AC/DC 50W Enclosed Switching Power Supply
LM50-10Axx Series

MORNSUN®

CE Report UK CA RoHS 3 years warranty
EN62368-1 BS EN 62368-1

FEATURES

- Universal 85 -264VAC or 120 - 370VDC Input voltage
- Operating ambient temperature range: -30℃ to +70℃
- High efficiency, high reliability, long life time
- Low ripple & noise
- Output short circuit, over-current, over-voltage protection
- Safety according to IEC/UL62368, EN60335, GB4943

LM50-10Axx series products are designed with dual non-isolated output, which can supply power to two units in the system at the same time. It is the best power solution for industrial control equipment, instrumentation and other applications. It can work in the ambient temperature from -30 ℃ to +70 ℃ without adding a fan for heat dissipation. These converters offer excellent EMC performance and meet IEC/EN/UL62368, EN60335, GB4943 standards.

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)	
			Vo1/Io1	Vo2/Io2	Vo1		Vo1	Vo2
EN/BS	LM50-10A0512-20	54	5V/6A	12V/2A	4.75-5.5V	79	6000	2000
	LM50-10A0524-14	53.6	5V/4A	24V/1.4A		80	4000	1000

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input		85	--	264	VAC
	DC input		120	--	370	VDC
Input Voltage Frequency			47	--	63	Hz
Input Current	115VAC		--	--	1.3	A
	230VAC		--	--	0.8	
Inrush Current	115VAC	Cold start	--	30	--	
	230VAC		--	50	--	
Leakage Current	240VAC		<2mA			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions			Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range, balanced load	Vo1		--	±2.0	--	%
		Vo2	LM50-10A0512-20	--	±7.0	--	
			LM50-10A0524-14	--	±8.0	--	
Line Regulation	Rated load	Vo1		--	±0.5	--	
		Vo2	LM50-10A0512-20	--	±1.5	--	
			LM50-10A0524-14	--	±1.5	--	
Load Regulation	0% - 100% load, balanced load	Vo1		--	±0.5	--	
		Vo2	LM50-10A0512-20	--	±3	--	
			LM50-10A0524-14	--	±3	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value), 25℃	Vo1		--	--	80	mV
		Vo2	LM50-10A0512-20	--	--	150	
			LM50-10A0524-14	--	--	150	
Hold-up Time	115VAC			--	5	--	ms
	230VAC			--	30	--	

Short Circuit Protection	Recovery time <5s after the short circuit disappear, not available for Vo2	Hiccup, continuous, self-recovery
Over-current Protection	230VAC, dual output with balanced load	110% - 250% Io, hiccup, self-recovery
Over-voltage Protection		5.75V≤Vo1≤6.75V (Output voltage hiccup)

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 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	
Operating Humidity		Non-condensing		10	--	95	%RH
Storage Humidity				20	--	90	
Switching Frequency				--	65	--	kHz
Power Derating		Operating temperature derating	+45℃ to +70℃	2.0	--	--	%/℃
		Input voltage derating	85VAC-115VAC	0.67	--	--	%/VAC
			120VDC-160VDC	0.5	--	--	%/VDC
Safety Standard				EN62368-1, BS EN 62368-1 (Report) Design refer to IEC/UL62368-1, EN60335-1, GB4943.1			
Safety Class				CLASS I			
MTBF		MIL-HDBK-217F@25℃		>300,000h			

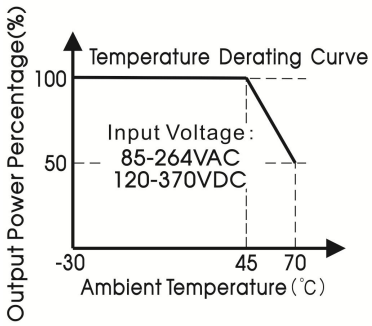
Mechanical Specifications

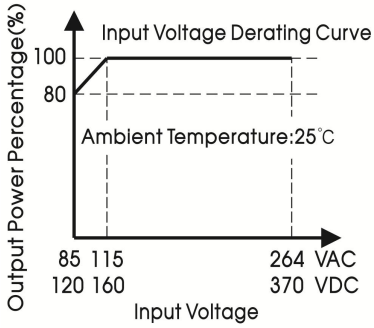
Case Material	Metal (AL1100, SGCC)
Dimensions	99.00 x 97.00 x 30.00 mm
Weight	250g (Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032 CLASS B	
	RE	CISPR32/EN55032 CLASS B	
	Harmonic	IEC/EN 61000-3-2 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/EN 61000-4-5 ±2KV/±4KV	perf. Criteria A
	CS	IEC/EN61000-4-6 10Vr.m.s	perf. Criteria A
	MS	IEC/EN61000-4-8 10A/m	perf. Criteria A
	Voltage dips, short interruptions and voltage	IEC/EN61000-4-11 0%, 70%	perf. Criteria B

Product Characteristic Curve

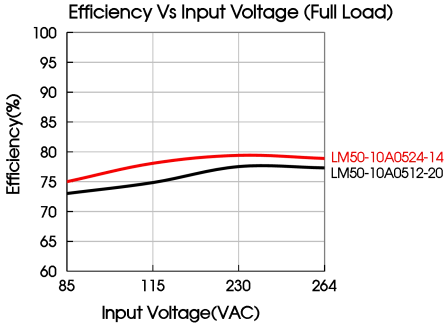




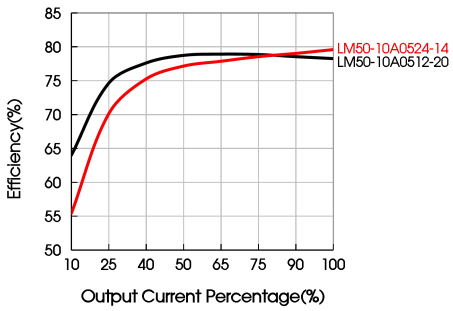
Note: 1. With an AC input voltage between 85 - 115VAC and a DC input between 120 - 160VDC the output power must be derated as per the temperature derating curves;

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

Efficiency Vs Input Voltage (Full Load)

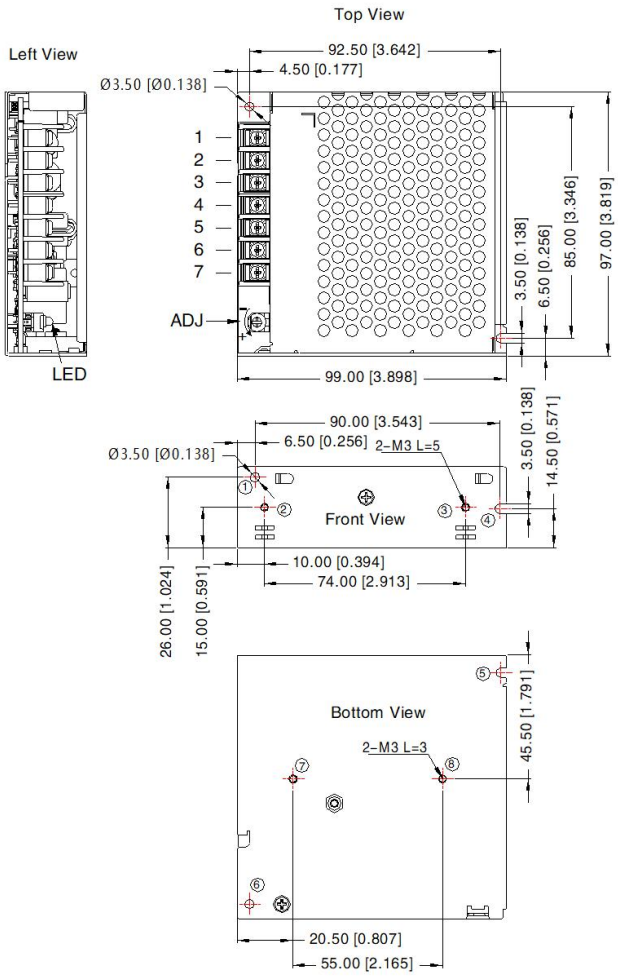


Efficiency Vs Output Load(Vin=230VAC)



Dimensions and Recommended Layout

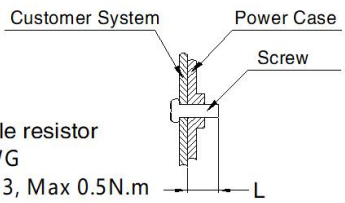
THIRD ANGLE PROJECTION



Pin-Out	
Pin	Function
1	AC(L)
2	AC(N)
3	⏚
4	COM
5	+Vo2
6	COM
7	+Vo1

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

Position	Screw Spec.	L(max)	Torque(max)
②－③	M3	5mm	0.4N・m
⑦－⑧	M3	3mm	0.4N・m



Note:
Unit: mm[inch]
ADJ: Output adjustable resistor
Wire range: 22-14AWG
Tightening torque: M3, Max 0.5N.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: 58220066;
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. The output voltage can be adjusted by the ADJ, clockwise to decrease;
10. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
11. 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.

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