AC/DC 35W Enclosed Switching Power Supply

LM35-10Cxx Series

MORNSUN®

CE RoHS 3 years Warranty

FEATURES

- Universal 85 - 264VAC or 120 - 373VDC Input voltage
- Operating ambient temperature range: -30℃ ~ +70℃
- High efficiency, high reliability and long lifetime
- LED indicator for power on
- Output short circuit, over-current, over-voltage protection
- Withstand 300VAC surge input for 5s
- High I/O isolation test voltage up to 3000VAC
- Safety according to IEC/EN/UL62368, EN60335, GB4943 (CE pending)
- Emissions compliant to CISPR32/EN55032 CLASS B
- Withstand 5G vibration test
- Operating altitude up to 5000m

This LM35-10Cxx series of power converter design features triple output versions, which can independently supply 3 different loads in the system. The products can be used in harsh working environments with an ambient temperature range from -30° C ~+70° C, without the need of the fan for further heat dissipation. In addition, the converters EMC immunity performance meets the requirements of IEC61000 standard and meet emission standard CISPR32/EN55032, class B without any external components, thus providing excellent EMC protection. The products also meet IEC/EN/UL62368, EN60335, GB4943 safety standards. The converters integrate a variety of protection features and offer a high-performance to low-cost ratio providing the best power solution for a variety of industries such as industrial control equipment, instrumentation and smart home and building equipment application.

Selection Guide

Certification	Part No.	Output Power	Nominal Output Voltage and Current			Working Current Range*			Efficiency * (%) Typ.	Max. Capacitive Load(μF)		
			Vo1/Io1	Vo2/Io2	Vo3/Io3	Io1	Io2	Io3		Vo1	Vo2	Vo3
CE (Pending)	LM35-10C 051212-10	33W	+5V/3.0A	+12V/1.0A	-12V/0.5A	0.3-4.0A	0.1-1.5A	0.05-0.5A	81	3000	1000	470
	LM35-10C 051515-10	35W	+5V/2.5A	+15V/1.0A	-15V/0.5A	0.25-3.5A	0.1-1.5A	0.05-0.5A	81	2500	1000	470
	LM35-10C 052412-05	36.5W	+5V/2.5A	+24V/0.5A	+12V/1.0A	0.25-3.5A	0.05-1.0A	0.1-1.0A	81	2500	470	1000

Note:1.* Working current range: If any one of the 3 outputs arrive at the maximum current, the total output power cannot exceed the rated power and working time < 3s.
2.*The typical efficiency tested under input voltage at 230VAC.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input		85	--	264	VAC
	DC input		120	--	373	VDC
Input Frequency			47	--	63	Hz
Input Current	115VAC		--	--	0.75	A
	230VAC		--	--	0.5	
Inrush Current	115VAC	Cold start	--	30	--	
	230VAC		--	50	--	
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions			Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range	Vo1		--	±2.0	--	%
		Vo2	LM35-10C051212-10	--	±6.0	--	
			LM35-10C051515-10	--	±8.0	--	
			LM35-10C052412-05	--	±8.0	--	
		Vo3	LM35-10C051212-10	--	±6.0	--	
			LM35-10C051515-10	--	±8.0	--	
			LM35-10C052412-05	--	±8.0	--	

MORNSUN Guangzhou Science & Technology Co., Ltd. reserves the copyright and right of final interpretation

Line Regulation	Full load	Vo1		--	±0.5	--	%
		Vo2	LM35-10C051212-10	--	±1.0	--	
			LM35-10C051515-10	--	±1.0	--	
			LM35-10C052412-05	--	±1.0	--	
		Vo3	LM35-10C051212-10	--	±1.0	--	
			LM35-10C051515-10	--	±1.0	--	
			LM35-10C052412-05	--	±1.0	--	
Load Regulation	10% - 100% load (Balanced load)	Vo1		--	±1.5	--	%
		Vo2	LM35-10C051212-10	--	±3.0	--	
			LM35-10C051515-10	--	±3.0	--	
			LM35-10C052412-05	--	±3.0	--	
		Vo3	LM35-10C051212-10	--	±3.0	--	
			LM35-10C051515-10	--	±3.0	--	
			LM35-10C052412-05	--	±3.0	--	
Ripple & Noise*	20MHz bandwidth (peak-peak value)	Vo1		--	80	--	mV
		Vo2	LM35-10C051212-10	--	120	--	
			LM35-10C051515-10	--	150	--	
			LM35-10C052412-05	--	150	--	
		Vo3	LM35-10C051212-10	--	120	--	
			LM35-10C051515-10	--	150	--	
			LM35-10C052412-05	--	120	--	
Temperature Coefficient				--	±0.03	--	%/℃
Voltage Adjustable Range （Vo1） *	Rated input voltage			4.75	--	5.50	VDC
Start-up Delay Time	Rated input voltage			--	--	2.0	S
Output Voltage Rise Time	The output Vo1/Vo2/Vo3 rise time from 10%Vo to 90%Vo at rated voltage 115V/60Hz & 230V/50Hz, rated output load, ambient temperature			--	--	30	mS
Hold-up Time	115VAC			--	5	--	
	230VAC			--	30	--	
Minimum Load				Refer to the working current range			
Short Circuit Protection	Recovery time <5s after the short circuit disappear			Hiccup, continuous, self-recovery			
Over-current Protection	3 outputs with equal-scale load			110%-180%Io, self-recovery			
Over-voltage Protection				5.75VDC ≤Vo1≤6.75VDC, output clamped			

Note: 1.*The "Tip and barrel method" is used for ripple and noise test, (47uF electrolytic capacitor and 104 ceramic capacitor) please refer to AC-DC Converter Application Notes for specific information.
2.*When Vo1 working in the adjustable range, the output power please refer to power derating curve and should not be exceed the rated output power.

General Specifications

Item		Operating Conditions		Min.	Typ.	Max.	Unit
Isolation Voltage	Input - Output	Electric Strength Test for 1min, leakage current <10mA		3000	--	--	VAC
	Input - ⏚			2000	--	--	
	Output - ⏚			500	--	--	
Insulation Resistance	Input - Output	At 500VDC		100	--	--	MΩ
	Input - ⏚			100	--	--	
	Output - ⏚			100	--	--	
Operating Temperature		Refer to derating curve		-30	--	+70	℃
Storage Temperature				-40	--	+85	
Storage Humidity		Non-condensing		--	--	95	%RH
Power Derating		Input voltage derating	85VAC - 115VAC	0.667	--	--	%/VAC
			115VAC - 264VAC	0	--	--	
			120VDC -160VDC	0.5	--	--	%/VDC
			160VDC -373VDC	0	--	--	
		Operating temperature derating	+50℃ ~ +70℃	2.5	--	--	%/℃

MORNSUN Guangzhou Science & Technology Co., Ltd. reserves the copyright and right of final interpretation

Safety Standard		Meet IEC/EN/UL62368, EN60335, GB4943
Safety Class		CLASS I
MTBF	MIL-HDBK-217F@25℃	>300,000 h

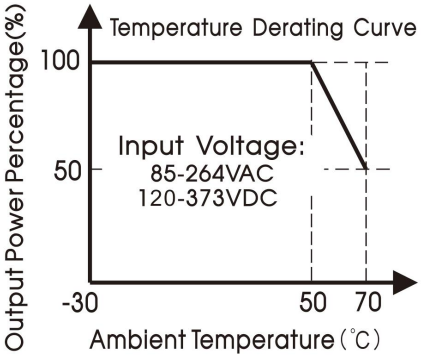
Physical Specifications

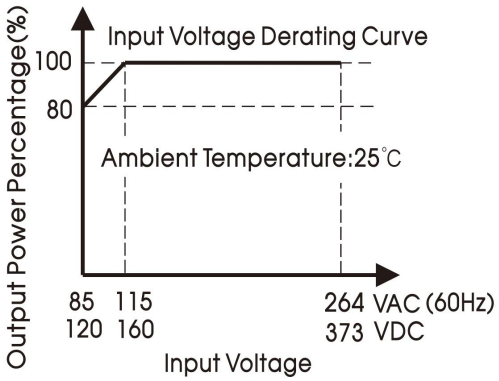
Case Material	Metal (AL1100, SGCC)
Dimension	99.00 x 97.00 x 30.00 mm
Weight	210g (Typ.)
Cooling Method	Free air convection

EMC Specifications

Emissions	CE	CISPR32/EN55032 CLASS B	
	RE	CISPR32/EN55032 CLASS B	
	Harmonic current	IEC/EN61000-3-2 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 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

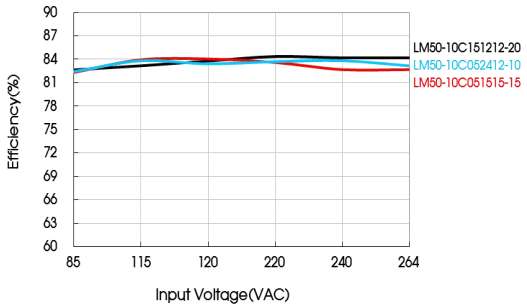
Product Characteristic Curve



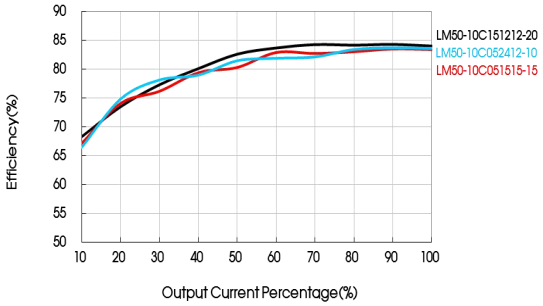


Note: ①With an input voltage between 85 -115VAC and a DC input between 120-160VDC the output power must be derated as per the temperature derating curves;
②This product is suitable for applications using natural air cooling; for applications in closed environment please consult Mornsun FAE.

Efficiency Vs Input Voltage (Full Load)

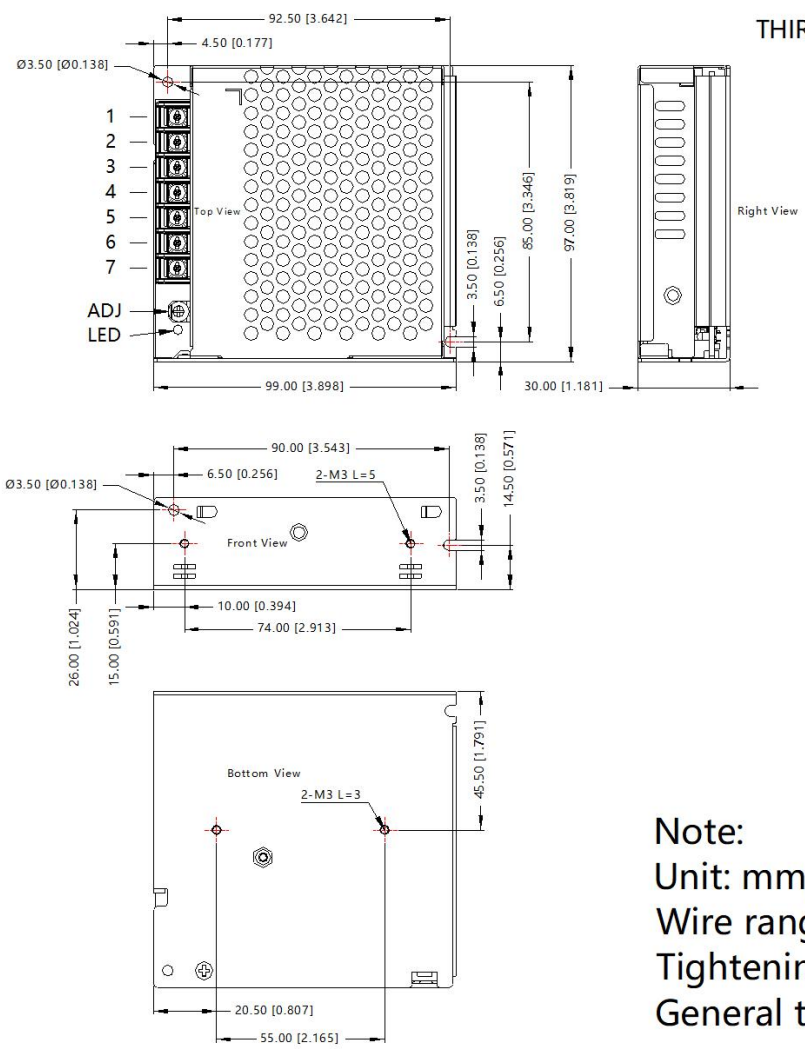


Efficiency Vs Output Load(Vin=230VAC)



MORNSUN Guangzhou Science & Technology Co., Ltd. reserves the copyright and right of final interpretation

Dimensions and Recommended Layout



Pin-Out	
Pin	Function
1	AC(L)
2	AC(N)
3	⏚
4	Vo3
5	Vo2
6	COM
7	Vo1

Note:
Unit: mm[inch]
Wire range: 22-14AWG
Tightening torque: M3 , 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 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. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.
9. 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, Luogang District, Guangzhou, P. R. China
Tel: 86-20-38601850 Fax: 86-20-38601272 E-mail: info@mornsun.cn www.mornsun-power.com

MORNSUN Guangzhou Science & Technology Co., Ltd. reserves the copyright and right of final interpretation