AC/DC Enclosed Switching Power Supply

LMF320-20Bxx, LMF320-20Bxx-C, LMF320-20Bxx-Q Series

MORNSUN®

RoHS

3 years Warranty

FEATURES

- Universal 85 - 264VAC or 120 - 373VDC Input voltage
- Accepts AC or DC input (dual-use of same terminal)
- Operating temperature range: -30℃ to +70℃
- Built-in active PFC function, PFC>0.95
- High I/O isolation test voltage up to 4000VAC
- Output short circuit, over-current, over-voltage, over-temperature protection
- Safety according to IEC/EN/UL62368, EN60335, GB4943 (CE/CCC pending)
- Compact size with a low 1U profile
- LED indicator for power on
- Built-in DC fan
- Withstand 300VAC surge input for 5s
- Emissions meets CISPR32/EN55032 CLASS B
- Start-up delay time less than 5 seconds at -30℃

LMF320-20Bxx series are one of Mornsun's enclosed AC-DC switching power supply. It features universal AC input and at the same time accepts DC input voltage, cost-effective, built-in active PFC function, high efficiency and high reliability. These converters offer excellent EMC performance and meet IEC/EN61000-4, CISPR32/EN55032, IEC62368, UL62368, EN62368, 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(V)	Efficiency at 230VAC (%) Typ.	Max. Capacitive Load (μF)
CE/CCC (Pending)	LMF320-20B05	300	5V/60A	4.5 - 5.5	81	5000
	LMF320-20B12	320.4	12V/26.7A	10 - 13.2	84	5000
	LMF320-20B15	321	15V/21.4A	13.5 - 18	85	5000
	LMF320-20B24	321.6	24V/13.4A	20 - 26.4	86	5000
	LMF320-20B48	321.6	48V/6.7A	41 - 56	86.5	5000

Note：*Use suffix "C" for terminal with protective cover and suffix "Q" for conformal coating.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input		85	--	264	VAC
	DC input		120	--	373	VDC
Input Voltage Frequency			47	--	63	Hz
Input Current	115VAC		--	4	4.2	A
	230VAC		--	2	2.1	
Inrush Current	115VAC	Cold Start	--	35	--	
	230VAC		--	65	--	
Power Factor	115VAC	At full Load	--	0.98	--	--
	230VAC		--	0.95	--	
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full Load Range	5V	--	±2	--	%
		12V/15V/24V/48V	--	±1	--	
Line Regulation	Rated Load	5V	--	±0.5	--	
		12V/15V	--	±0.3	--	
		24V/48V	--	±0.2	--	
Load Regulation	0% - 100% load	5V	--	±1	--	
		12V/15V/24V/48V	--	±0.5	--	
Output Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	5V/12V/15V/24V	--	150	--	mV
		48V	--	200	--	
Temperature Coefficient			--	±0.03	--	%/℃
Minimum Load*	5V/12V/15V/24V/48V output		0	--	--	%
Hold-up Time	115VAC		--	12	--	ms
	230VAC		--	12	--	
Short Circuit Protection	Recovery time <5s after the short circuit disappear.		Hiccup, continuous, self-recovery			
Over-current Protection*			105% - 150% Io, self-recovery			
Over-voltage Protection	5V		≤6.75V (Output voltage turn off, re-power on for recovery)			
	12V		≤16.2V (Output voltage turn off, re-power on for recovery)			
	15V		≤21.8V (Output voltage turn off, re-power on for recovery)			
	24V		≤32.4V (Output voltage turn off, re-power on for recovery)			
	48V		≤60.0V (Output voltage turn off, re-power on for recovery)			
Over-temperature Protection*	Over-temperature Protection Activation		--	--	85	℃
	Over-temperature Protection Deactivation		50	--	--	

Note: 1. *The "Tip and barrel method"is used for ripple and noise test (47uF electrolytic capacitor and 0.1uF ceramic capacitor), please refer to AC-DC Converter Application Notes for specific information.
2. *Minimum load: When the product is working at a temperature above 50℃, the minimum load is 5% of the rated load, so that the fan could work at high temperature to reduce the temperature rise of the product.
3. *Over-current Protection: Test at rated output voltage, Io is rated output current load.
4. *Over-temperature Protection needs to be tested under rated full load conditions.

General Specifications

Item		Operating Conditions		Min.	Typ.	Max.	Unit
Isolation Test	Input - ⏚	Electric Strength Test for 1min., leakage current <10mA		2000	--	--	VAC
	Input - output			4000	--	--	
	output - ⏚			500	--	--	
Insulation Resistance	Input - ⏚	500VDC, 25±5℃, Humidity < 95%RH, non-condensing		100	--	--	MΩ
	Input - output			100	--	--	
	output - ⏚			100	--	--	
Operating Temperature				-30	--	+70	℃
Storage Temperature				-40	--	+85	
Storage Humidity		Non-condensing		10	--	95	%RH
Switching Frequency				--	--	--	kHz
Power Derating		Operating temperature derating	-30℃ to 0℃	0	--	--	%/℃
			+50℃ to +70℃	2.5	--	--	
		Input voltage derating	85VAC - 100VAC@50Hz	2.0	--	--	%/VAC
			85VAC - 100VAC@60Hz	1.33	--	--	

		120VDC - 140VDC	1.25	--	--	%/VDC
Safety Standard			Meet IEC/EN/UL62368/EN60335/GB4943			
Safety Class			CLASS I			
MTBF	MIL-HDBK-217F@25℃		>250,000 h			

Mechanical Specifications

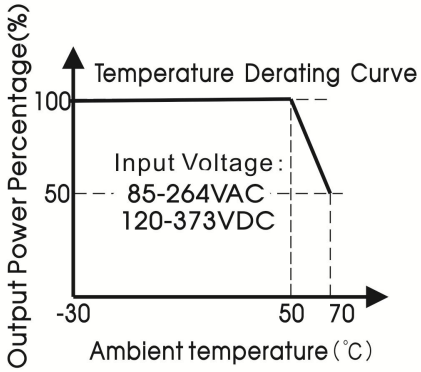
Case Material	Metal (AL1100, SGCC)
Dimensions	215.00 x 115.00 x 30.00 mm
Weight	750g (Typ.)
Cooling Method	Forced air cooling
Notice: there is built-in fan inside product, so it can't be shipped by air.	

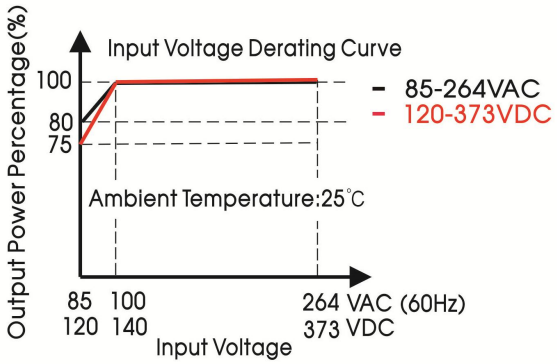
Electromagnetic Compatibility (EMC)

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/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 ±1KV/±2KV	perf. Criteria A
	CS	IEC/EN 61000-4-6 10 Vr.m.s	perf. Criteria A
	DIP	IEC/EN 61000-4-11 0%, 70%	perf. Criteria B

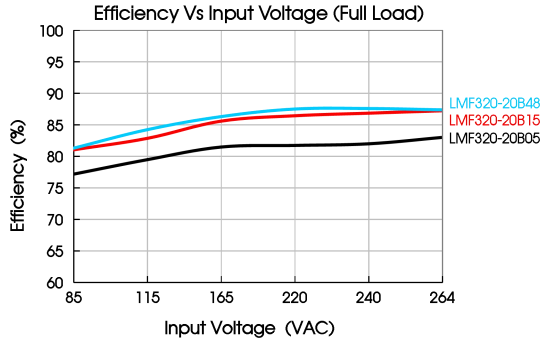
Note: 1. One magnetic bead(nickel-zinc ferrite)should be coupled with the output load line during CE/RE testing.
2. The power supply is considerated a component as part of system, all EMC items are tested on a metal plate (LxWxH, 450mmx450mmx3mm). Power supply should be combined with final equipment for EMC confirmation.

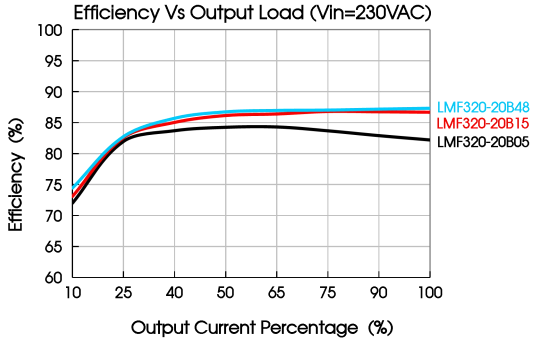
Product Characteristic Curve





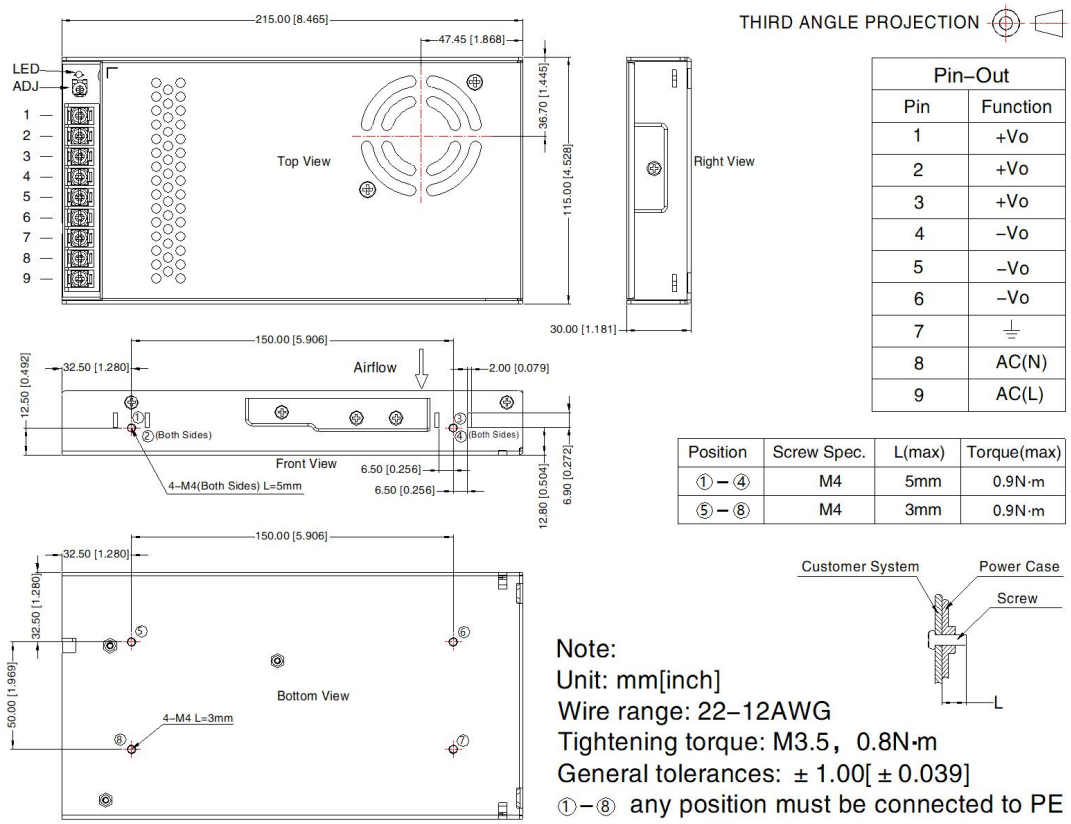
Note: ①With an input voltage between 85-100VAC and a DC input between 120-140VDC the output power must be derated as per the temperature derating curves;
② This product is suitable for applications using forced air cooling; for applications in closed environment please consult Mornsun FAE.





Dimensions and Recommended Layout

LMF320-20Bxx, LMF320-20Bxx-Q Series

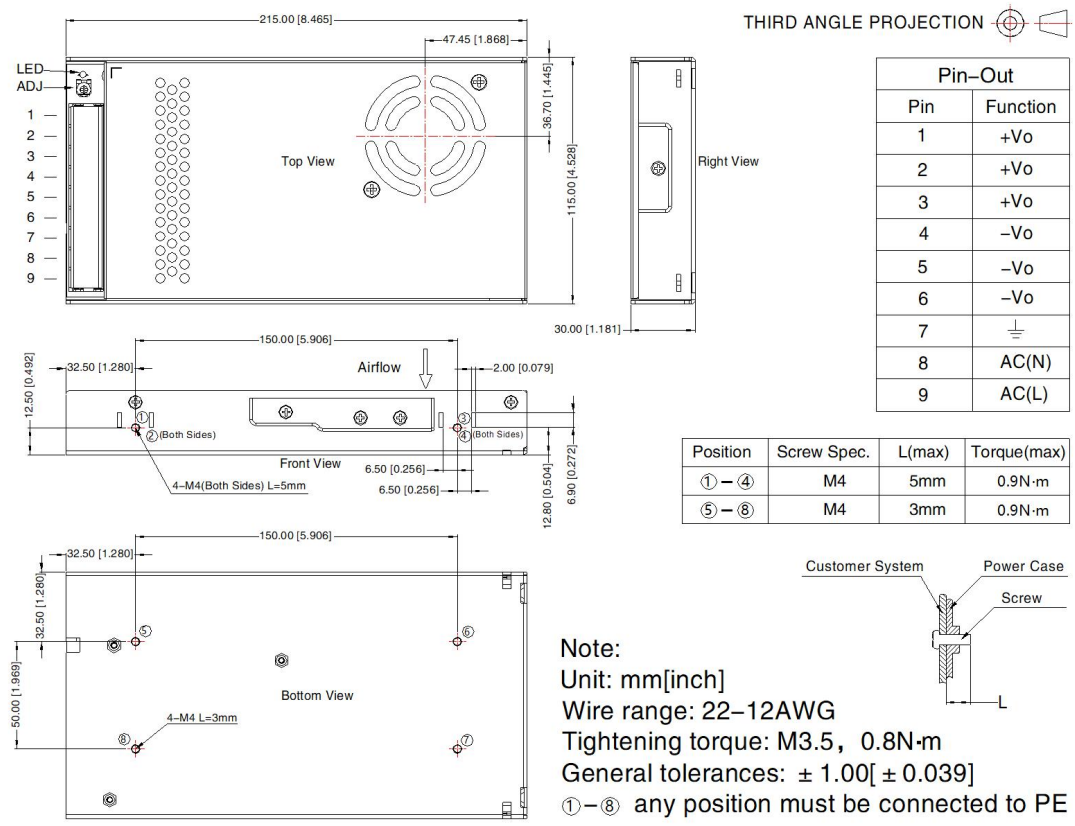


Pin–Out	
Pin	Function
1	+Vo
2	+Vo
3	+Vo
4	–Vo
5	–Vo
6	–Vo
7	⏚
8	AC(N)
9	AC(L)

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
Tightening torque: M3.5，0.8N·m
General tolerances: ± 1.00[± 0.039]
①–⑧ any position must be connected to PE

LMF320-20Bxx-C Series



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Position	Screw Spec.	L(max)	Torque(max)
①–④	M4	5mm	0.9N·m
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Note:
Unit: mm[inch]
Wire range: 22–12AWG
Tightening torque: M3.5，0.8N·m
General tolerances: ± 1.00[± 0.039]
①–⑧ any position must be connected to PE

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 terminal equipment. All EMC tests should be confirmed with the final equipment. Please consult our FAE for EMC test operation instructions.

Mornsun Guangzhou Science & Technology Co., Ltd.

Address: No. 5, Kehui St. 1, Kehui Development Center, Science Ave., Guangzhou Science City, Huangpu District, Guangzhou, P. R. China

TTel: 86-20-38601850 Fax: 86-20-38601272 E-mail: info@mornsun.cn www.mornsun-power.com