AC/DC 3000W Switching Power Supply

LMR3000-4860

MORNSUN®

RoHS

FEATURES

- Universal 85-300VAC Input voltage
- Active PFC
- Supports adjustable resistor voltage regulation: 47-54VDC
- 130% peak load for 5 seconds
- Double-sided conformal coating process with triple protection
- Wiring method: No accessories required, wiring terminal
- The installation is more convenient, the package comes with 4 L-shaped accessories
- Operating ambient temperature range: -30℃ to +75℃
- Supports parallel operation of 2 units
- Support CAN bus communication function, support CAN bus regulating output voltage, output current and average flow function
- Perfect protection function, fan anomaly protection, Input under-voltage, over-voltage protection, output short circuit, over-current, over-voltage, over-temperature protection
- Operating altitude up to 5000m
- Support LED instructions alarm
- Design refer to EN/IEC62368

The LMR3000-4860 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. 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 design refer to EN/IEC62368 certification standards. Aces and other fields.

Selection Guide

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)
LMR3000-4860	Forced cooling	3000	48VDC/62.5A	47-54VDC	93%@62.5A load	100000

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)		50	--	60	Hz
	AC input		45	--	66	
Input Current	115VAC		--	18	--	A
	230VAC		--	--	16	
Inrush Current	230VAC	Cold start	--	20	--	
Power Factor	230VAC		--	0.99	--	--

THD	230VAC, 50% -100% load	--	--	5	%
Input Under-voltage Protection	Lockout activation range	70	--	--	VAC
	Lockout deactivation range	--	--	83	
Input Over-voltage Protection	Over-voltage protection start	300	--	--	
	Over-voltage protection release	290	--	--	
Start-up Delay Time*	230VAC, rated load	--	--	10	s
	230VAC, rated load, environmental temperature ≤ -10℃	--	--	80	
Hot Plug		Unavailable			

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		--	±1	--	%
Line Regulation	Rated load		--	±1	--	
Load Regulation	0%, 100% load		--	±1	--	
Minimum Load			0	--	--	
Stand-by Power Consumption	230VAC		--	--	8	W
Ripple & Noise*	20MHz bandwidth (peak-peak value)	Nominal Input voltage (230VAC)	--	--	300	mV
Temperature Coefficient			--	±0.03	--	%/℃
Hold-up Time*	230VAC, rated load		--	10	--	ms
Short Circuit Protection*	230VAC		Constant current works, self-recover			
Over-current Protection*	230VAC, rated load		1.05% Io, constant current works, self-recover			
Over-voltage Protection*	230V		≤70V	self-recover		
Over-temperature Protection	230VAC, 100% load	Over-temperature protection start	--	--	70	℃
		Over-temperature protection release	60	--	--	
Fan Anomaly Protection			Output off			

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. *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;
3. *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;
4. *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;
5. *Output over-voltage protection, the upper machine can set the specific over-voltage protection value.

General Specifications

Item		Operating Conditions	Min.	Typ.	Max.	Unit
Isolation*	Input - output	Electric strength test for 1min., leakage current <30mA	3000	--	--	VAC
	Input - ⏚		1500	--	--	
	Output - ⏚	Electric strength test for 1min., leakage current <45mA	500	--	--	
Insulation Resistance*	Input - output	Ambient temperature: 25 ± 5℃ Relative humidity: < 95%RH, no condensation Test voltage: 500VDC	100	--	--	MΩ
	Input - ⏚					
	Output - ⏚					
Operating Temperature			-30	--	+75	℃
Storage Temperature			-40	--	+85	
Operating Humidity		Non-condensing	--	--	90	%RH
Storage Humidity			--	--	95	

Switching Frequency	PFC		--	55	--	KHz
	DC-DC		--	85	--	
Output Power Derating	Operating temperature derating	+50℃ to +65℃	2	--	--	%/℃
		+65℃ to +75℃	7	--	--	
	Input voltage derating	85VAC - 176VAC	0.6409	--	--	%/VAC
Leakage Current	230VAC，60Hz	Touch current	<2.5mA			
Safety Standards			Design refer to EN/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 & by default, it turns on directly upon power-on			
The Output Voltage Can Set The Value	Repeat settings, the interval time is less than 1 minute	47	--	54	V
The DC Output Is Adjustable By a Resistor		47	--	54	
Output Over-voltage Protection Can Set Value	All input voltage range, all load range	56	--	68	
Output Current Limit Flow Multiplier Setting	Just set once	0	--	1.3	
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 Over-voltage Protection Mode Setting	Power off restart and restore the output voltage by yourself				
	Restart the output voltage by yourself				
Power Module Address	Power and parallel application, fixed address				
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.	--	6	--	%

Green Light	Running		Constant on	Rectifier module has AC input normal state, no need to deal with
			Constant extinction	1. Without AC input, check whether the AC input is normal, such as If AC input is normal, replace the

				rectifier module; 2. The inside of the rectifier module is damaged. Replace the rectifier module.
			0.5Hz flicker	Manual query status Normal status, no need to process.
			4 Hz flicker	Rectifier module is in application program loading state and automatically recovers after loading without processing.
Yellow Light	Warning		Constant extinction	Rectifier module is in normal state without protection alarm, and no processing is required.
			Constant on	1. Power limit pre-alarm of rectifier module caused by too high ambient temperature; protection shutdown alarm caused by too high ambient temperature; check whether the vent of rectifier module is blocked and whether the ambient temperature is normal; 2. Check the grid voltage for AC input over-voltage and under-voltage protection; 3. The rectifier module is in a normal state of dormancy and shutdown and does not need to be processed.
			0.5Hz flicker	Communication between the rectifier module and the outside is interrupted. Replace the rectifier module or the monitoring module.
Red Light	Failure		Constant extinction	Rectifier module is in normal state without fault, and no treatment is required.
			Constant on	1. Pull out the rectifier module due to output over-voltage locking, and insert it after waiting for more than 1 minute; 2. If there is no output caused by internal fault of rectifier module, replace the rectifier module.
Note: For details, please inquire about our technical service staff.				

Environmental Characteristics

Item	Operating Conditions	Standard
High and Low Temperature Working	+75℃, -30℃	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
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	-30℃ to +75℃	GB2423.22、IEC60068-2-14
Temperature Cycle	-30℃ to +50℃	GB2423.22、IEC60068-2-14
Hot and Humid	+85℃, 85%RH	GB2423.50、IEC60068-2-67
Packaging Drop	1m, one corner, three edges and six sides	GB2423.8、IEC68-2-32

General Specifications

Case Material	Metal (SGCC) and (AL6063)
Dimensions	40.80 x 106.00 x 284.00mm
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
	Voltage flicker	IEC/EN61000-3-3		
Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV/Air ±15KV	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

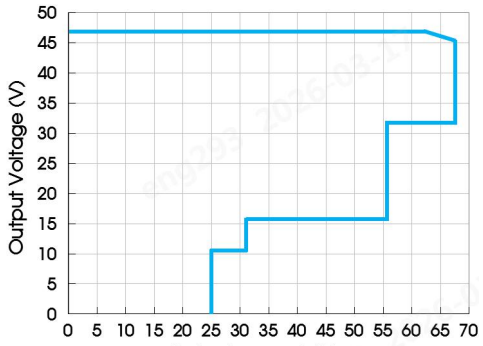


figure1 *

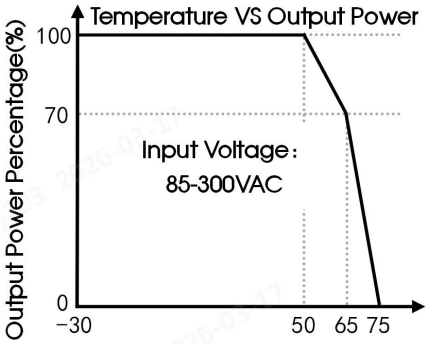


Figure2

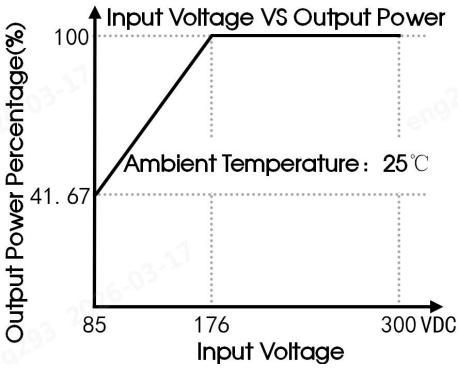


Figure3

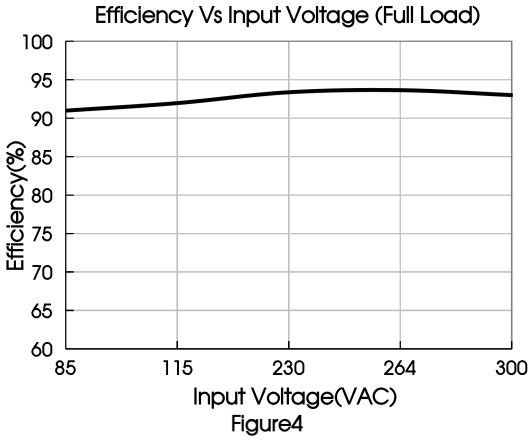


Figure4

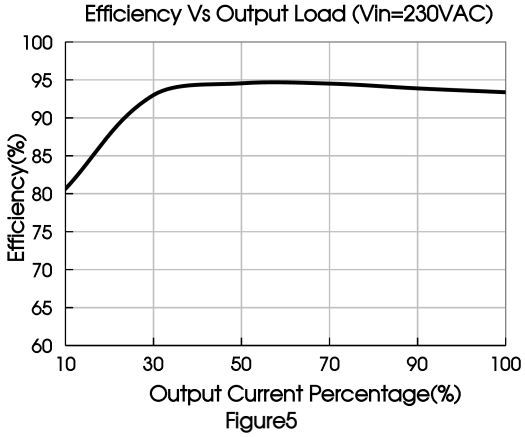
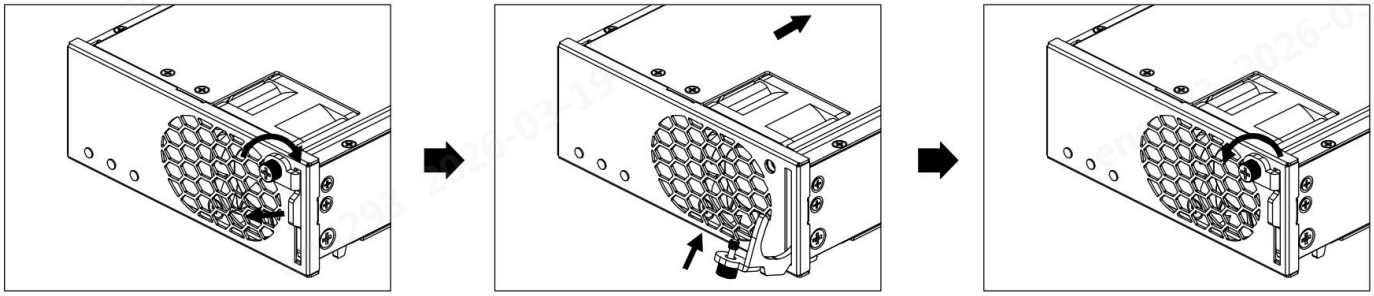


Figure5

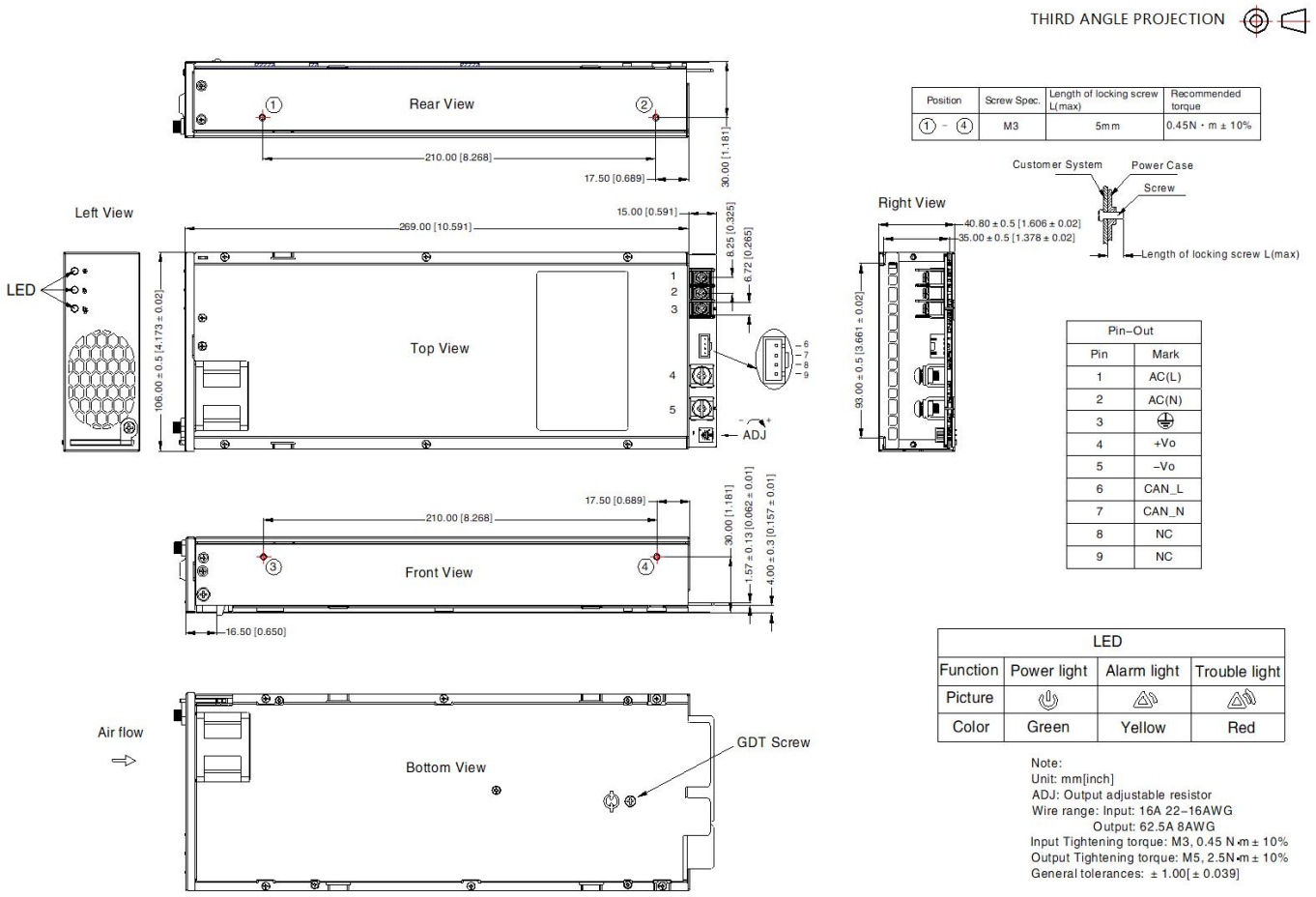
Note:
1. When the output of the power module is protected, the output voltage and output current will be limited to the scope of the shadow;
2. All schematic diagrams are tested at 25C's environmental temperature, except for other descriptions;
3. When the input voltage is 85VAC-176VAC reduction application, 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



Position	Screw Spec.	Length of locking screw L(max)	Recommended torque
① - ④	M3	5mm	0.45N · m ± 10%

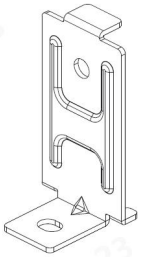
Pin-Out	
Pin	Mark
1	AC(L)
2	AC(N)
3	⏚
4	+Vo
5	-Vo
6	CAN_L
7	CAN_N
8	NC
9	NC

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

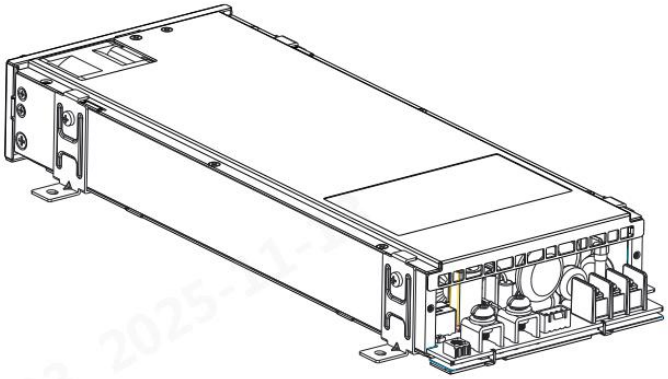
Note:
Unit: mm[inch]
ADJ: Output adjustable resistor
Wire range: Input: 16A 22-16AWG
Output: 62.5A 8AWG
Input Tightening torque: M3, 0.45 N·m ± 10%
Output Tightening torque: M5, 2.5N·m ± 10%
General tolerances: ± 1.00[± 0.039]

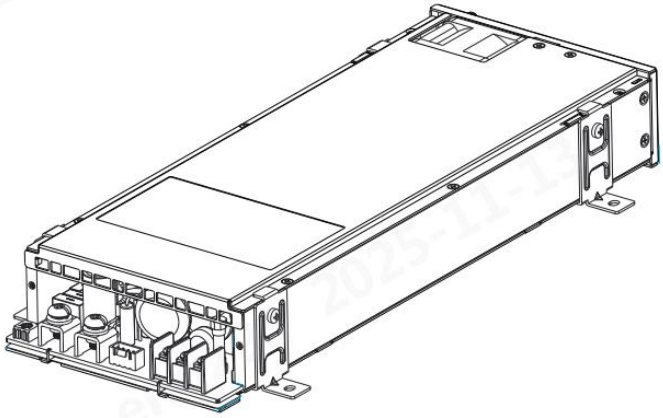
Product extension External Connection Method-fastener (accessories)

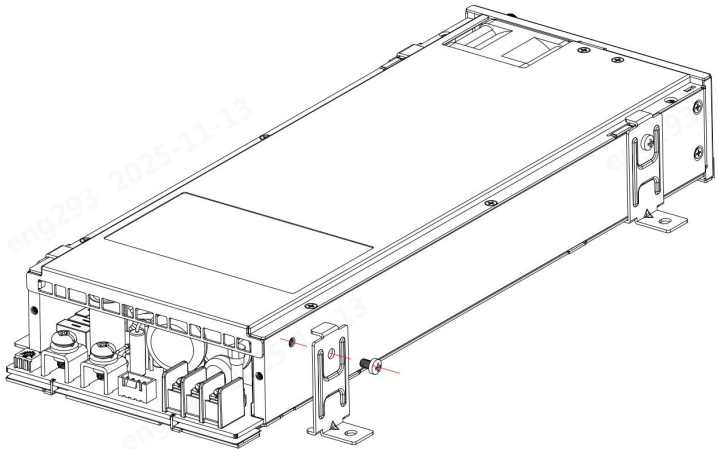
Product model: PJA-069



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 L-shaped accessory (PJA-069) is included in the package and does not need to be purchased separately.
Special product model：LMR3000-4860

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220883;
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. The output voltage can be adjusted by the ADJ, clockwise to increase;
10. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
11. 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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