AC/DC 3000W Switching Power Supply

LMR3000-4850

MORNSUN®

RoHS

FEATURES

- Universal 85-300VAC Input voltage
- Active PFC
- Operating ambient temperature range: -25℃ to +75℃
- High efficiency, low ripple & noise, high reliability
- Full digital control
- Support CAN bus communication function
- Perfect protection function
- 3 years warranty
- Operating altitude up to 5000m
- Support CAN bus regulating output voltage, output current and average flow function
- Support hot insertion function
- Support LED instructions alarm
- Design refer to IEC60950-1, IEC62368-1

The LMR3000-4850 rectifier module is the AC-DC module power supply provided by Jin Shengyang for customers. This power supply is a high-efficiency, high-power density digital module power supply. The wide input voltage range supports 53.5VDC output voltage. It supports the expansion frame mode CAN2. 0B bus communication function, the product has the advantages of perfect protection function, low ripple noise, and can be used in combination. It can be used to monitor the working status of the power supply, real -time load, and control adjustment function through the upper machine. The product has safe and reliable, EMC performance supports 5KA -level lightning protection. The security specifications meet the IEC60950-1/IEC62368-1certification standards. Aces and other fields.

Selection Guide

Certification	Part No.	Cooling Method	Output Power (W)	nominal Output Voltage and Current (vo/Io)	Output Voltage Adjustable Range (V)	Efficiency at 230VAC (%) Typ.*	Max. Capacitive Load (μF)
--	LMR3000-4850	Forced cooling	3001	53.5VDC/56.1A	42-58VDC	96%@15A load	100000
						96.5%@25A load	
						95.5%@50A load	

Note: 1.*When testing the full load conversion efficiency, the fan power is not included in the output power, and the typical fan power is 7.44W (TYP).
2.Output voltage can adjust value by CAN communication.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	Rated input (Certified voltage)		100	--	240	VAC
	AC input		85	--	300	
Input Voltage Frequency	Rated input (Certified voltage)		45	--	66	Hz
	AC input		45	--	66	
Input Current	nominal Input Voltage(230VAC)		--	--	16	A
Inrush Current	nominal Input Voltage(230VAC)	Cold start	--	20	--	
Power Factor	nominal Input Voltage(230VAC)		--	0.99	--	--
THD	nominal Input Voltage(230VAC), 50%-100% load		--	--	5	%
Start-up Delay Time*	nominal Input Voltage(230VAC), rated load, Room temperature		--	--	10	s
	nominal Input Voltage(230VAC), rated load,Environmental temperature ≤ -10℃		--	--	80	

Hot Plug		Support hot insertion function

Note: * Start delay time: When the ambient temperature is less than-10℃ and the chiller is started, the rectifier module power enters a constant output voltage and constant output current start mode. The maximum start time when the output is under rated load is 80 seconds.

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range		--	--	0.5	%
Line Regulation	Rated load		--	--	1	
Load Regulation	0% - 100% load		--	--	1	
Minimum Load			0	--	--	
Stand-by Power Consumption	nominal Input Voltage(230VAC), Room temperature		--	--	8	W
Ripple & Noise*	20MHz bandwidth (peak-peak value)	nominal Input Voltage(230VAC)	--	--	200	mV
Temperature Coefficient			--	±0.03	--	%/℃
Hold-up Time*	nominal Input Voltage(230VAC),rated load		10	--	--	ms
Short Circuit Protection*	nominal Input Voltage(230VAC)		constant current works, , self-recover			
Over-current Protection*	nominal Input Voltage(230VAC)	Room temperature , high temperature	1.05% Io, constant current works, , self-recover			
		Low Temperature	1.05%Io, constant current works, , self-recover			
Over-voltage Protection*	230V		< 60.5VDC,self-recover			
Over-temperature Protection	230VAC , 100%load	Over-temperature protection start	--	--	70	℃
		Over-temperature protection release	60	--	--	

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 overvoltage protection, the upper machine can set the specific overvoltage protection value.
3. *Hold-up Time,Keep the power loss time, and determine that the output voltage is dropped to 80%of the output voltage to 80%of the rated output voltage.
4. *Short -circuit Protection:After removing the output short -circuit protection, and the output load current is less than 23A, the output voltage can be restored by itself.
5. *Over-current Protection:The output constant current point can be adjusted by CAN communication, after removing the output over-current Protection, and the output load current is less than 23A, the output voltage can be restored by itself.

General Specifications

Item		Operating Conditions		Min.	Typ.	Max.	Unit
Isolation Test*	Input - ⏚	Electric strength test for 1min., leakage current <30mA		1500	--	--	VAC
	Input - output			3000	--	--	
	Output - ⏚	Electric strength test for 1min., leakage current <45mA		500	--	--	
Insulation Resistance*	Input - ⏚	Ambient temperature: 25 ± 5℃ Relative humidity: < 95%RH, no condensation Test voltage: 500VDC		100	--	--	MΩ
	Input - output			100	--	--	
	Output - ⏚			100	--	--	
Storage Temperature				-25	--	75	℃
Operating Temperature				-40	--	85	
Storage Humidity		no condensation		10	--	95	%RH
Operating Humidity				20	--	90	
switching frequency		PFC		--	55	--	KHz
		DC-DC		--	85	--	
Power Derating		Operating temperature derating	53.5V 50℃-65℃	2	--	--	%/℃
			65℃-75℃	7	--	--	
		Input voltage derating	176V-85V	0.458	--	--	%/VAC
Leakage Current		230VAC，60Hz	Touch current	<2.5mA			

Safety Standards		Safety according to IEC60950-1, IEC62368-1
Safety Class		CLASS I
MTBF	MIL-HDBK-217F@25℃	≥500000 h
Warranty	Ambient temperature: <25℃	3years

Note: 1. *When testing insulation and resistance, you should first remove the GDT screw;
2. *When testing the insulation resistance, remove the GDT screw first.

Functional Specifications*

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Remote Control Switch*	All input voltage range, all load range	Through the CAN bus communication control			
The output voltage can set the value	Repeat settings, the interval time is less than 1 minute	41.5	--	58.5	V
The default value settings of the output voltage	Just set once	48	--	58	
Output overvoltage protection can set value	All input voltage range, all load range	56	--	61.5	
Output current limit flow multiplier setting	Just set once	0	--	1.22	
Input current limit flow setting	All input voltage range, all load range	0	--	100	
Input voltage display accuracy	nominal Input Voltage(230VAC), rated load	--	2	--	%
Input current display accuracy	nominal Input Voltage(230VAC), rated load	--	5	--	
Output voltage display accuracy	rated load	--	1.5	--	
Output current display accuracy	rated load	--	6	--	
Fan speed display accuracy	All input voltage range, all load range	--	10	--	
Vascopic environmental temperature accuracy	Room temperature	--	5	--	
PFC topological work temperature display accuracy	Room temperature	--	5	--	
DC/DC topological work temperature display accuracy	Room temperature	--	5	--	
WALK-in start-delay settings	Walk-in start-delay setting range S (8s-200s)				
Power module order start time interval settings	Setting time interval setting of the power module sequence S (0s-20s)				
Power module output overvoltage protection mode setting	Power off restart and restore the output voltage by yourself				
	Restart the output voltage by yourself				
Power module performs address redistribution control	Power and parallel application, use the competitive address distribution mechanism				
Work status and warning LED light	Running status, warning, failure				
Cumulative operation time of the power module		10	--	--	years
Power module parameter information read	Including the rated output information of the power module and the SN code and other information				
Multi -module parallel work average flow accuracy	The output load power is greater than 50%of the rated load.	--	5	--	%

green light	Running		Light up	The input voltage of the power module is normal without processing.
			Extinguish	The input voltage of the power module is abnormal, please check whether the input voltage is normal. If the input voltage is normal, replace the power module.
			0.5Hz flashing	There is no need to deal with manual query.
			4Hz flashing	The power module application is loaded, and the output voltage is restored by itself after loading.
Yellow light	warning		Extinguish	The input voltage of the power module is normal without processing.
			Light up	1. The working temperature of the power module is too high, and the temperature protection function is

				performed. Please check whether the ventilation port of the power module is blocked or the environmental temperature is too high. 2. The input voltage of the power supply is too high or the input voltage is too low, please check the input voltage of the power module. 3. The power module is in a dormant state and does not need to be disposed of.
			0.5Hz flashing	The power module is interrupted with external communication, and the power module is required or checking the communication device.
red light	failure		Extinguish	There is no failure of the power module.
			Light up	1. During the output overvoltage protection, the power module needs to be pulled out, waiting for 1 minute before inserting. 2. No output voltage caused by the internal failure of the power module, please replace the power module.
Note: For details, please inquire about our technical service staff.				

Environmental Characteristics

Item	Operating Conditions	Standard
High and Low Temperature Working	+75℃, -25℃	GB2423.1、GB2423.2、IEC60068-2-1
Sinusoidal Vibration	10-500Hz, 2G 10min/T, three directions of X, Y, Z axis	GB2423.10、IEC60068-2-6
Alternating Hot and Humid	+25℃, 95%RH - +50℃, 95%RH	GB2423.4、IEC60068-2-30
Low Temperature Storage	-40℃	GB2423.1、IEC60068-2-1
High Temperature Storage	+85℃	GB2423.2、IEC60068-2-2
High Temperature Aging	+50℃	GB2423.2、IEC60068-2-2
Normal Temperature Aging	+25℃	GB2423.1、IEC60068-2-1
Temperature Shock	-25℃ to +75℃	GB2423.22、IEC60068-2-14
Temperature Cycle	-25℃ to +50℃	GB2423.22、IEC60068-2-14
Hot and Humid	+85℃, 85%RH	GB2423.50、IEC60068-2-67
High Temperature Elevation	+50℃, 54KPa	GB2423.26、IEC60068-2-41
Low Temperature Elevation	-25℃, 54KPa	GB2423.25、IEC60068-2-40
Constant Humid and Hot	+40℃, 95%RH	GB2423.3、IEC60068-2-78
Packaging Drop	1m, one corner, three edges and six sides	GB2423.8、IEC68-2-32

General Specifications

Case Material	Metal (SGCC) and (AL6063)
Dimensions	40.8mm*105mm*269mm
Weight	1660g (Typ.)
Cooling Method	Forced cooling/ 26.5CFM (Typ.)

Electromagnetic Compatibility (EMC)

Emissions	CE (Input port)	CISPR32 EN55032 150K - 30MHz	CLASS A
	RE	CISPR32 EN55032 30MHz - 1GHz	CLASS A
	Harmonic current	IEC/EN61000-3-2	CLASS A
Immunity	ESD	IEC/EN61000-4-2 Contact1±6KV/Air ±8KV	perf. Criteria A
	RS	IEC/EN61000-4-3 10V/m	
	EFT (Input port)	IEC/EN61000-4-4 ±4KV	

	Surge (Input port)*	IEC/EN61000-4-5	line to line ±2KV/line to ground ±4KV	
	MS	IEC/EN61000-4-8	30A/m	
	CS	IEC/EN61000-4-6	0.15 - 80MHz 10Vr.m.s	
	Voltage dips	IEC/EN61000-4-11	0% of 230Vac，0Vac，20ms	perf. Criteria B
			5% of 230Vac，11.5Vac，10ms	perf. Criteria B
			70% of 230Vac，161Vac，500ms	perf. Criteria C
	Voltage interruption	IEC/EN61000-4-11	0% of 230Vac，0Vac，5000ms	perf. Criteria C

Note: 1. *perf. Criteria:
A: The equipment shall continue to operate as intended without operator intervention;
B: After the test, the equipment shall continue to operate as intended without operator intervention;
C: Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions.
D; The functional reduction or loss of function due to damage is damaged.
2*Before testing lightning waves, you should first confirm that the GDT screw has been installed.

Product Characteristic Curve

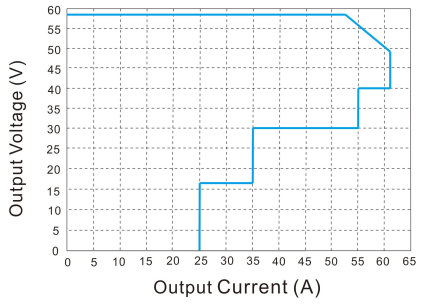


figure1 *

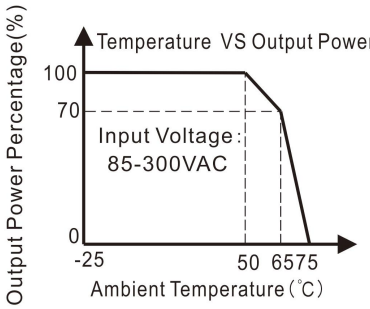


figure2

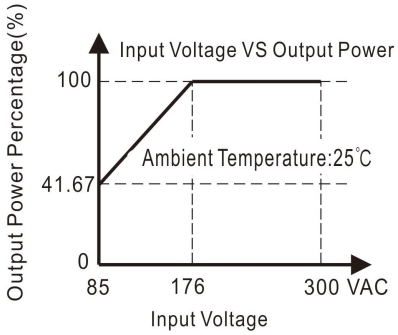


figure3

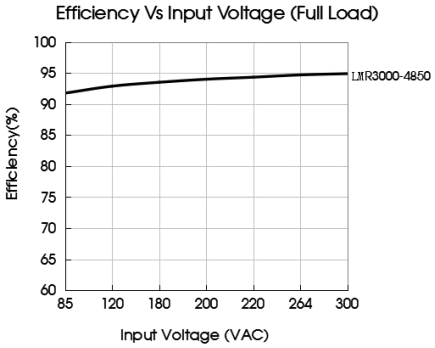


figure4

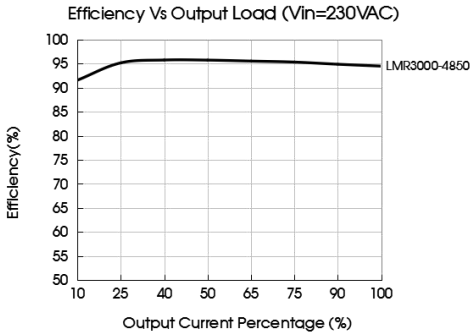
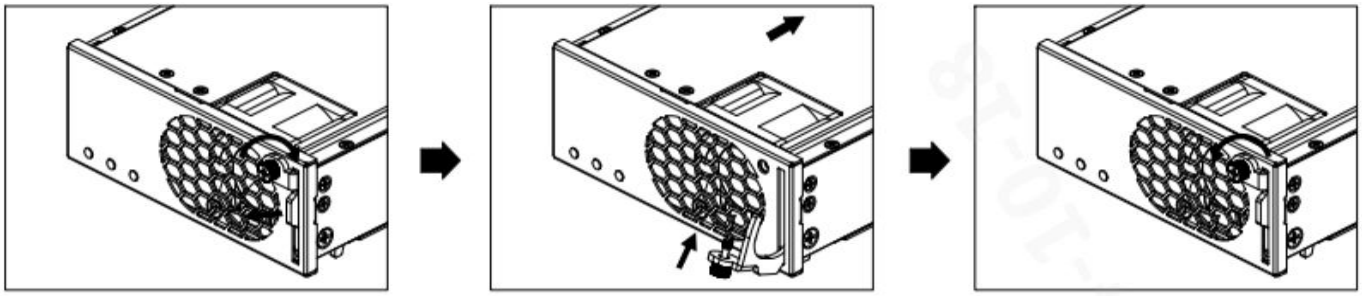


figure5

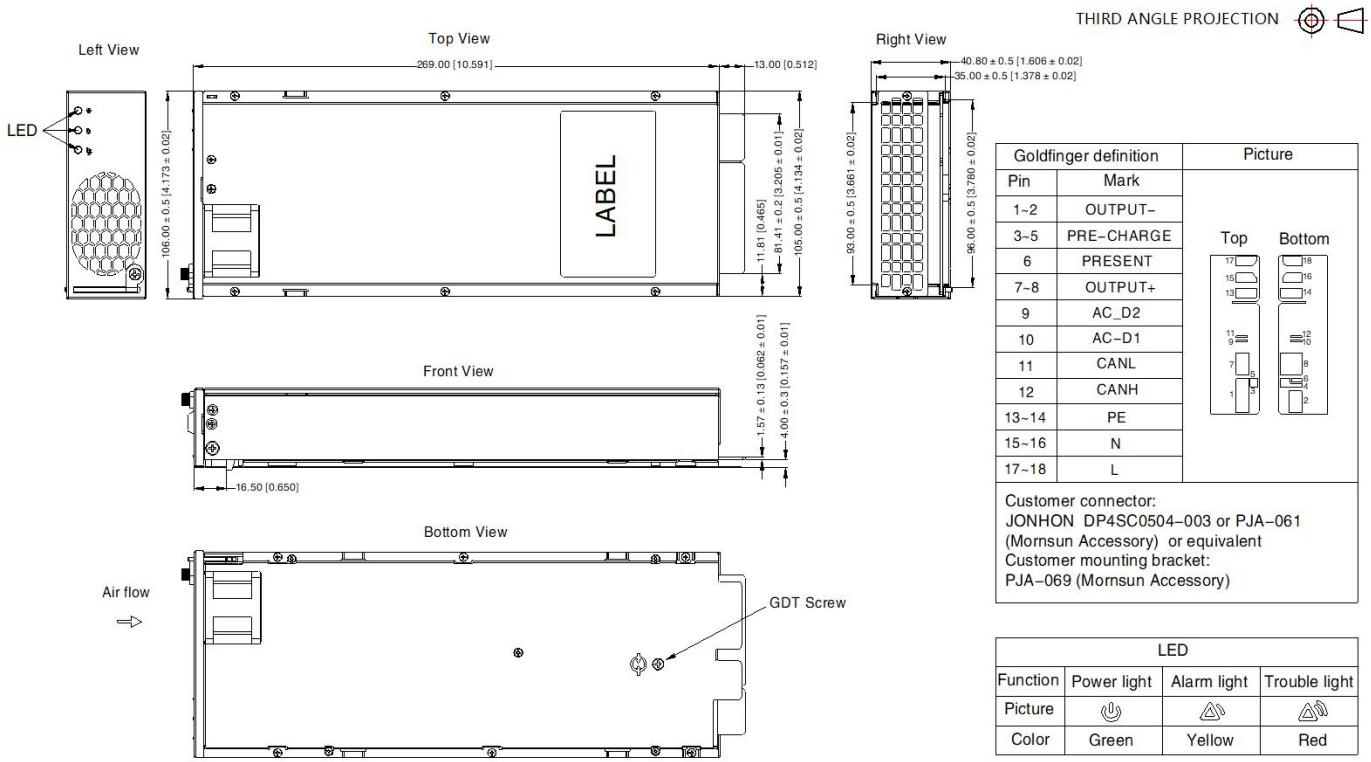
Note:
1. When the output of the power module is protected, the output voltage and output current will be limited to the scope of the shadow.
2. All schematic diagrams are tested at 25C's environmental temperature, except for other descriptions.
3. When the input voltage is 85VAC-176VAC reduction application, the demand for the reduction of working temperature is needed.
4. This product is suitable for use in natural air cooling environment. If you need to use in a closed environment, please consult our FAE staff.
5. The operating temperature is the same as the ambient temperature, and it is determined according to the air temperature at 2cm above the power module.

Installation Diagram



Step1: Use your hand or a screwdriver to loosen the tight screw and pull the handle outward.
Step2: Gently push the power supply into place and close the handle.
Step3: Secure the handle by tightening the hand screw with your hand or a screwdriver.

Dimensions and Recommended Layout



Goldfinger definition		Picture
Pin	Mark	
1~2	OUTPUT−	
3~5	PRE−CHARGE	
6	PRESENT	
7~8	OUTPUT+	
9	AC_D2	
10	AC−D1	
11	CANL	
12	CANH	
13~14	PE	
15~16	N	
17~18	L	

Customer connector:
JONHON DP4SC0504−003 or PJA−061
(Mornsun Accessory) or equivalent
Customer mounting bracket:
PJA−069 (Mornsun Accessory)

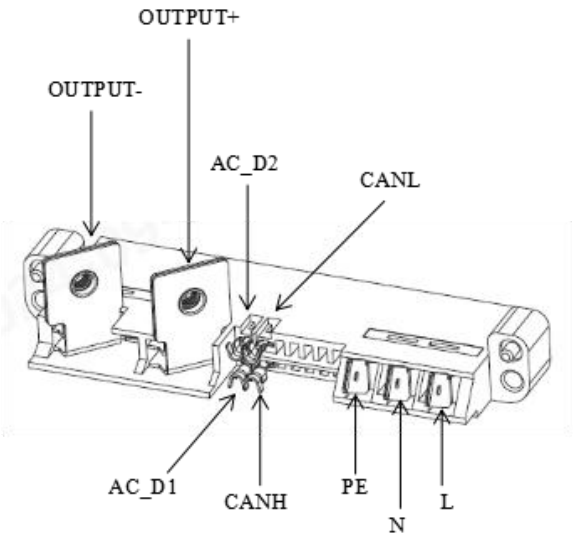
LED			
Function	Power light	Alarm light	Trouble light
Picture			
Color	Green	Yellow	Red

Note:
Unit: mm[inch]
General tolerances: ± 1[± 0.039]

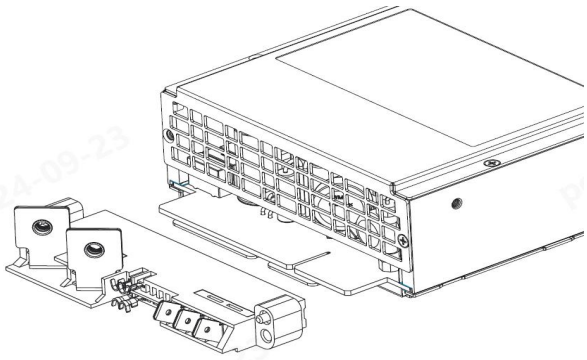
LMR3000−4850−V0

Product extension External connection method-connector (accessories)

Product model: PJA-061



Installation Diagram:



Installation step:

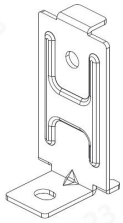
As shown in the figure, insert the PJA-061 connector on the gold finger connector of the product.

This accessory can be purchased separately,if it is necessary to contact the sales engineer.

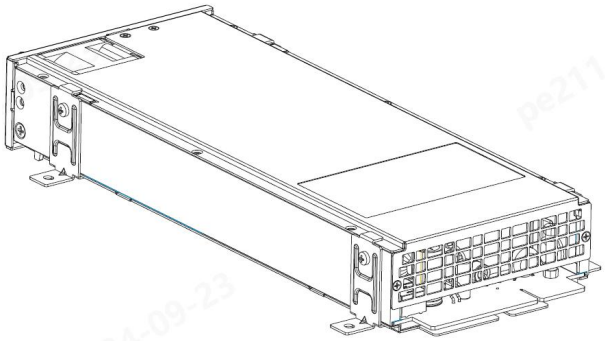
Special product model: LMR3000-4850

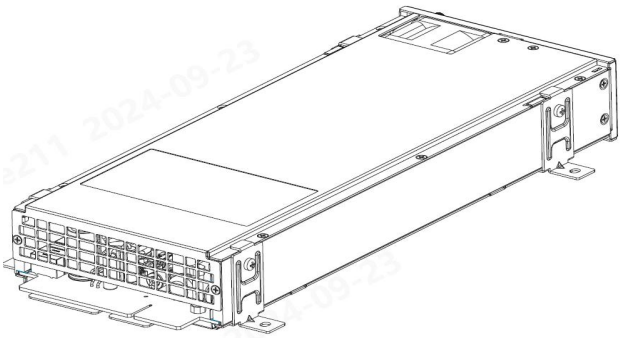
Product extension External connection method-fastener (accessories)

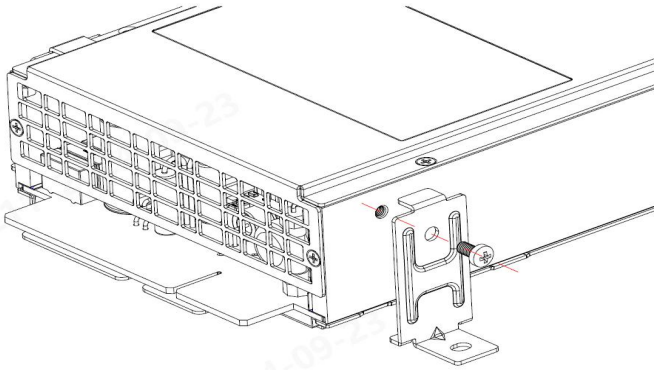
Product model：PJA-069



Installation Diagram：







Installation step：

As shown in the figure, PJA-069 is installed on the side position, and the M3 screws in the accessory package are tightened,M3 screw, tight torque 0.45N.m.

This accessory can be purchased separately,if it is necessary to contact the sales engineer.

Special product model：LMR3000-4850

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220767;
2. 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;
3. The room temperature derating of 5℃/1000m is needed for operating altitude greater than 2000m;
4. All index testing methods in this datasheet are based on our company corporate standards;
5. 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;
6. We can provide product customization service, please contact our technicians directly for specific information;
7. Products are related to laws and regulations: see "Features" and "EMC";
8. The out case needs to be connected to PE (⏚) of system when the terminal equipment in operating;
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. Please consult our FAE for EMC test operation instructions.

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