AC/DC 150W Enclosed Switching Power Supply

LM150-20Bxx, LM150-20Bxx-Q Series

MORNSUN®

FEATURES

- Universal 85 - 264VAC or 120 - 373VDC Input voltage
- Accepts AC or DC input (dual-use of same terminal)
- Operating ambient temperature range: -30℃ to +70℃
- Low standby power consumption, high efficiency
- High I/O isolation test voltage up to 4000VAC
- Low ripple & noise
- Output short circuit, over-current, over-voltage, Over-temperature protection
- Safety according to IEC/EN/UL62368, EN60335, GB4943
- Withstand 300VAC surge input for 5s
- Over-voltage class Ⅲ (designed to meet EN61558)
- Operating altitude up to 5000m

LM150-20Bxx series is 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, low no load power consumption, high efficiency, high reliability and double or reinforced insulation. These converters offer excellent EMC performance and meet IEC/EN61000-4, CISPR32/EN55032, IEC/UL/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	LM150-20B12	150	12V/12.5A	10.2-13.8	86	10000
	LM150-20B15	150	15V/10A	13.5 -18	87	6000
	LM150-20B24	156	24V/6.5A	21.6 - 28.8	88	2400
	LM150-20B36	154.8	36V/4.3A	32.4 - 39.6	88	1200
	LM150-20B48	158.4	48V/3.3A	43.2 -52.8	89	600

Note：*Use 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	A
	230VAC		--	--	2	
Inrush Current	115VAC	Cold start	--	30	--	
	230VAC		--	60	--	
Leakage Current	240VAC		<0.75mA			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range		--	±1	--	%
Line Regulation	Rated load		--	±0.5	--	
Load Regulation	0% - 100% load		--	±0.5	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	12V/15V	--	--	150	mV

		24V/36V/48V	--	--	200	
Temperature Coefficient			--	±0.03	--	%/℃
Minimum Load			0	--	--	%
Stand-by Power Consumption			--	--	0.5	W
Hold-up Time	115VAC		8	--	--	ms
	230VAC		16	--	--	
Short Circuit Protection	Recovery time <5s after the short circuit disappear.		Hiccup, continuous, self-recovery			
Over-current Protection			110%-150% Io, self-recovery			
Over-voltage Protection	12V		≤16.2VDC (Output voltage turn off, re-power on for recovery)			
	15V		≤21.75VDC (Output voltage hiccup or turn off, re-power on for recovery)			
	24V		≤33.6VDC (Output voltage turn off, re-power on for recovery)			
	36V		≤48.6VDC (Output voltage turn off, re-power on for recovery)			
	48V		≤60VDC (Output voltage turn off, re-power on for recovery)			
Over-temperature Protection			Output voltage turn off, re-power on for recovery			
Note: *The "Tip and barrel method" is used for ripple and noise test, please refer to AC-DC Converter Application Notes for specific information.						

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 - ⏚				1250	--	--	
Insulation Resistance	Input - ⏚	At 500VDC			50	--	--	MΩ
	Input - output				50	--	--	
	Output - ⏚				50	--	--	
Operating Temperature					-30	--	+70	℃
Storage Temperature					-40	--	+85	
Storage Humidity		Non-condensing			--	--	95	%RH
Switching Frequency					--	65	--	kHz
Power Derating		Operating temperature derating	<100VAC Input	-30℃ to -25℃	5	--	--	%/℃
			12V	+45℃ to +70℃	2	--	--	
			15V/24V/36V/48V	+50℃ to +70℃	2.5	--	--	
		Input voltage derating	<100VAC Input		1.33	--	--	%/VAC
Safety Standard					Meet IEC/EN/UL62368/EN60335/GB4943			
Safety Class					CLASS I			
MTBF		MIL-HDBK-217F@25℃			>300,000 h			

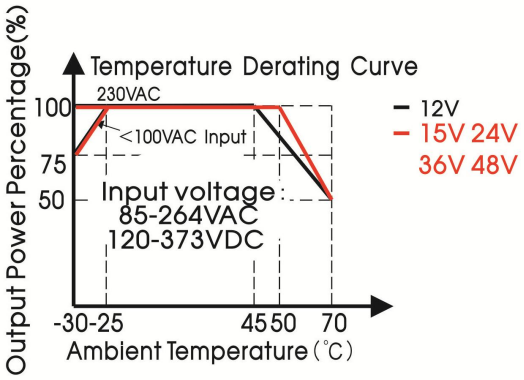
Mechanical Specifications

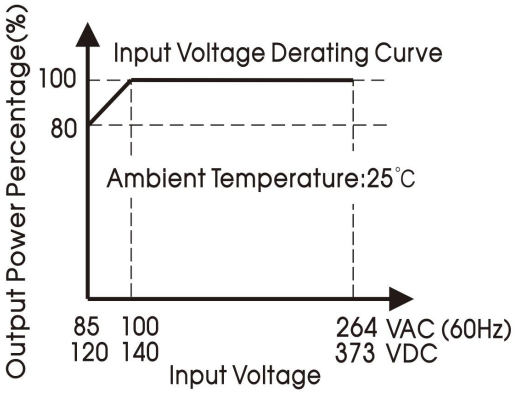
Case Material	Metal (AL5052, SGCC)	
Dimensions	159.00 x 97.00 x 30.00 mm	
Weight	12V/15V	430g (Typ.)
	24V/36V/48V	410g (Typ.)
Cooling Method	Free air convection	

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032 CLASS B	
	RE	CISPR32/EN55032 CLASS B	
	Harmonic current	IEC/EN61000-3-2 CLASS A (≤80% Load)	
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 ±4KV	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 10 Vr.m.s	perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11 0%, 70%	perf. Criteria B

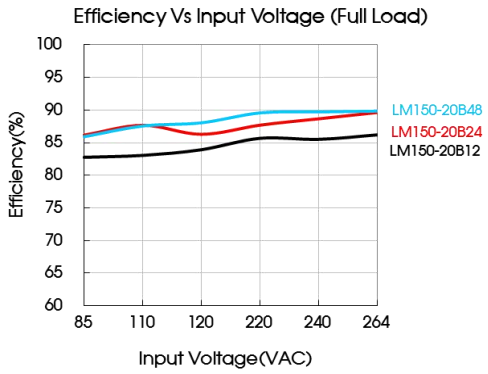
Product Characteristic Curve

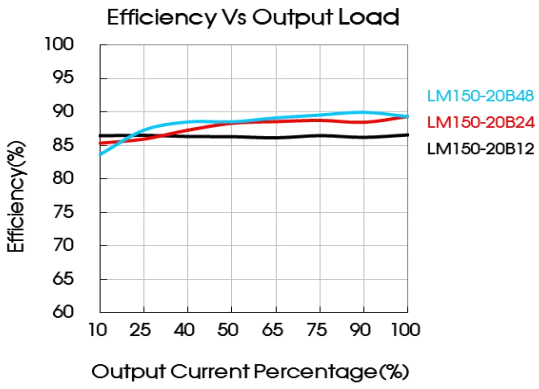




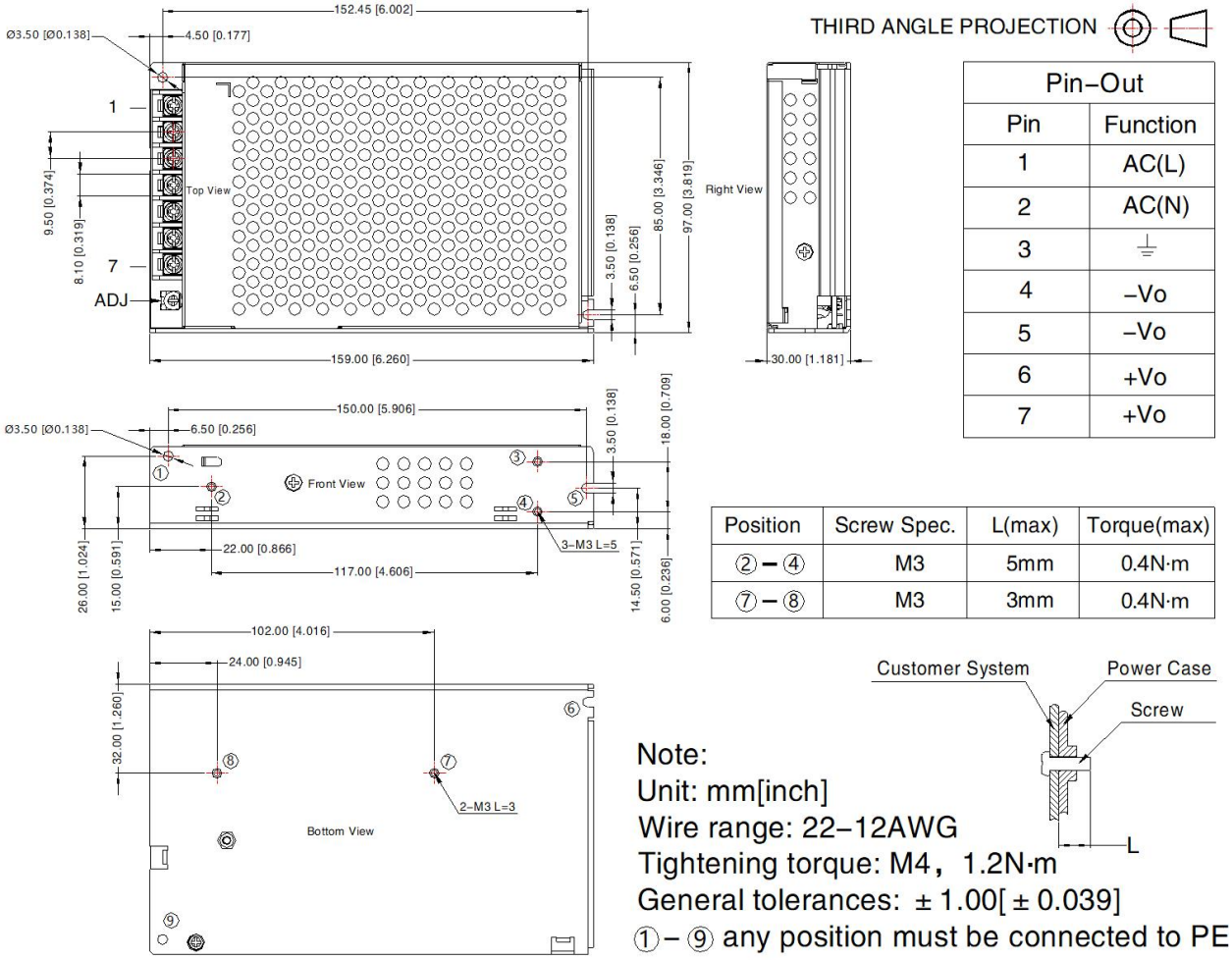
Note: ①With an input voltage between 85 -100VAC and a DC input between 120 -140VDC the output power must be derated as per the temperature derating curves;

②This product is suitable for applications using natural air cooling; for applications in closed environment please consult Mornsun FAE.





Dimensions and Recommended Layout



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

Position	Screw Spec.	L(max)	Torque(max)
②–④	M3	5mm	0.4N·m
⑦–⑧	M3	3mm	0.4N·m

Note:
Unit: mm[inch]
Wire range: 22–12AWG
Tightening torque: M4，1.2N·m
General tolerances: ± 1.00[± 0.039]
①–⑨ 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: 58220064;
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.

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