AC/DC 450W Enclosed Switching Power Supply

LM450-12Bxx, LM450-12Bxx-C, LM450-12Bxx-Q Series

MORNSUN®

Report EN62368-1 GB4943.1 BS EN62368-1 RoHS

FEATURES

- Input voltage range: 176 - 264VAC or 240 - 373VDC
- Accepts AC or DC input (dual-use of same terminal)
- Operating ambient temperature range: -30℃ to +70℃
- LED indicator for power on
- Operating up to 5000m altitude
- Output short circuit, over-current, over-voltage, over-temperature protection
- Built-in DC fan
- Safety according to UL/IEC62368

LM450-12Bxx series is one of Mornsun's enclosed AC-DC switching power supply. It features AC input and at the same time accepts DC input voltage, cost-effective, high efficiency and high reliability. These converters offer excellent EMC performance and meet IEC/EN61000-4, CISPR32/EN55032, UL/EN/IEC62368, GB4943 standards and they are widely used in areas of industrial, LED, street light control, electricity, security, telecommunications, smart home, etc.

Selection Guide

Certification	Part No.*	Output Power (W)	Nominal Output Voltage and Current (Vo/Io)	Output Voltage Adjustable Range ADJ (V)	Efficiency at 230VAC (%) Typ.	Max. Capacitive Load (μF)
EN/CQC/ BIS	LM450-12B12	450	12V/37.5A	10.2-13.8	85	4000
	LM450-12B15	450	15V/30A	13.5-18	86	3300
	LM450-12B24	451.2	24V/18.8A	21.6-28.8	87	1500
	LM450-12B27	450.9	27V/16.7A	24.3-29.7	87	1500
	LM450-12B36	450	36V/12.5A	32.4-39.6	87.5	1000
	LM450-12B48	451.2	48V/9.4A	43.2-52.8	88	470

Note: 1.*Use suffix "C" for terminal with protective cover and suffix "Q" for conformal coating;
2.The product picture is for reference only. For details, please refer to the actual product.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input		176	--	264	VAC
	DC input		240	--	373	VDC
Input Voltage Frequency			47	--	63	Hz
Input Current	230VAC		--	5	6	A
Inrush Current	230VAC	Cold start	--	60	80	
Leakage Current	240VAC		--	--	2	mA
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range	12V	--	±1.5	--	%
		15V/24V/27V/36V/48V	--	±1	--	
Line Regulation	Rated load		--	±0.5	--	
Load Regulation	0% - 100% load	12V	--	±1	--	
		15V/24V/27V/36V/48V	--	±0.5	--	
Output Ripple & Noise*	20MHz bandwidth (peak-to-peak value)		--	--	200	mV
Temperature Coefficient			--	±0.03	--	%/℃
Minimum Load			0	--	--	%

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Hold-up Time	230VAC	--	16	--	ms
Short Circuit Protection	Recovery time <8s after the short circuit disappear.	Hiccup, continuous, self-recover			
Over-current Protection		⩾110% Io, hiccup, self-recover			
Over-voltage Protection	12V	13.8V-17.62V		Hiccup, self-recover	
	15V	18V-23.5V			
	24V	30V-38V			
	27V	32V-41V			
	36V	45V-52V			
	48V	55.6V-68.2V			
Over-temperature Protection		Hiccup, self-recover			

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

General Specifications

Item		Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input - ⏚	Electric strength test for 1min., leakage current <10mA	2000	--	--	VAC
	Input- output		3000	--	--	
	Output - ⏚	Electric strength test for 1min., leakage current <5mA	500	--	--	
Insulation Resistance	Input - ⏚	At 500VDC	100	--	--	MΩ
	Input - output		100	--	--	
	Output - ⏚		100	--	--	
Operating Temperature			-30	--	+70	℃
Storage Temperature			-40	--	+85	
Operating Humidity*		Non-condensing	20	--	90	%RH
Storage Humidity			10	--	95	
Switching Frequency		15V/48V	--	65	--	kHz
		12V/24V/27V/36V	--	85	--	
Power Derating		-30℃ to -10℃	1.5	--	--	%/℃
		+50℃ to +70℃	2	--	--	
		176VAC - 200VAC	0.417	--	--	%/VAC
Safety Standard			IS13252 (Part1), GB4943.1 safety approved & EN62368-1, BS EN62368-1 (Report); Design refer to UL/IEC62368-1			
Safety Class			CLASS I			
MTBF		MIL-HDBK-217F@25℃	>300,000 h			

Note: *Select part number with "Q" for conformal coating requirement.

Mechanical Specifications

Case Material	Metal (AL1100, SGCC)
Dimensions	215.00 x 115.00 x 30.00mm
Weight	750g (Typ.)
Cooling Method	Forced air cooling

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS A	
	RE	CISPR32/EN55032	CLASS A	
Immunity	ESD	IEC/EN 61000-4-2	Contact ±6KV /Air ±8KV	Perf. Criteria A
	RS	IEC/EN 61000-4-3	10V/m	Perf. Criteria A
	EFT	IEC/EN 61000-4-4	±2KV	Perf. Criteria A
	Surge	IEC/EN 61000-4-5	line to line ±2KV/line to ground ±4KV	Perf. Criteria A
	CS	IEC/EN61000-4-6	10Vr.m.s	Perf. Criteria A
	Voltage dips, short	IEC/EN61000-4-11	100% dip 1 periods, 30% dip 25 periods,	Perf. Criteria B

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	interruptions and voltage variations	100% interruptions 250 periods	

Note:

1. One magnetic beed should be coupled with the output load line during CE/RE testing;
2. This power supply does not meet the harmonic current requirements specified in EN61000-3-2.

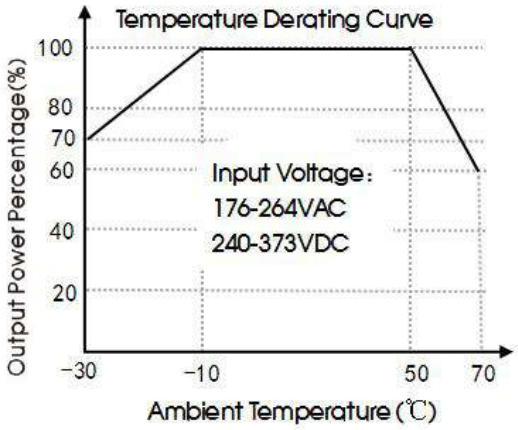
Please do not use this power supply under the following conditions:

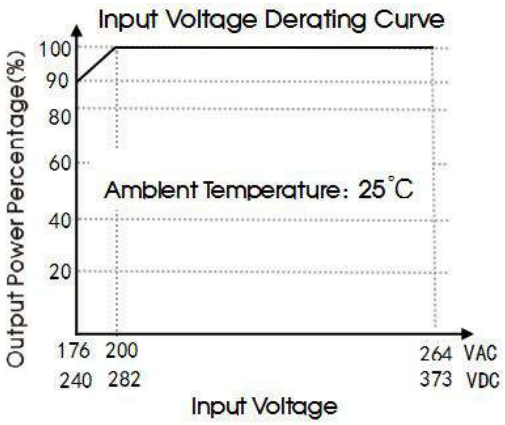
1) The terminal equipment is used in the European Union.
2) Supporting terminals are connected to a public power grid with 220VAC or a higher voltage that comply with the requirements of EN61000-3-2.
3) The power supply is installed in terminal equipment with average or continuous input power greater than 75W.
4) The power supply belong to a part of lighting system.

Exception: The power supply used in the following terminal equipment does not need to meet EN61000-3-2.

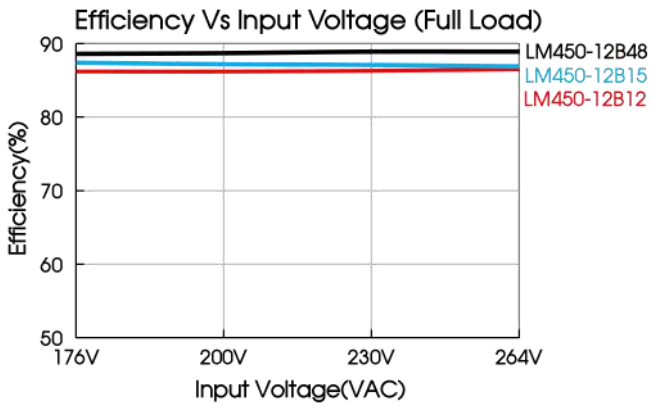
1) Professional equipment with a total rated input power greater than 1000W.
2) Symmetrically controlled heating element with a rated power less than or equal to 200W.
3. If no harmonic current is required or customers can solve harmonic current problems by themselves, this product can be used.

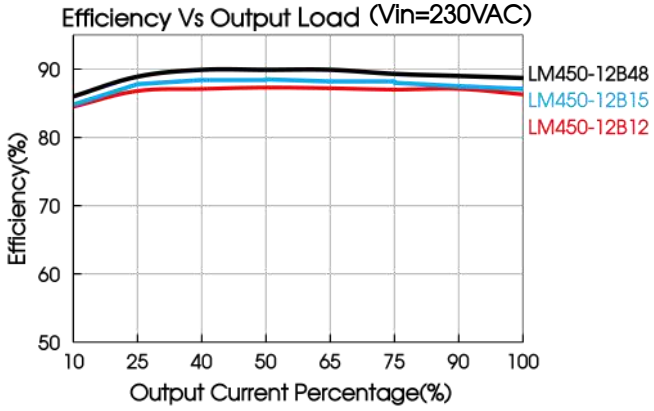
Product Characteristic Curve





Note: ① With an AC input between 176-200VAC and a DC input between 240-282VDC, the output power must be derated as per temperature derating curves;
② This product is suitable for applications using natural air cooling; for applications in closed environment please consult Mornsun FAE.





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Dimensions and Recommended Layout

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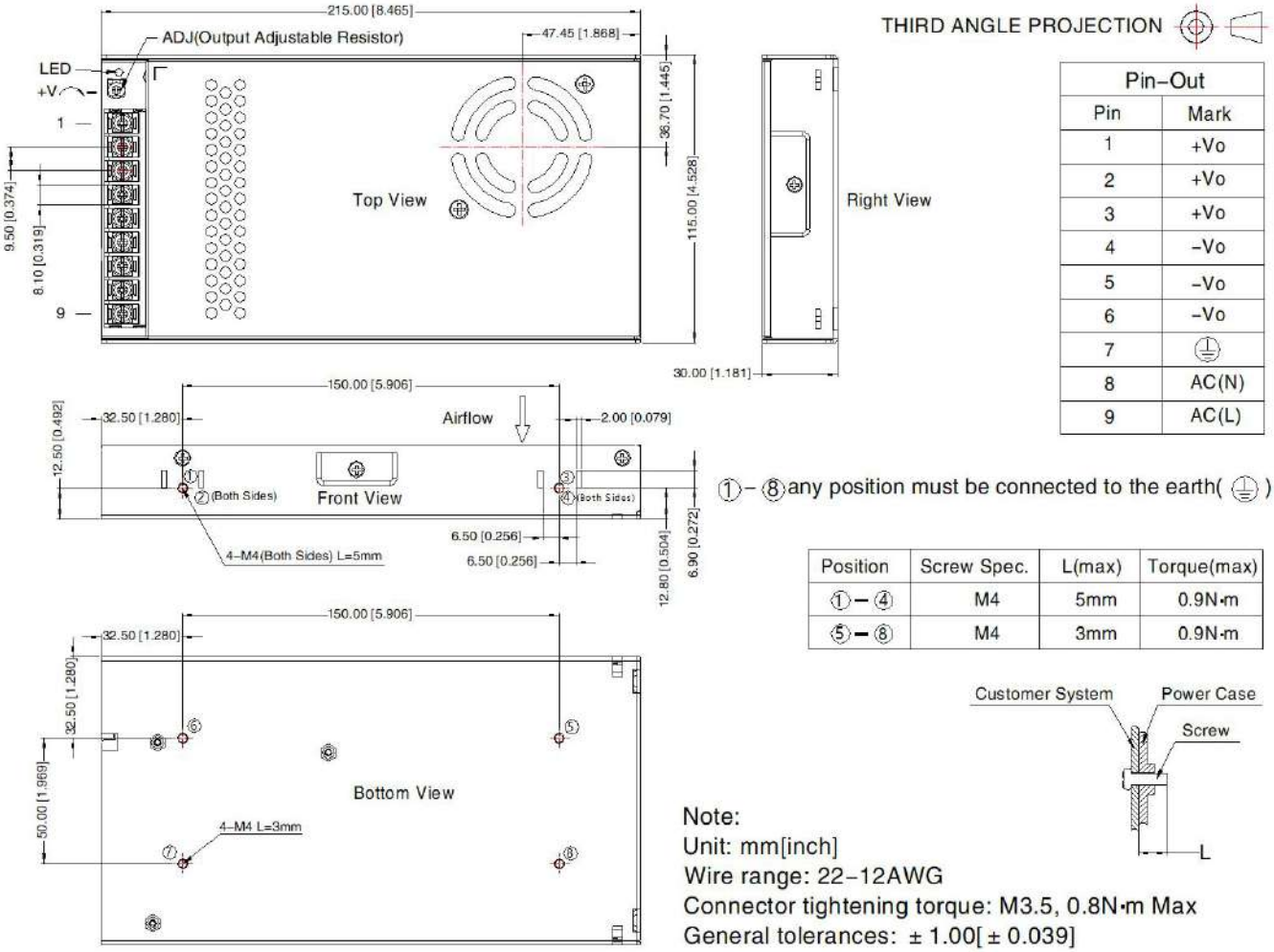

THIRD ANGLE PROJECTION

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

①-⑧any position must be connected to the earth(⏚)

Position	Screw Spec.	L(max)	Torque(max)
①-④	M4	5mm	0.9N·m
⑤-⑧	M4	3mm	0.9N·m

Note:
Unit: mm[inch]
Wire range: 22-12AWG
Connector tightening torque: M3.5, 0.8N·m Max
General tolerances: ± 1.00[± 0.039]

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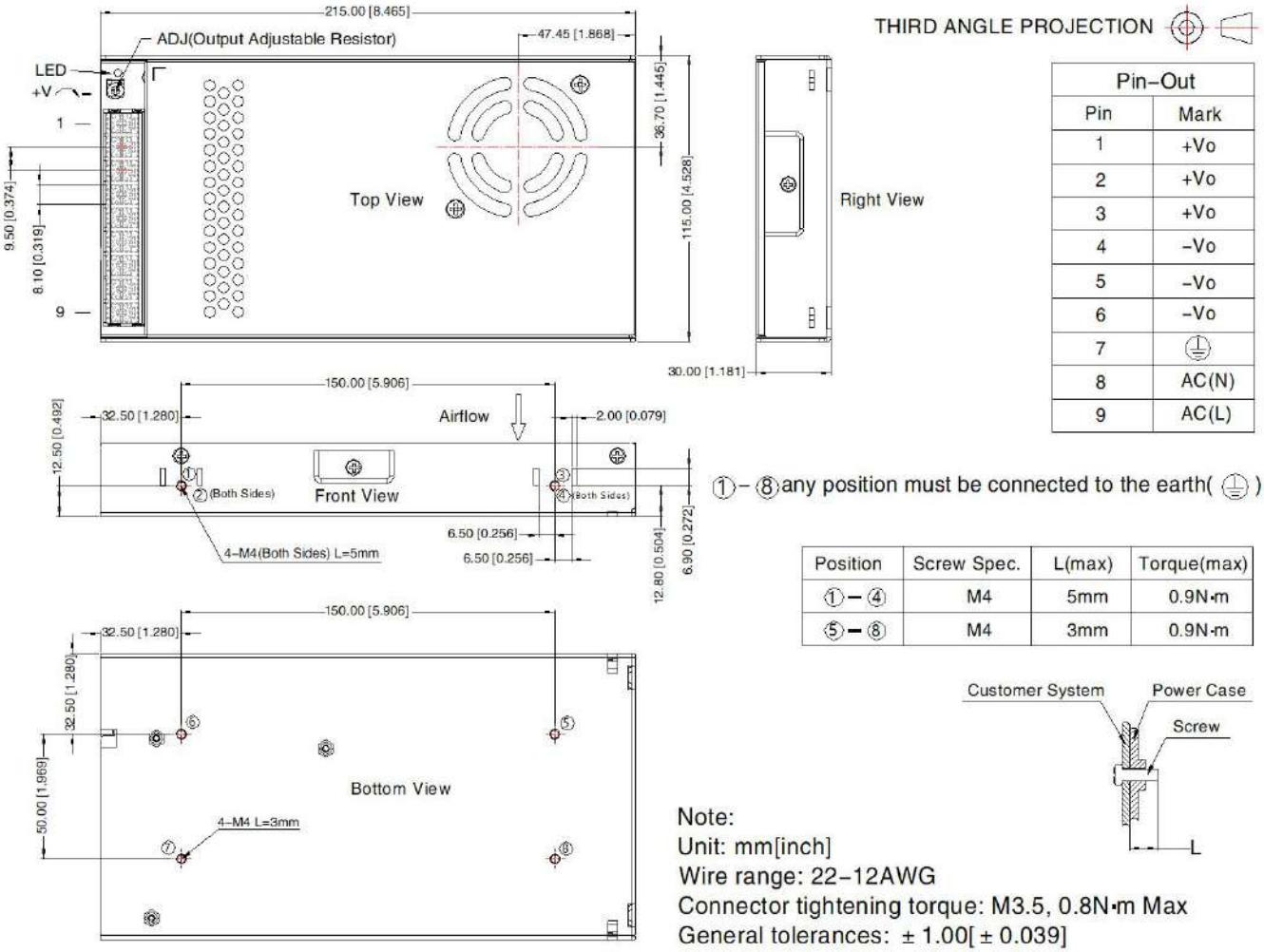
LM450-12Bxx-C Series



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

Position	Screw Spec.	L(max)	Torque(max)
①-④	M4	5mm	0.9N·m
⑤-⑧	M4	3mm	0.9N·m

Note:
Unit: mm[inch]
Wire range: 22-12AWG
Connector tightening torque: M3.5, 0.8N·m Max
General tolerances: ± 1.00[± 0.039]

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220115;
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 ambient 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 final equipment. All EMC tests should be confirmed with the final equipment. Please consult our FAE for EMC test operation instructions.

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