AC/DC 200W Enclosed Switching Power Supply

LM200-12Bxx, LM200-12Bxx-Q, LM200-12Bxx-C Series

MORNSUN®

RoHS

UL62368-1 EN62368-1 EN60335-1 EN61558-1 IEC62368-1 GB4943.1 BS EN 62368-1

FEATURES

- AC input range: 176 - 264VAC
- DC input range: 240 - 370VDC
- Ultra low standby power consumption: < 0.75W @230VAC
- Operating ambient temperature range: - 30℃ to +70℃
- High efficiency, high reliability
- LED indicator for power on
- Output short circuit, over-current, over-voltage, over-temperature protection
- Operating altitude up to 5000m

LM200-12Bxx 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, low no load power consumption, high efficiency and high reliability. These power supply offer excellent EMC performance and meet IEC/EN61000-4, CISPR32/EN55032, UL/EN/IEC62368, EN60335, 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)
		Steady state	transient**				
UL/EN/IEC/ CQC/BIS/UKCA	LM200-12B05	150	200	5V/30A	4.5-5.5	87	10000
	LM200-12B12	204	--	12V/17A	10.2-13.8	87.5	4000
	LM200-12B15	210	--	15V/14A	13.5-18	88	3300
	LM200-12B24	211.2	--	24V/8.8A	21.6-28.8	88.5	1500
	LM200-12B36	212.4	--	36V/5.9A	32.4-39.6	89	1500
	LM200-12B48	211.2	--	48V/4.4A	43.2-52.8	89.5	470

Note: *Use suffix "C" for terminal with protective cover and suffix "Q" for conformal coating.
**Hold-up time1min (Typ.).

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range (by switch)	AC input		176	--	264	VAC
	DC input		240	--	370	VDC
Input Voltage Frequency			47	--	53	Hz
Input Current	230VAC		--	2.2	3	A
Inrush Current	230VAC	Cold start	--	60	80	
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range	5V	--	±3.0	--	%
		12V	--	±1.5	--	
		15V/24V/36V/48V	--	±1.0	--	
Line Regulation	Rated load		--	±0.5	--	
Load Regulation	0% - 100% load	5V	--	±2.0	--	
		12V	--	±1.0	--	
		15V/24V/36V/48V	--	±0.5	--	

Output Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	5V/12V/15V/24V	--	150	--	mV
		36V/48V	--	200	--	
Temperature Coefficient			--	--	±0.03	%/℃
Minimum Load			0	--	--	%
Stand-by Power Consumption	230VAC, 25℃		--	--	0.75	W
Hold-up Time	230VAC		16	--	--	ms
Short Circuit Protection	Recovery time <5s after the short circuit disappear.		Hiccup, continuous, self-recover			
Over-current Protection			110% - 185% Io, self-recover			
Over-voltage Protection	5V		≤8VDC		Output voltage turn off, re-power on for recover	
	12V		≤18VDC			
	15V		≤22VDC			
	24V		≤33.6VDC			
	36V		≤46.8VDC			
	48V		≤60VDC			
Over-temperature Protection			Output voltage turn off, re-power on for recover			

Note: *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.

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	
Storage Humidity		Non-condensing			10	--	95	%RH
Operating Humidity					20	--	90	
Switching Frequency					--	65	--	kHz
Power Derating		Operating temperature derating	5V output	+40℃ to +70℃	1.66	--	--	%/℃
			Other output	+50℃ to +70℃	2.5	--	--	
		Input voltage derating	176VAC - 264VAC		0	--	--	%/VAC
Safety Standard					UL/IEC62368-1, IS13252 (Part1), GB4943.1 safety approved & EN60335-1, EN61558-1, EN62368-1, BS EN 62368-1 (Report)			
Safety Class					CLASS I			
MTBF		MIL-HDBK-217F@25℃			>300,000 h			

Mechanical Specifications

Case Material	Metal (AL1100, SGCC)
Dimensions	179.00 x 99.00 x 30.00mm
Weight	520g (Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS A	
	RE	CISPR32/EN55032	CLASS A	
Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV/Air ±8KV	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 ground ±4KV	Perf. Criteria A
	CS	IEC/EN61000-4-6	10Vr.m.s	Perf. Criteria A
	Voltage dips, short interruptions and voltage variations	IEC/EN61000-4-11	100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods	Perf. Criteria B

Remark:

1. One magnetic bead(nickel-zinc ferrite) 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.

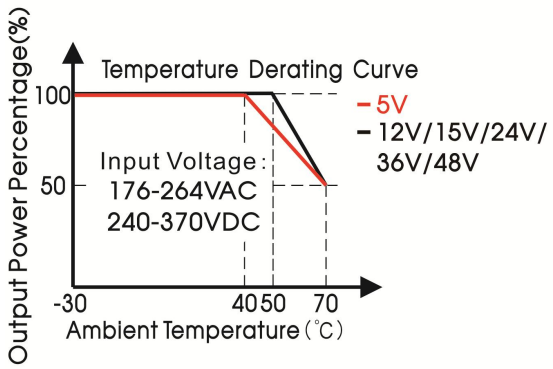
Please do not use this power supply under the following conditions:

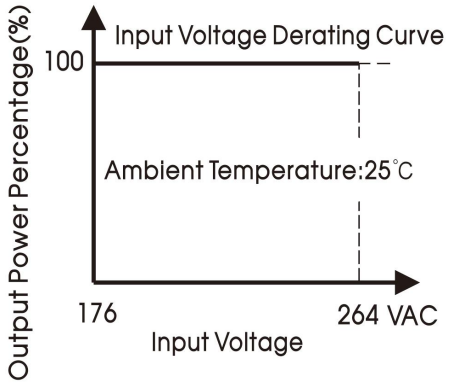
1) The terminal equipment is used in the European Union.
2) Supporting terminals are connected to a public power grid with 220VAC or a higher voltage that comply with the requirements of EN61000-3-2.
3) The power supply is installed in terminal equipment with average or continuous input power greater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

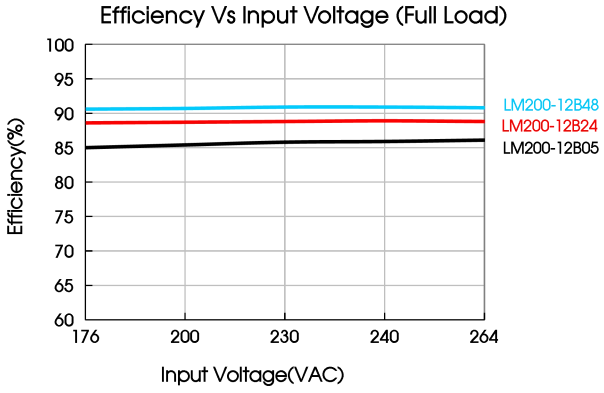
1) Professional equipment with a total rated input power greater than 1000W.
2) Symmetrically controlled heating element with a rated power less than or equal to 200W.

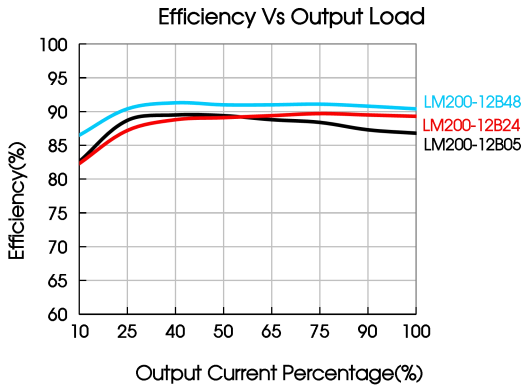
Product Characteristic Curve





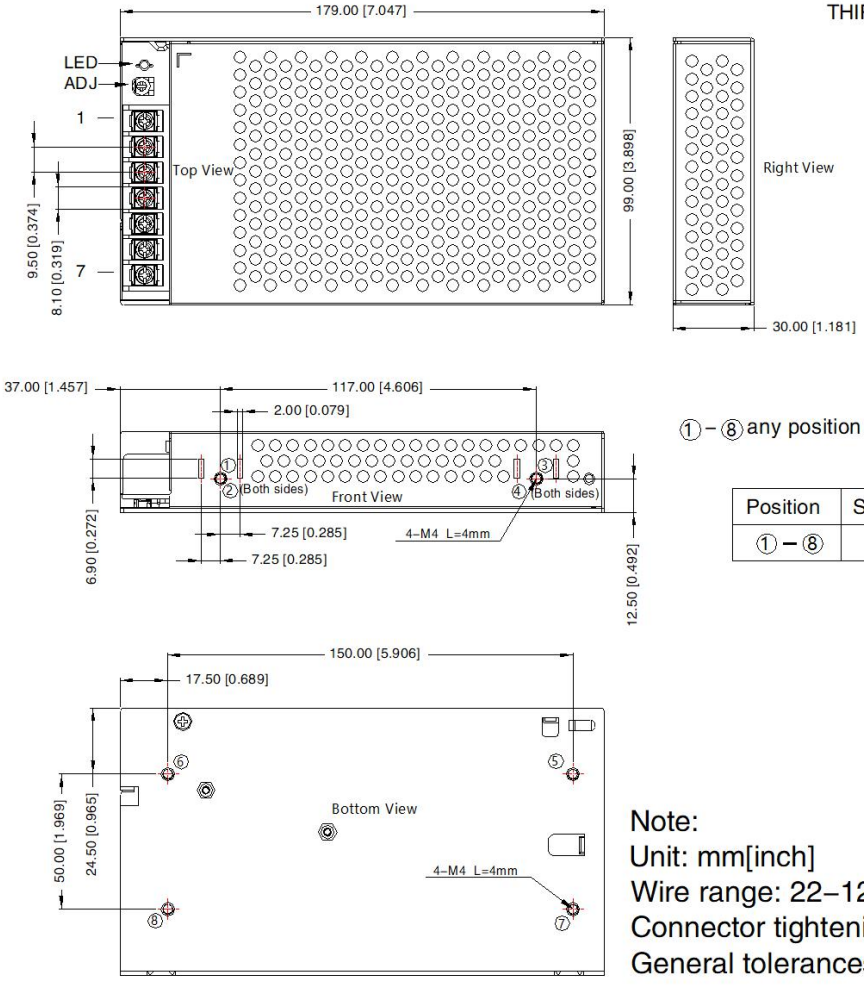
Note: This product is suitable for applications using natural air cooling; for applications in closed environment please consult our FAE.





Dimensions and Recommended Layout

LM200-12Bxx, LM200-12Bxx-Q Series

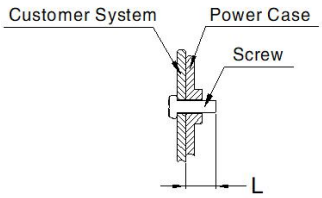


THIRD ANGLE PROJECTION

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

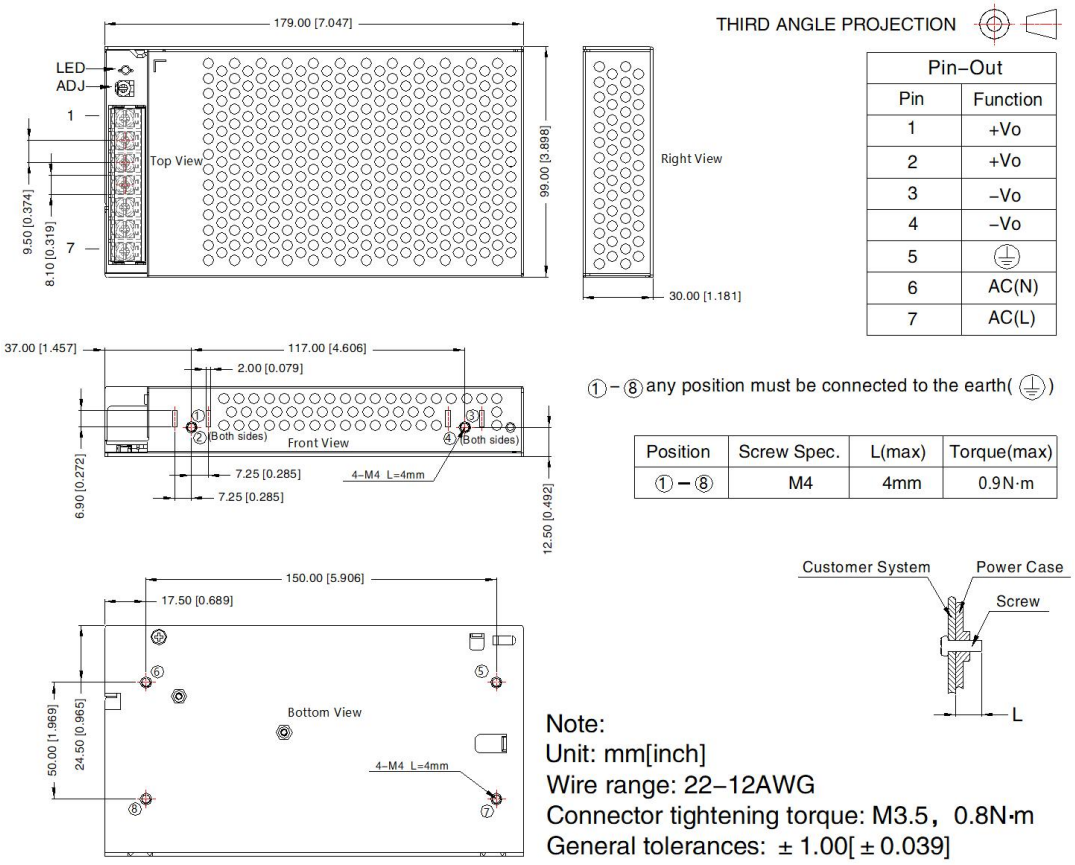
①-⑧ any position must be connected to the earth(⏚)

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



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

LM200-12Bxx-C Series



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

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

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

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

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220136;
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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