AC/DC 350W Enclosed Switching Power Supply

LM350-12Bxx, LM350-12Bxx-C, LM350-12Bxx-Q Series

MORNSUN®

FEATURES

- Input voltage Range: 176 - 264VAC or 240 - 373VDC
- Accepts AC or DC input (dual-use of same terminal)
- Ultra low standby power consumption <0.75W @230VAC
- Operating ambient temperature range: -30℃ to +70℃
- Compact size with a low 1U profile
- LED indicator for power on
- Operating up to 5000m altitude
- Output short circuit, over-current, over-voltage, Over-temperature protection
- Safety according to IEC/EN/UL62368, GB4943
- Withstand 300VAC surge input for 5s
- Built-in DC fan

LM350-12Bxx 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 converters offer excellent EMC performance and meet IEC/EN61000-4, CISPR32/EN55032, EC/UL/EN62368, 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)
UL/CE/CQC	LM350-12B05	300	5V/60A	4.5 - 5.5	84	10000
	LM350-12B12	348	12V/29A	10.2 -13.8	85.5	4000
	LM350-12B15	348	15V/23.2A	13.5 -18	87.5	3300
	LM350-12B24	350.4	24V/14.6A	21.6 - 28.8	87	1500
	LM350-12B36	349.2	36V/9.7A	32.4 - 39.6	88	1500
	LM350-12B48	350.4	48V/7.3A	43.2 - 52.8	89	470

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		176	--	264	VAC
	DC input		240	--	373	VDC
Input Voltage Frequency			47	--	53	Hz
Input Current	230VAC		--	3.4	4	A
Inrush Current	230VAC	Cold start	--	60	--	
Leakage Current	240VAC		--	--	0.75	mA
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range	5V	--	±3	--	%
		12V	--	±1.5	--	
		15V/24V/36V/48V	--	±1	--	
Line Regulation	Rated load		--	±0.5	--	
Load Regulation	0% - 100% load	5V	--	±2	--	
		12V	--	±1	--	

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		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 <8s after the short circuit disappear.		Hiccup, continuous, self-recovery			
Over-current Protection			110%-180% Io, self-recovery			
Over-voltage Protection	5V		5.75V-6.75V（Hiccup, self-recovery）			
	12V		13.8V-16.2V（Hiccup, self-recovery）			
	15V		18V-21V（Hiccup, self-recovery）			
	24V		28.8V-33.6V（Hiccup self-recovery）			
	36V		41.4V-46.8V（Hiccup, self-recovery）			
	48V		55.2V-59.5V（Hiccup, self-recovery）			
Over Temperature Protection			Hiccup, self-recovery			

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 Test	Input - ⏚	Electric strength test for 1min., leakage current <10mA		2000	--	--	VAC
	Input-output			3000	--	--	
	output - ⏚			500	--	--	
Insulation Resistance	Input - ⏚	At 500VDC		100	--	--	MΩ
	Input - output			100	--	--	
	output - ⏚			100	--	--	
Operating Temperature				-30	--	+70	℃
Storage Temperature				-40	--	+85	
Fan On/Off Control		Fan On, temperature for Rth3		50	--	--	
		Fan Off, temperature for Rth3		--	--	40	
Operating Humidity*		Non-condensing		-20	--	90	%RH
Storage Humidity		Non-condensing		--	--	95	
Switching Frequency				--	65	--	kHz
Power Derating		Operating temperature derating	+50℃ to +70℃	2	--	--	%/℃
			-20℃ to -30℃	0.8	--	--	
Safety Standard				Meet IEC/EN/UL62368/GB4943			
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 30.00 mm
Weight	700g (Typ.)
Cooling Method	Forced air cooling

Notice: there is built-in fan inside product, so it can't be shipped by air.

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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 10 Vr.m.s	perf. Criteria A
	Voltage dips, short interruptions and voltage variations	IEC/EN61000-4-11 0%, 70%	perf. Criteria B

Remark A:

1, One magnetic beed should be coupled with the output load line during CE/RE testing;

2, When the power supply is used in the European Union or in applications that mandatory to meet the requirements of EN61000-3-2, users need to handle the harmonic current requirements, details please refer to Mornsun FAE. Applications like,

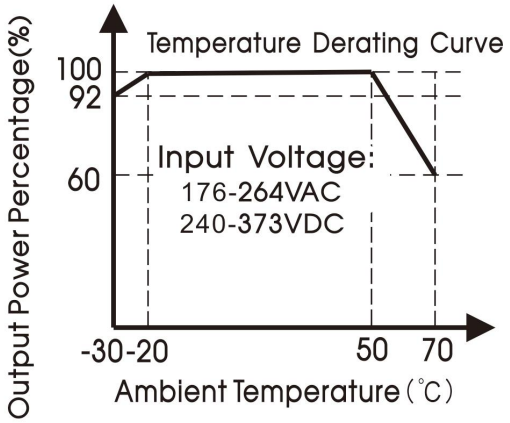
1) The terminal equipment is used in the European Union.

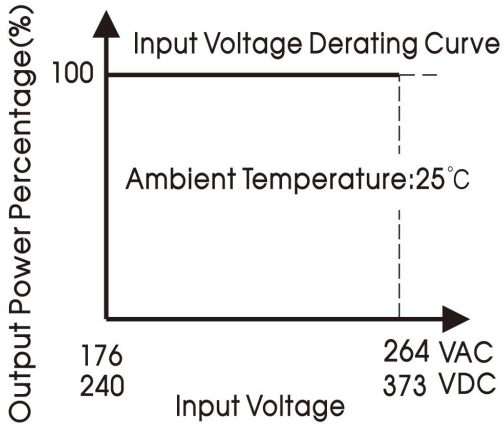
2) The terminal equipment is connected to public mains supply with 220VAC or greater rated nominal voltage that mandatory to meet the requirements of EN61000-3-2.

3) The power supply is installed in terminal equipment with average or continuous input power greater than 75W.

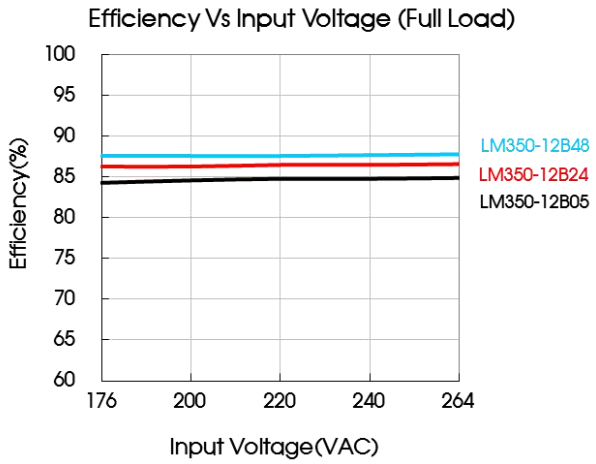
4) The power supply belongs to a part of lighting system.

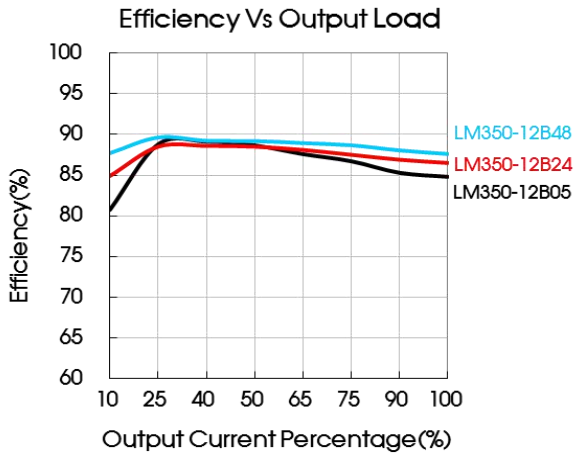
Product Characteristic Curve





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





Dimensions and Recommended Layout

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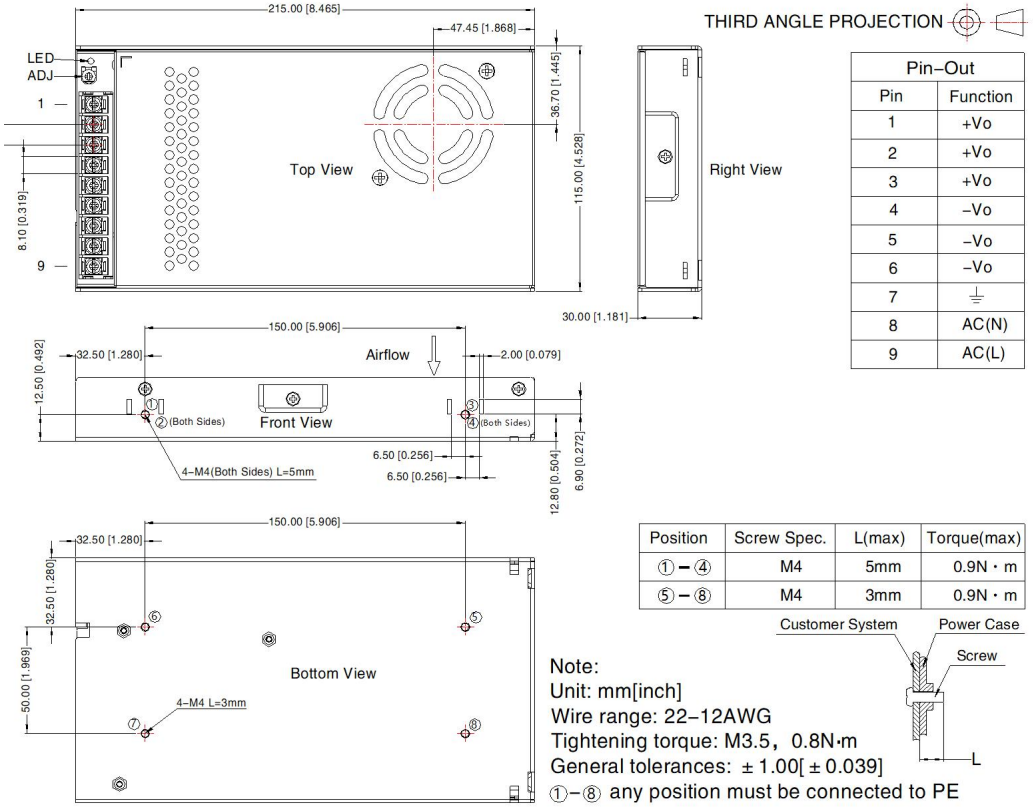
LM350-12Bxx, LM350-12Bxx-Q Series

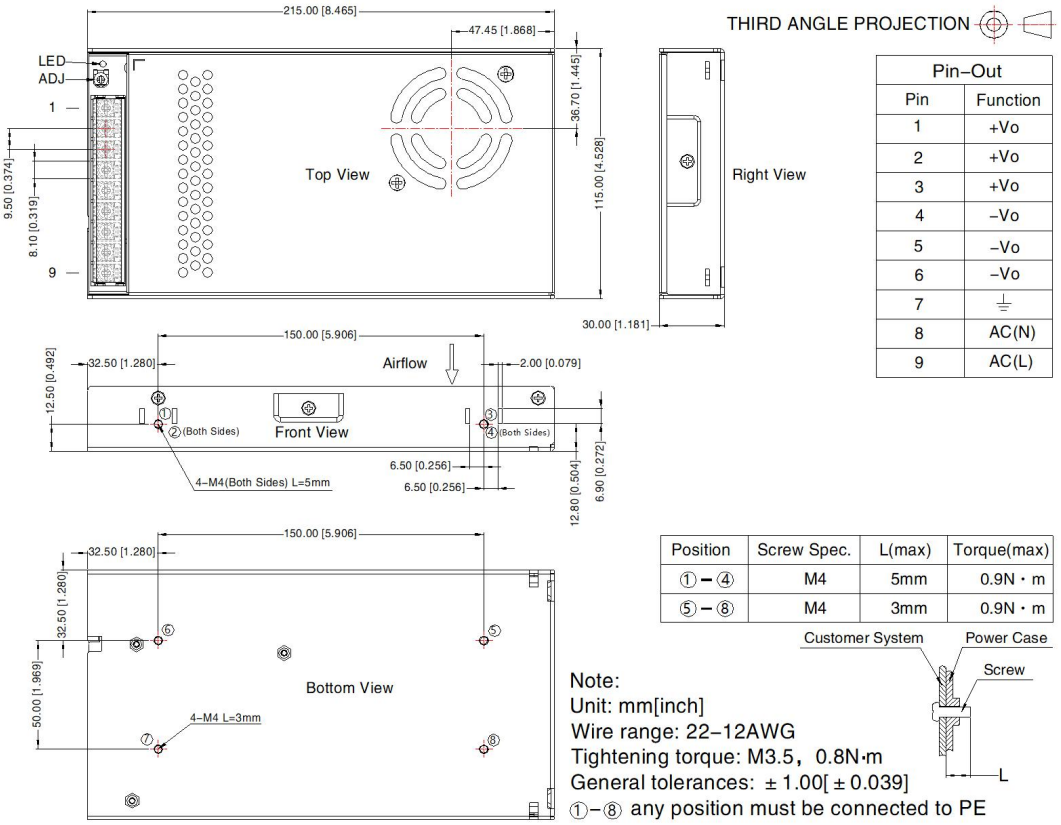


Pin-Out	
Pin	Function
1	+Vo
2	+Vo
3	+Vo
4	-Vo
5	-Vo
6	-Vo
7	⏚
8	AC(N)
9	AC(L)

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

LM350-12Bxx-C Series



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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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