



RoHS



FEATURES

- Input voltage range: 176 - 264VAC or 240 - 370VDC
- Accepts AC or DC input (dual-use of same terminal)
- Operating ambient temperature range: -30°C to +70°C
- LED indicator for power on
- Operating up to 5000m altitude
- Output short circuit, over-current, over-voltage, over-temperature protection
- Built-in DC fan forced air cooling
- Conformal coating on substrate
- 3 years warranty

LM350-12BxxS 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, UL/IEC/EN62368, GB4943 standards and they are widely used in areas of industrial, LED, street light control, 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 (uF)
--	LM350-12B12S	348	12V/29A	10.2-13.8	85.5	4000
	LM350-12B24S	350.4	24V/14.6A	21.6-28.8	87	1500

Note:
 1. *Efficiency Indicates the efficiency of the whole machine before the fan starts.
 2. Under any conditions, the total power of the product should not exceed the rated power. When the output voltage is increased, the total output power cannot exceed the rated output power, when the output voltage is decreased, the output current cannot exceed the rated output current.
 3. 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	Rated input (Certified voltage)	200	--	240	VAC
	AC input	176	--	264	
	DC input	240	--	370	VDC
Input Voltage Frequency	Rated input (Certified voltage)	50	--	60	Hz
		47	--	53	
Input Current	Rated input (Certified voltage)	--	--	4	A
	230VAC	--	3.4	4	
Input Inrush Current	230VAC Cold start	--	60	--	
Start-up Delay Time		--	--	3	s
Input Fuse	Built-in fuse	--	6.3	--	A
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range	12V	±1.5	--	%
		24V	±1	--	
Line Regulation	Rated load	--	±0.5	--	
Load Regulation	0% - 100% load	12V	±1	--	
		24V	±0.5	--	
Minimum Load		0	--	--	
Output Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	--	150	mV

Temperature Coefficient		--	±0.03	--	%/°C
Stand-by Power Consumption	230VAC	--	--	1	W
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%-300% Io, self-recover			
Over-voltage Protection	12V	13.8V-16.2V (Hiccup, self-recover)			
	24V	28.8V-33.6V (Hiccup, self-recover)			
Over Temperature Protection	230VAC, rated load, 70°C	Output voltage turn-off, self-recover after fault disappear			

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 <3mA	2000	--	--	VAC
	Input - output	Electric strength test for 1min., leakage current <5mA	3000	--	--	
	Output - ⊕	Electric strength test for 1min., leakage current <3mA	500	--	--	
Insulation Resistance	Input - ⊕	Ambient temperature: 25 ± 5°C Relative humidity: < 95%RH, no condensation Test voltage: 500VDC	100	--	--	MΩ
	Input - output		100	--	--	
	Output - ⊕		100	--	--	
Operating Temperature		-30	--	+70	°C	
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		10	--	95		
Switching Frequency		--	65	--	kHz	
Power Derating	Operating temperature derating	+50°C to +70°C	2	--	--	% / °C
		-20°C to -30°C	0.8	--	--	
Leakage Current	240VAC	Touch current	<0.75mA RMS			
Safety Standard			Design refer to UL/IEC/EN62368-1, GB4943.1			
Safety Class			CLASS I			
MTBF	MIL-HDBK-217F@25°C		≥300,000 h			
Warranty			3 years			

Environmental Characteristics

Item	Operating Conditions	Standard
Low Temperature Working	-30°C	GB2423.1, IEC60068-2-1
High Temperature Working	+70°C	GB2423.2, IEC60068-2-2
Sinusoidal Vibration	10 - 500Hz, 5G, three directions of X, Y, Z axis	GB2423.10, IEC60068-2-6
Low Temperature Storage	-30°C	GB2423.1, IEC60068-2-1
High Temperature Storage	+70°C	GB2423.2, IEC60068-2-2
Temperature Shock	-30°C to +70°C	GB2423.22, IEC60068-2-14
Temperature Cycle	-25°C to +50°C	GB2423.22, IEC60068-2-14
Hot and Humid	+70°C, 90%RH	GB2423.50, IEC60068-2-67
High Temperature/Low-pressure Synthetical Test	+50°C, 54kPa	GB2423.26, IEC60068-2-41

Mechanical Specifications

Case Material	Metal (AL1100, SGCC)
Dimensions	215.00 mm x 115.00 mm x 30.00 mm
Weight	700g (Typ.)
Cooling Method	Forced air cooling

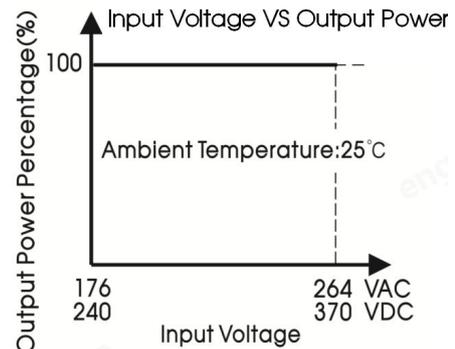
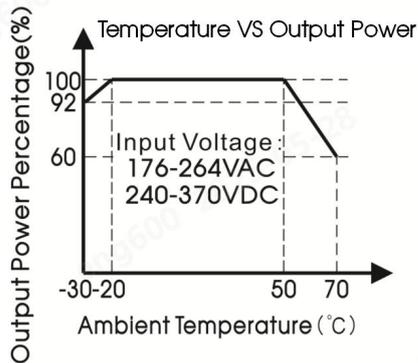
Electromagnetic Compatibility (EMC)

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 PE ±4KV	perf. Criteria A
	CS	IEC/EN61000-4-6	10 Vr.m.s	perf. Criteria A
	MS	IEC/EN61000-4-8	30A/m	perf. Criteria A
	Voltage variation*	IEC61000-6-2/IEC61000-4-11	70% Un, 25/30 cycle(50/60Hz) 40% Un, 10/12 cycle(50/60Hz) 0% Un, 1 cycle	perf. Criteria B
	voltage interruption*	IEC61000-6-2/IEC61000-4-11	0% Un, 250/300 cycle(50/60Hz)	perf. Criteria C

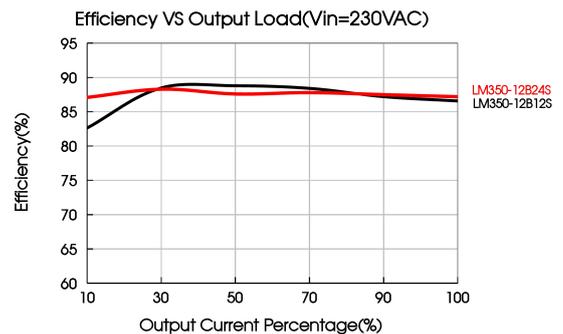
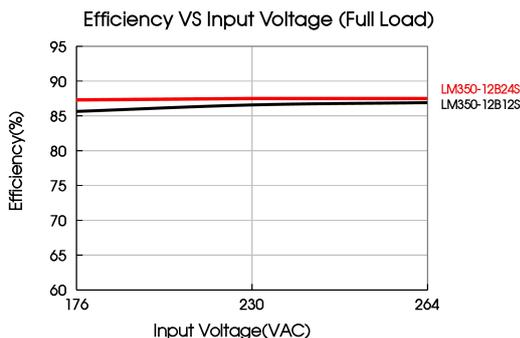
Remark:

- One magnetic bead should be coupled with the output load line during CE/RE testing.
- Matching our filter FC-L06WX series, can meet the higher level of EMC.
- The power supply does not meet the requirements of harmonic current stipulated in EN61000-3-2; This power supply is not suitable for the following situations.
 - The terminal equipment is used in the European Union;
 - 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;
 - The power supply is installed in terminal equipment with average or continuous input power greater than 75W;
 - The power supply belong to a part of lighting system;
 In addition, the power supply can be used in the following terminals which do not need to meet EN61000-3-2;
 - Professional equipment with total fixed input power greater than 1000W;
 - symmetrical controlled heating element with rated power less than or equal to 200W.
- If no harmonic current is required or customers can solve harmonic current problems by themselves, this product can be used.
- *Un is the maximum input nominal voltage.

Product Characteristic Curve



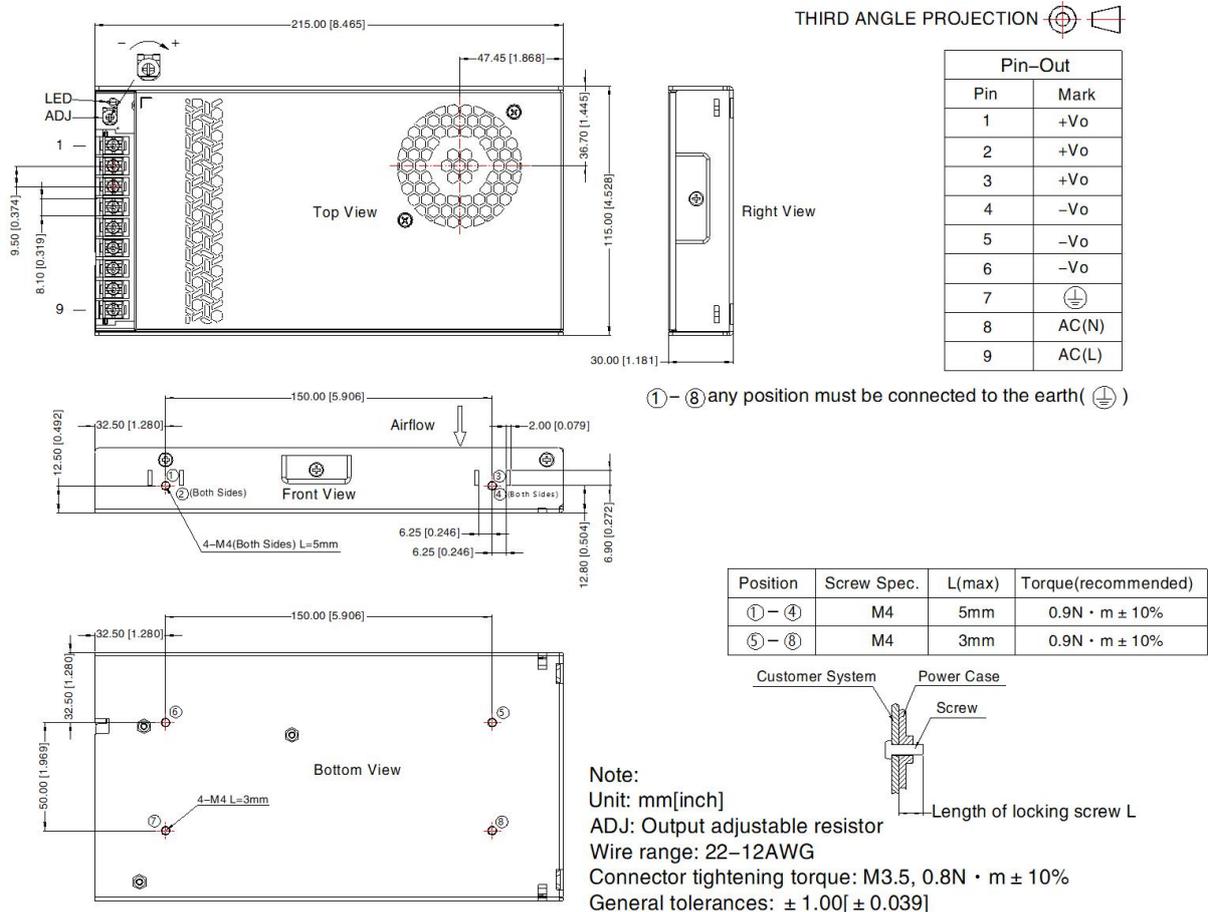
Note: This product is suitable for applications using forced air cooling; for applications in closed environment please consult Mornsun FAE.



Note:

The product is equipped with a built-in cooling fan. Keep the air intake clear of debris. If the environment cannot meet this requirement, a fanless model is recommended.

Dimensions and Recommended Layout



Note:

- For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220729;
- Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^\circ\text{C}$, humidity<75%RH with nominal input voltage and rated output load;
- The ambient temperature derating of $5^\circ\text{C}/1000\text{m}$ is needed for operating altitude greater than 2000m;
- All index testing methods in this datasheet are based on our company corporate standards;
- 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;
- We can provide product customization service, please contact our technicians directly for specific information;
- Products are related to laws and regulations: see "Features" and "EMC";
- The out case needs to be connected to the earth (⊕) of system when the terminal equipment in operating;
- The output voltage can be adjusted by the ADJ, clockwise to increase;
- Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.
- 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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