MORNSUN®

3W, AC/DC converter



FEATURES

- Universal input voltage range: 85~264VAC/100~370VDC
- AC and DC dual-use(input from the same terminal)
- High efficiency, high power density
- Output short circuit protections
- Meets UL60950, EN60950 standards
- PCB mounting, Chassis mounting, Din-Rail mounting available

c¶us (€ RoHS

LD03-10Bxx series— is a compact size power converter offered by Mornsun. It features universal input voltage, taking both DC and AC input voltage, low power consumption, high efficiency, high reliability, safer isolation. It offers good EMC performance, and is UL & CE certified, and widely used in industrial, electricity, instruments, telecommunication and civil applications.

Note: Please refer to Design Reference when module being used in a bad EMC environment.

Selection	Guide				
Certification	Part No.	Output Power	Nominal Output Voltage and Current(Vo/Io)	Efficiency (230VAC, %/Typ.)	Max. Capacitive Load (µF)
	LD03-10B03	2.3W	3.3V/700mA	63	8000
	LD03-10B05		5V/600mA	72	6000
UL/CE	LD03-10B09		9V/330mA	74	700
UL/CE	LD03-10B12	3W	12V/250mA	76	700
	LD03-10B15		15V/200mA	76	700
	LD03-10B24		24V/125mA	78	68

Input Specifications					
Item	Operating Conditions	Min.	Тур.	Max.	Unit
In the Maltheresia Despera	AC input	85		264	VAC
Input Voltage Range	DC input	100		370	VDC
Input Frequency		47		63	Hz
	110VAC	_	65	_	
Input Current	230VAC		30	_	mA
	110VAC		10	-	
Inrush Current	230VAC	_	20	_	Α
Recommended External Input Fuse(Special package series include fuse)		0.5	\/250V, slow	fusing, neces	ssary
Hot Plug			Unav	ailable	

Output Specifications					
Item	Operating Conditions	Min.	Тур.	Max.	Unit
	3.3V output	-	±3	-	
Output Voltage Accuracy	Other output	_	±2	-	O/
Line Regulation	Full load		±0.5	_	%
Load Regulation	10%-100% load		±1	_	

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AC/DC Converter

LD03-10Bxx Series



Ripple & Noise*	20MHz bandwidth (peak-peak value)		30	60	mV
Temperature Coefficient			±0.02	_	%/℃
Stand-by Power Consumption			0.35	_	W
Short Circuit Protection		Hico	cup, continu	ous, self-reco	very
Hold-up Time	230VAC input	_	50	_	ms
Note: * Rely test method is adopted to te	st the ripple and noise, please see AC-DC Converter Applic	cation Notes for sp	ecific operation	on methods.	

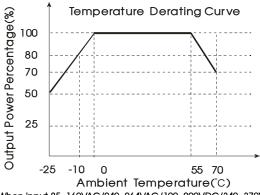
General Spe	cifications					
Item		Operating Conditions	Min.	Тур.	Max.	Unit
Isolation Voltage	Input-output	Test time: 1min	3000		_	VAC
Operating Tempera	ature		-25	_	+70	°C
Storage Temperatu	re		-25	_	+105	C
Storage Humidity					95	%RH
Switching Frequenc	су			100	_	KHz
D D		+55°C∼+70°C	2.0		_	0/ 1%
Power Derating		+0 °C∼ -25 °C	2.0		-	%/℃
Safety Standard			IEC60950/E	N60950/UL60	0950	
Safety Certification			EN60950/U	L60950		
Safety Class			CLASSII			
MTBF			MIL-HDBK-2	217F @25 ℃ >	300,000 h	

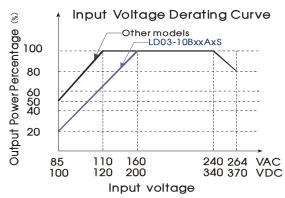
Physical	Specifications	
Casing Mate	erial	Black flame-retardant and heat-resistant plastic (UL94-V0)
Dimension	Horizontal package/A2S chassis mounting/A4S Din-Rail mounting	Refer to the Dimensions
Weight	Horizontal package/A2S chassis mounting/A4S Din-Rail mounting	21g/43g /65g (Typ.)
Cooling Me	thod	Free convection

EMC	Specifications		
	CE	CISPR22/EN55022, CLASS A	
ENAL	CE	CISPR22/EN55022, CLASS B (See Fig. 2 for recommended circuit)	
EMI	RE	CISPR22/EN55022, CLASS A	
	KE	CISPR22/EN55022, CLASS B (See Fig. 2 for recommended circuit)	
	ESD	IEC/EN61000-4-2 ±6KV/8KV	perf. Criteria B
	RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN 61000-4-4 ±2KV (See Fig. 2 for recommended circuit)	perf. Criteria B
EMS	Surge	IEC/EN 61000-4-5 ±1KV/±2KV (See Fig. 2 for recommended circuit)	perf. Criteria B
LIVIO	CS	IEC/EN61000-4-6 10Vr.m.s	perf. Criteria A
	PFM	IEC/EN61000-4-8 10A/m	perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11 0%-70%	perf. Criteria B

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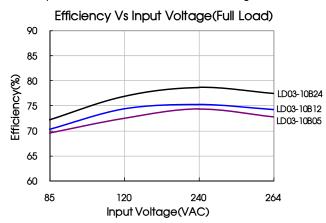
Product Characteristic Curve

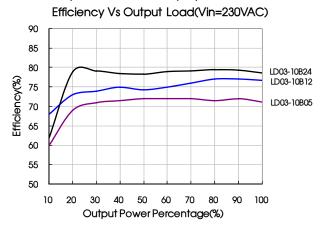




Note: ①When input 85~160VAC/240~264VAC/100~200VDC/340~370VDC (LD03-10BxxAx\$ series), 85~110VAC/240~264VAC/100~120VDC/340~370VDC(other series), it need to be voltage derated on basis of temperature derating;

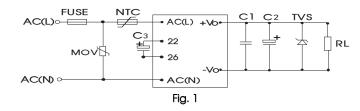
This product is suitable for use in natural air cooling environments, if in a closed environment, please contact our company's FAE.





Design Reference

1. Typical application circuit



Model	C1(::D	CO(LIE)	C2	T\/C +ula a
iviodei	C1(µF)	C2(µF)	C3	TVS tube
LD03-10B03		150		SMBJ7.0A
LD03-10B05		150		SMBJ7.0A
LD03-10B09	,	120	4 9. F /400\/	SMBJ12A
LD03-10B12	'	120	6.8µF /400V	SMBJ20A
LD03-10B15		120		SMBJ20A
LD03-10B24		68		SMBJ30A

Note:

1. Output filtering capacitor C2 and input filtering capacitor C3 are electrolytic capacitors, it is recommended to use high frequency and low impedance electrolytic capacitor. For capacitance and current of capacitor please refer to manufacture's datasheet. Output capacitor withstand voltage derating should be 80% or above. C1 is ceramic capacitor, which is used to filter high-frequency noise. TVS is a recommended component to protect post-circuits if converter fails. External input NTC is recommended to use 10D-9; External input MOV is recommended to use \$14K300.

2.LD03 models: Terminals 22 and 26 are internal rectification and filtering terminals. To protect the models further, it must connect an electrolytic capacitor C3 (it is recommended to be 6.8µF/400V). The special package LD03-10BxxAxS has no external capacitor pin. When the operating voltage is below 160VAC, It need to derate, refer to "Input Voltage Derating Curve".

2. EMC solution-recommended circuit

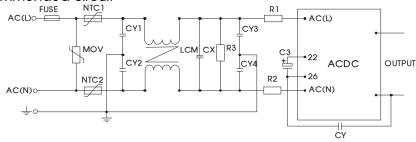
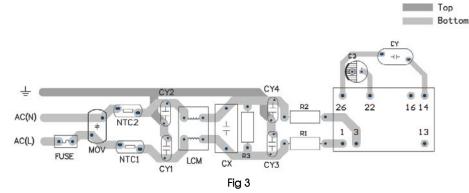


Fig 2

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EMC solution-recommended circuit PCB layout

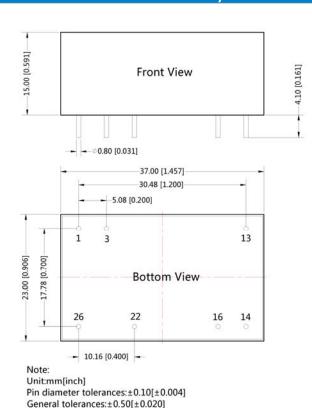


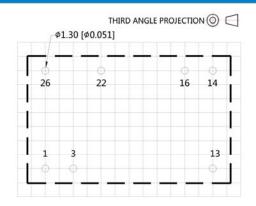
Note: Suggestions for safety regulation and wiring width: wire width ≥3mm, distance between wires ≥6mm, and distance between wire and ground ≥6mm

Element model	Recommended value
MOV	\$14K300
NTC1/ NTC2	5D-9
R1/R2	24 Ω /3W
R3	1M Ω /2W
CY1/ CY2/ CY3/ CY4	1000pF/400VAC
CX	0.22µF/275VAC
LCM	10~30 mH, recommended to use MORNSUN's FL2D-z5-103
CY	Y capacitor, recommended parameter 1000pF/400VAC, recommended external, to meet EMC higher require.
FUSE	0.5A/250V, slow fusing, necessary

3. For more information about Mornsun EMC Filter products, please visit <u>www.mornsun-power.com</u> to download the Selection Guide of EMC Filter

Dimensions and Recommended Layout





Note : Grid 2.54*2.54mm

Pin-Out			
Pin	Function		
1	AC(L)		
3	AC(N)		
13	NC		
14	-Vo		
16	+Vo		
22	+V(cap)		
26	-V(cap)		

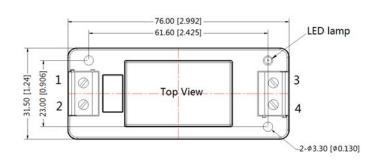
NC:No connection

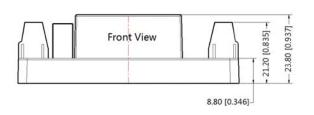
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LD03-10BxxA2S Chassis mounting Dimensions







Pin-Out		
Pin	Function	
1	AC(N)	
2	AC(L)	
3	+Vo	
4	-Vo	

Note:

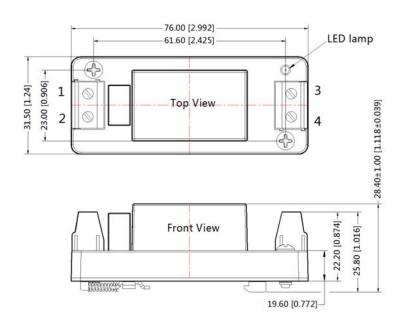
Unit:mm[inch]

Wire range : 24~12 AWG

General tolerances: ±0.50[±0.020]

LD03-10BxxA4S Din-Rail mounting Dimensions





Pin-Out		
Pin	Function	
1	AC(N)	
2	AC(L)	
3	+Vo	
4	-Vo	

Note:

Unit:mm[inch]

Wire range : 24~12 AWG Installed on DIN RAIL TS35

General tolerances: ±0.50[±0.020]



Notes:

- 1. Packing information please refer to Product Packing Information which can be downloaded from www.mornsun-power.com. Packing bag number: 58220001(Horizontal package), 58220022(A2S/A4S package);;
- 2. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
- 3. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25 °C, humidity<75% with nominal input voltage and rated output load;
- 4. All index testing methods in this datasheet are based on our Company's corporate standards;
- 5. The performance parameters of the product models listed in this manual are as above, but some parameters of non-standard model products may exceed the requirements mentioned above. Please contact our technicians directly for specific information;
- 6. We can provide product customization service;
- 7. Specifications are subject to change without prior notice.

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