

Constant current value adjustment (or PC/ remote current adjustment/Dynamic current adjustment)

Note: The output current can be adjusted to 20-110% of the rated current by external voltage





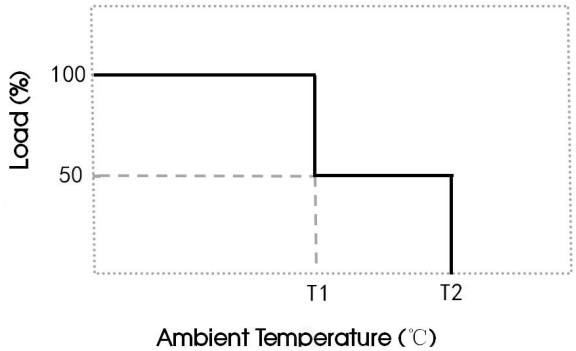
*Note 1: By factory default, the output current adjustment function is not activated, and the Vccs (Pin13) and PC-DIS (Pin14) are shorted. When this function is not required, short-circuit the Vccs (Pin13) and PC-DIS (Pin14). Otherwise, the power supply has no output

*Note 2: Keep Vccs (Pin13) and PC-DIS (Pin14) on when you need to activate this feature

*Note 3: In the overtemperature protection range, the automatic load reduction function works in PC mode.

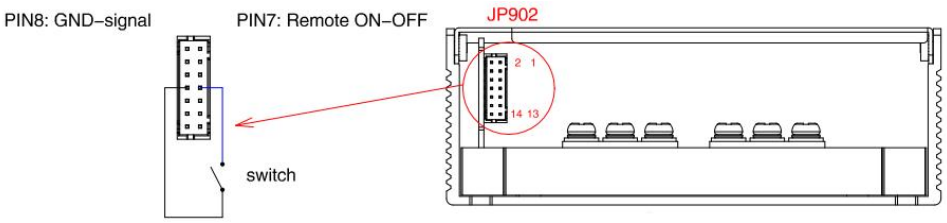
T1(typ.): Maximum ambient temperature at full load

T2(typ.): T1+5℃



2.11 Remote control

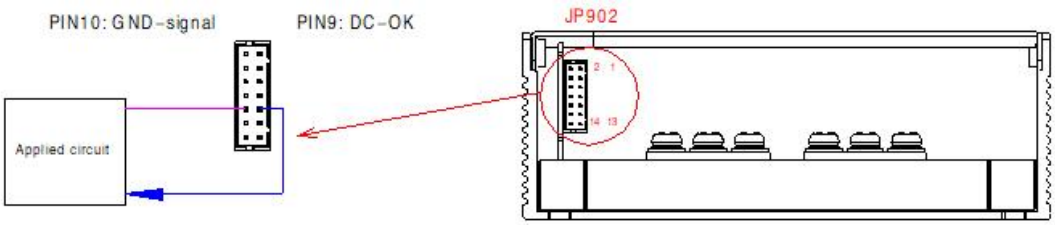
Through the "remote control on/off" function, you can control the power supply on/off alone or with other units



Remote Control	Power Status
Short circuit	ON
Open circuit	OFF

2.12 DC OK signal

The DC OK signal is a TTL level signal. The maximum sink current is 10mA, maximum external voltage 5.6V.



DC OK Signal	Power Status
"High" > 4.5-5.5V	ON
"Low" < -0.1-0.5V	OFF

3. Installation requirements

3.1 Safety introduction

During high voltage operating

- The power supply module is disconnected from the input DC or the AC power and placed for at least one minute before starting to operate it.
- When installing the input wire to the power module, please connect the ground terminal first, and then connect the L line and the N line.
- When removing the input wire, please remove the L wire and the N wire first, and then remove the ground wire.
- When disassembling, make sure that no objects fall into the power module.

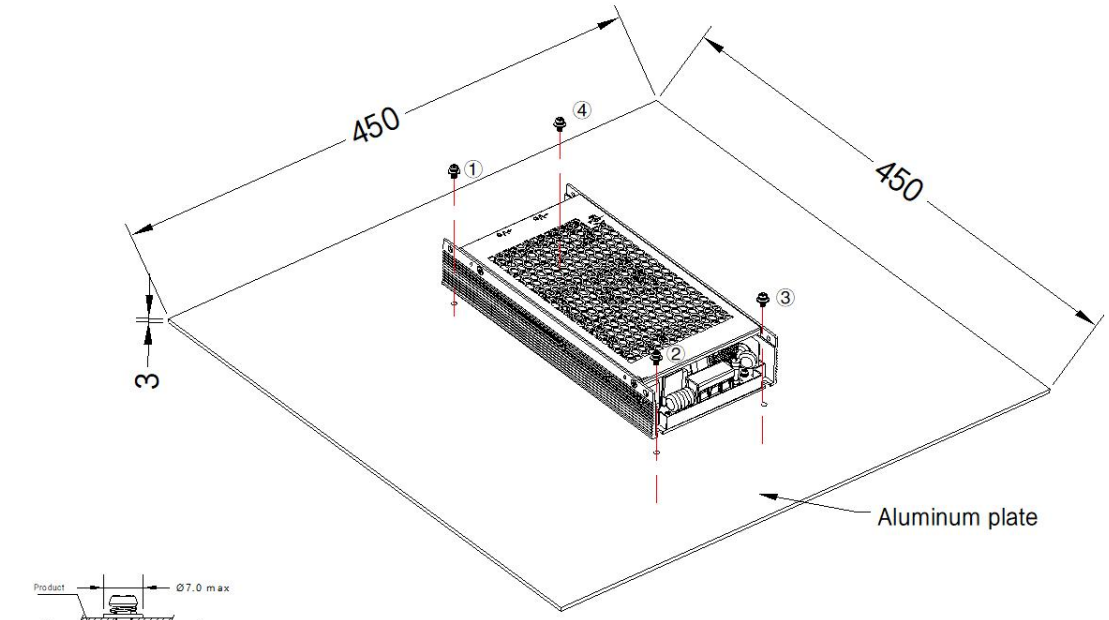
- Pay attention to high temperature.
- After the power module is working in a high temperature environment, wait for its shell to cool down before operating.
- This product needs to be installed by professionals and needs to be used with other equipment.

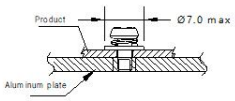
3.2 Installation method

Add aluminum plates and fans as follows

In order to comply with the "derating curve" and "static characteristic curve", the AEFUH1000-xx series must be mounted on an aluminum plate (or a case of the same size), the size of the aluminum plate is 450mm*450mm*3mm, Installation is shown below:

Note in order to optimize the heat dissipation performance, The surface of the aluminum plate must be smooth (or evenly coated with thermal grease), and the power module must be installed in the center of the aluminum plate.





Position	Screw Spec.	Torque(max)
② ~ ④	M3	0.4N · m

Note: 1. In order to meet the "Derating Curve", the product testing must be installed onto an aluminum plate. The size of the suggested aluminum plate is shown as above.
And for optimizing thermal performance, it is necessary to apply thermal grease on the bottom of the product.
2. It is suggested to install the product with M3 combination screws, and the product must be firmly installed at the center of the aluminum plate.

