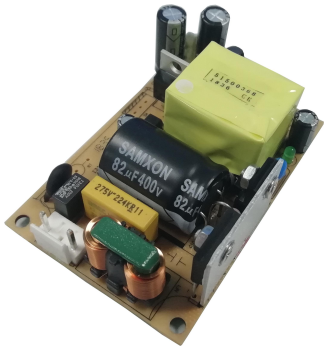
65W, AC-DC converter



CE RoHS

FEATURES

- Universal 85-264VAC or 100-370VDC input voltage
- 3×2 inch high power density
- Operating ambient temperature range: -25℃ ~ +70℃
- Output short circuit, over-current, over-voltage protection
- High efficiency, high reliability
- Regulated output, low ripple & noise
- EMI performance meets CISPR32 / EN55032 CLASS B
- 2 years warranty
- EN62368 safety approval

LO65-10Bxx series is one of Mornsun's compact size power converter. It features universal AC input and at the same time accepts DC input voltage, low power consumption, high efficiency, high reliability, reinforced isolation. It offers good EMC performance compliant to IEC/EN61000-4 and CISPR32/EN55032 and meets IEC/EN/UL62368 standards. The converters are widely used in industrial, office and civil applications. For extremely harsh EMC environment, we recommend using the application circuit show in Design Reference of this datasheet.

Selection Guide

Certification	Part No.	Output Power	Nominal Output Voltage and Current	Efficiency at 230VAC (%) Typ.	Capacitive Load (μF) Max.
CE	LO65-10B05	50W	5V/10000mA	80	40000
	LO65-10B09	60W	9V/6600mA	83	12000
	LO65-10B12	65W	12V/5420mA	85	8000
	LO65-10B15		15V/4340mA	85	7000
	LO65-10B24		24V/2710mA	87	1500
	LO65-10B48		48V/1360mA	87	1000

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	85	--	264	VAC
	DC input	100	--	370	VDC
Input Frequency		47	--	63	Hz
Input Current	115VAC	--	--	1600	mA
	230VAC	--	--	900	
Inrush Current	115VAC	--	35	--	A
	230VAC	--	50	--	
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		--	±2	--	%
Line Regulation	Full load	--	±0.5	--	
Load Regulation	5%-100% Load	--	±1	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	--	150	mV
Stand-by Power Consumption		--	--	0.5	W
Temperature Coefficient		--	±0.02	--	%/°C
Short Circuit Protection		Hiccup, continuous, self-recovery			
Over-current Protection		120% - 300%Io, self-recovery			

Over-voltage Protection	5VDC Output	≤9VDC (Output voltage clamp or turn off)			
	9VDC Output	≤16VDC (Output voltage clamp or turn off)			
	12VDC Output	≤20VDC (Output voltage clamp or turn off)			
	15VDC Output	≤24VDC (Output voltage clamp or turn off)			
	24VDC Output	≤35VDC (Output voltage clamp or turn off)			
	48VDC Output	≤60VDC (Output voltage clamp or turn off)			
Minimum Load		0	--	--	%
Hold-up Time	230VAC input	--	35	--	ms
Note: * The "parallel cable" 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	Input-Output	Electric Strength Test for 1min., leakage current <5mA	3000	--	--	VAC
Operating Temperature			-25	--	+70	℃
Storage Temperature			-25	--	+85	
Storage Humidity			--	--	90	%RH
Switching Frequency			--	65	--	kHz
Power Derating		-25℃ ~ -10℃	2.0	--	--	%/℃
		+50℃ ~ +70℃	2.5	--	--	
		85VAC - 165VAC	0.375	--	--	%/VAC
		240VAC - 264VAC	0.833	--	--	
Safety Standard			IEC62368/UL62368/EN62368			
Safety Certification			EN62368			
Safety Class			CLASS Ⅱ			
MTBF			MIL-HDBK-217F@25°C > 300,000 h			

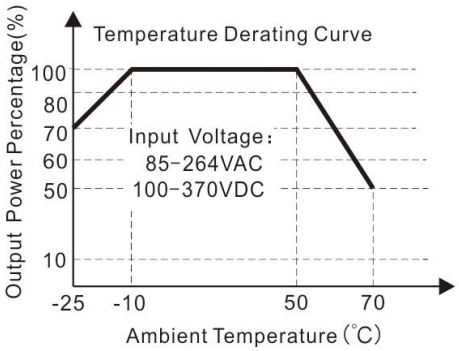
Mechanical Specifications

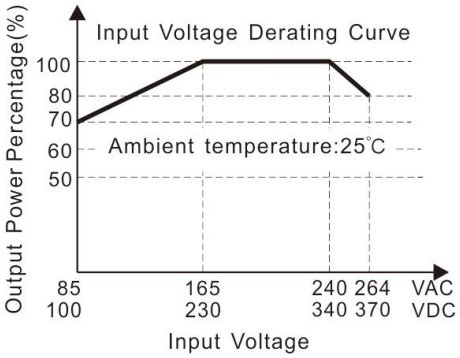
Dimension	76.20 x 50.80 x 30.00 mm
Weight	95g(Typ.)
Cooling method	Free air convection

Electromagnetic Compatibility (EMC)

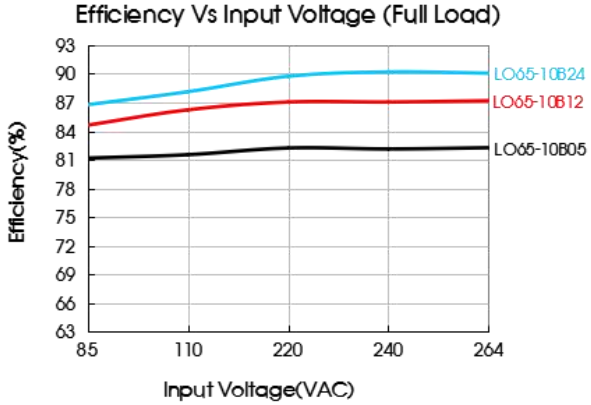
Emissions	CE	CISPR32/EN55032 CLASS B	
	RE	CISPR32/EN55032 CLASS B	
Immunity	ESD	IEC/EN61000-4-2 Contact ±6 KV	perf. Criteria B
	RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4 ± 2KV	perf. Criteria B
	Surge	IEC/EN61000-4-5 line to line ±1 KV	perf. Criteria B
	CS	IEC/EN61000-4-6 10Vr.m.s	perf. Criteria A
	Voltage dips, short interruption and voltage variations	IEC/EN61000-4-11 0%, 70%	perf. Criteria B

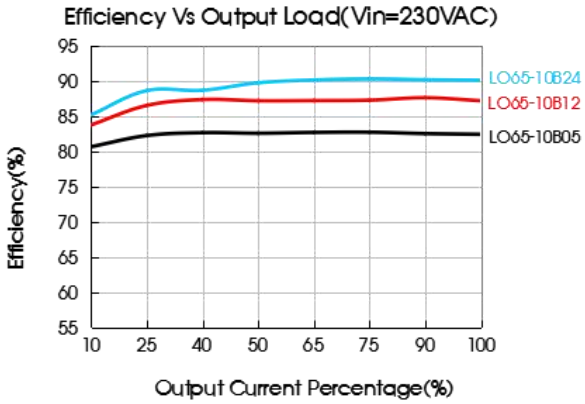
Product Characteristic Curve





Note: ① With an AC input between 85-165V/240-264VAC and a DC input between 100-230V/340-370VDC, the output power must be derated as per temperature derating curves;
② This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.





Design Reference

1. Typical application

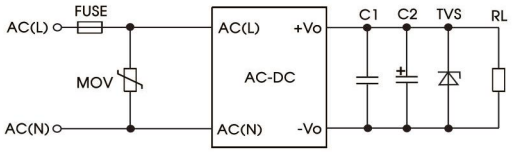


Fig. 1: Typical circuit diagram

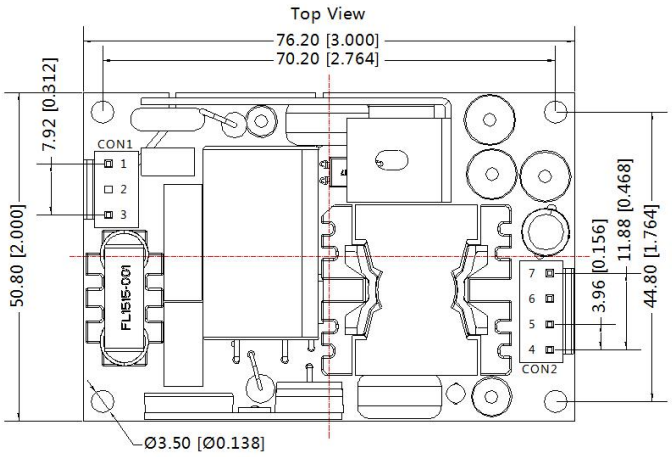
Part No.	FUSE	MOV	C1(μF)	C2(μF)	TVS
LO65-10B05	3.15A/250V slow-blow	S14K300	1	330	SMBJ7.0A
LO65-10B09				47	SMBJ12A
LO65-10B12					SMBJ20A
LO65-10B15					SMBJ20A
LO65-10B24					SMBJ30A
LO65-10B48					SMBJ64A

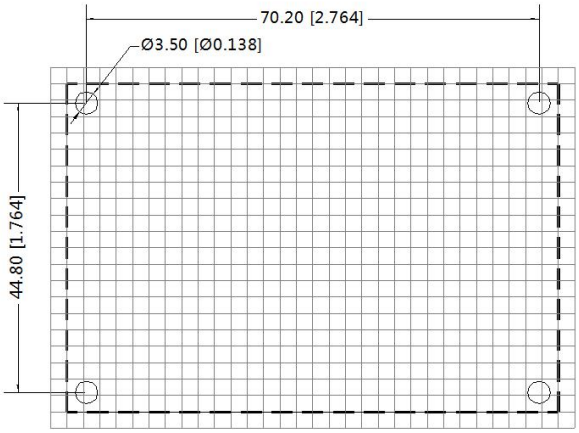
Output Filter Components:
We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2 (refer to manufacture's datasheet). Choose a Capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C1 is a ceramic capacitor used for filtering high-frequency noise and TVS is a recommended suppressor diode to protect the application in case of a converter failure.

2. For additional information please refer to application notes on www.mornsun-power.com.

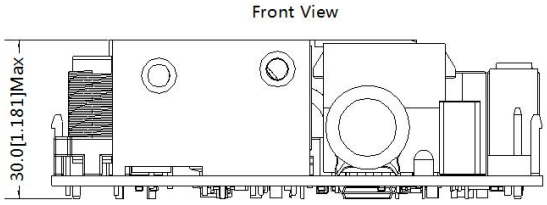
Dimensions and Recommended Layout

THIRD ANGLE PROJECTION





Note: Grid 2.54*2.54mm



Note:
Unit: mm[inch]
General tolerances: ±0.50[±0.020]
In CON1 model: VH-3A, Recommend terminal: VH-3Y
Out CON2 model: VH-4A, Recommend terminal: VH-4Y
Mounting hole screwing torque: Max 0.4 N·m

Pin-Out			
Pin	Function	Connector	Terminal
1	AC(L)	VH-3A or B2P3-VH or the same Spec.	VH-3Y or VHR-3N or the same Spec.
2	NoPin		
3	AC(N)		
4	-Vo	VH-4A or B4P-VH or the same Spec.	VH-4Y or VHR-4N or the same Spec.
5	-Vo		
6	+Vo		
7	+Vo		

Note:
1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220060;
2. There will be noise generated when product working at light load, but it does not affect the performance and reliability;
3. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75% with nominal input voltage and rated output load;
4. All index testing methods in this datasheet are based on our company corporate standards;
5. We can provide product customization service, please contact our technicians directly for specific information;
6. Products are related to laws and regulations: see "Features" and "EMC";
7. 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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