

LBXX-10XXX SERIES

LB series ---- is a compact size power converter offered by Mornsun for PCB mount installation applications. 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, meets IEC61000, UL60950, EN60601 and IEC60950 standards, and is UL & CE certified, and widely used in industrial, office and civil applications.



PRODUCT FEATURES

1. Universal Input :85 ~ 264VAC,50/60Hz
2. Regulated output, low ripple and noise
3. efficiency up to 81%
4. compact size, low power consumption, environmentally friendly
5. output short circuit protection, over-current protection and thermal protection
6. UL94V-0; plastic case, meets
7. Class II ,safety grade:
8. CE、UL、EN60601 approval
9. EMC and safety standard, meets
10. 3 years warranty

MODEL SELECTION

LB10-10B24

- Output Voltage
- Output Style
- Input Voltage
- Isolation Voltage
- Rated Power
- Package Style
- Product Series

PRODUCT PROGRAM

Approval	Model	Package	Power	Output (Vo1/Io1)	Output (Vo2/Io2)	Ripple and Noise(Typ.)	Efficiency(%) (Typ.)
UL/CE	LB03-10B03	48.5X36X20.5mm	3W	3.3V/1000mA		50mV	68
UL/CE	LB03-10B05			5V/600mA			71
UL/CE	LB03-10B12			12V/250mA			74
UL/CE	LB03-10B15			15V/200mA			75
UL/CE	LB03-10B24			24V/125mA			77
UL/CE	LB05-10B03	55X45X21.0mm	5W	3.3V/1500mA		50mV	70
UL/CE	LB05-10B05			5V/1000mA			73
UL/CE	LB05-10B09			9V/600mA			75
UL/CE	LB05-10B12			12V/450mA			76
UL/CE	LB05-10B15			15V/350mA			78
UL/CE	LB05-10B24			24V/230mA			79
UL/CE	LB05-10A05			+5V/500mA	-5V/500mA		70
UL/CE	LB05-10A12			+12V/210mA	-12V/210mA		74
UL/CE	LB05-10A15			+15V/170mA	-15V/170mA		75
UL/CE	LB05-10A24			+24V/100mA	-24V/100mA		77
UL/CE	LB05-10D0505-01			+5V/900mA	+5V/100mA		70
UL/CE	LB05-10D0512-01			+5V/750mA	+12V/100mA		74
UL/CE	LB05-10D0515-01			+5V/700mA	+15V/100mA		74
UL/CE	LB05-10D0524-01			+5V/600mA	+24V/100mA		75
	LB10-10B03	62X45X22.5mm	10W	3.3V/3000mA		50mV	70
	LB10-10B05			5V/2000mA			73
	LB10-10B09			9V/1100mA			77
	LB10-10B12			12V/900mA			78
	LB10-10B15			15V/700mA			78
	LB10-10B24			24V/450mA			80
	LB10-10A05			+5V/1000mA	-5V/1000mA		73
	LB10-10A12			+12V/450mA	-12V/450mA		78
	LB10-10A15			+15V/350mA	-15V/350mA		79
	LB10-10D0505-02I		11W	5V/2000mA	5V/200mA		72
UL/CE	LB15-10B03	70X48X23.5mm	15W	3.3V/3500mA		50mV	71
UL/CE	LB15-10B05			5V/3000mA			74
UL/CE	LB15-10B12			12V/1250mA			79
UL/CE	LB15-10B15			15V/1000mA			80
UL/CE	LB15-10B24			24V/625mA			81

Remarks:

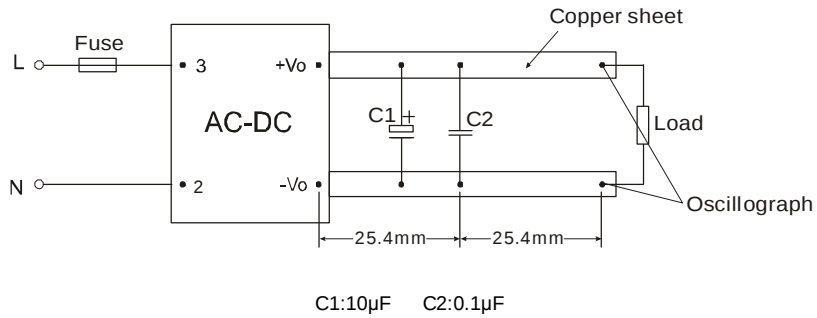
1. Ripple and Noise were measured by the method of parallel lines;
2. Unless otherwise specified, all specifications above are measured at rated input voltage and rated output load, TA=25°C, humidity < 75%;
3. Add suffix "I" for regulated slave output, and build-in line regulator. The slave output can not be continuously shorted, and neither can it be continuously over current.
4. All specifications stated in this datasheet are subject to the above listed models only. For specifications of non-standard models, please contact our technical support team.

INPUT SPECIFICATIONS			
Input voltage range		85~264VAC ,120~370VDC	
Input frequency		47~63Hz	
Input current	LB03 models	110VAC	230VAC
	LB05models	60mA , typ	30mA , typ
	LB10 models	100mA , typ	60mA , typ
	LB15 models	200mA , typ	100mA , typ
		280mA , typ	150mA , typ
Inrush current	LB03/05 models	110VAC	230VAC
	LB10/15 models	10A, typ	20A, typ
		10A, typ	30A, typ
Leakage current		0.3mA RMS typ. 230VAC/50Hz	
External input fuse (recommended)	LB03/05 models	1A/250V	slow blow
	LB10/15 models	2A/250V	slow blow

OUTPUT SPECIFICATIONS			
Voltage set accuracy		±2%(main out)	
Input variation		±0.5%(main out) ±1.5%(others)	
Load variation (10%-100%) (symmetric load) (symmetric load) (symmetric load)	Single output models	±1%	
	Dual output models	±2%	
	Isolation & twin output (with voltage regulator)	±2%	
	Isolation & twin output (without voltage regulator)	±3%(main out) ±5%(others)	
Minimum load	Single output models	0%	
	Dual output models	10% (main out)	
	Isolation & twin output	10% (main out)	
Ripple& noise(p-p)	(20MHz Bandwidth)	50mV (Typ)	100mV (Max)
Short circuit protection		Continuous, and auto resume (except specialties)	
Over current protection		≥110% I _o	
Over output voltage protection	3.3 / 5VDC models	≤6.5VDC	
	9VDC models	≤12VDC	
	12 / 15VDC models	≤20VDC	
	24VDC models	≤30VDC	
	48VDC models	≤60VDC	

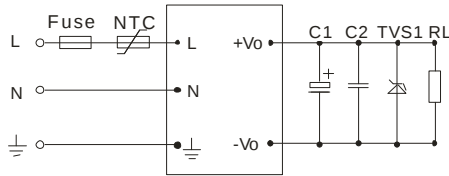
COMMON SPECIFICATIONS			
Temperature ranges	Operating :	-40°C ~ +70°C	
	Power derating (above 55°C)	3.75% / °C	
	Storage:	-40°C ~ +105°C	
	Case temperature:	+90°C max	
Hold-up time		80ms(typ.) at Vin:230VAC	
Humidity (non condensing)		85% (max.)	
Temperature coefficient		0.02% /°C (main out) 0.15% /°C(others)	
Switching frequency		60kHz max.	
I/O-isolation voltage		3000VAC/1Min	
EMI/RFI conducted		EN55022, level B	
EMC compliance	Electrostatic discharge ESD	IEC/EN 61000-4-2 level 3 6kV/8kV	
	RF field susceptibility	IEC/EN 61000-4-3	
	Electrical fast transients/bursts on mainsline	IEC/EN 61000-4-4 level 3 2kV	
	Surge	IEC/EN 61000-4-5 level 3 1kV / 2kV	
Safety standards		IEC60950, EN60950, UL60950	
Safety approvals		EN60950, IEC60950, UL60950	
Safety Class		CLASS II	
Case material		UL 94V-0	
Install		PCB	
MTBF		>300,000h @25°C	
Package	LB03 models	48.5X36X20.5mm	
	LB05models	55X45X21mm	
	LB10 models	62X45X22.5mm	
	LB15 models	70X48X23.5mm	

PARALLEL LINES MEASURE

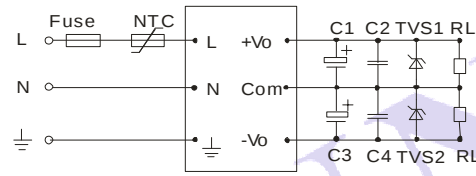


TYPICAL APPLICATIONS

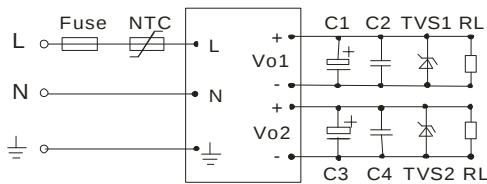
LB**-10B**(single Output)



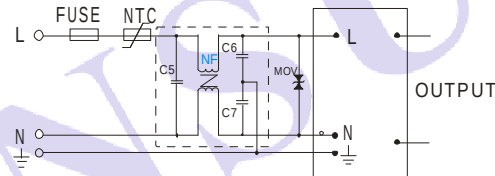
LB**-10A**(Dual output)



LB**-10D**(Isolate Twin Output)



LB03-15 series if higher requirement to EMC application circuit (external circuit output as above typical applications):



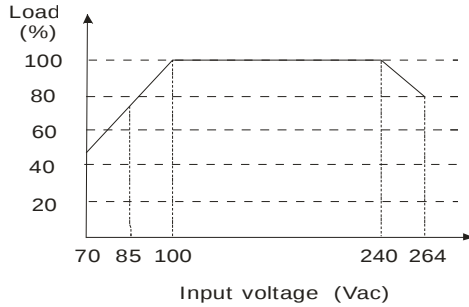
EXTERNAL TYPICAL VALUE(UNIT: μ F)

MODEL	C1	C3	MODEL	C1	C3
LB03-10B03	220		LB10-10B03	470	
LB03-10B05	220		LB10-10B05	330	
LB03-10B12	120		LB10-10B09	120	
LB03-10B15	68		LB10-10B12	120	
LB03-10B24	10		LB10-10B15	120	
LB05-10B03	330		LB10-10B24	68	
LB05-10B05	330		LB10-10A05	220	220
LB05-10B09	120		LB10-10A12	120	120
LB05-10B12	120		LB10-10A15	47	47
LB05-10B15	68		LB10-10D0505-02I	220	120
LB05-10B24	68		LB15-10B03	330	
LB05-10A05	120	120	LB15-10B05	680	
LB05-10A12	68	68	LB15-10B12	220	
LB05-10A15	47	47	LB15-10B15	220	
LB05-10A24	10	10	LB15-10B24	68	
LB05-10D0505-01	220	68			
LB05-10D0512-01	220	68			
LB05-10D0515-01	220	47			
LB05-10D0524-01	220	47			

Remark:

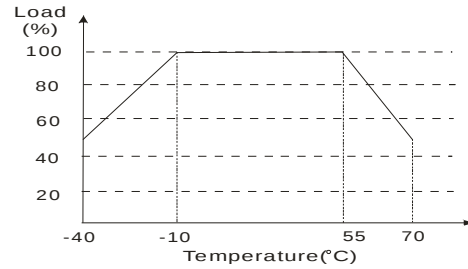
- Output filtering capacitor C3 and C1 are electrolytic capacitor. It is recommended to use high frequency and low resistance electrolytic capacitor. For capacitance and current of the capacitor please refer to suppliers' specifications. Voltage derating of capacitor should be 80% or above. C2andC4 eliminate high frequency noise, advice use 0.1 μ F/50V. TVS is a recommended component to protect post-circuits (when converter fails).
- External input NTC is recommended to use 5D-9 (Only LB10 models)
- if higher requirement to EMC performance, recommended to add"EMC filter" at the input end, recommended parameter as follows:
MOV: Varistor, model: 471KD10, it is used to protect the device under surge.
C5:X capacitor, recommended parameter 0.1 μ F /275V;
C6,C7:Y capacitor, recommended parameter 2200pF/400V;
NF: common model choke, recommended inductance is about 10mH-30mH.

INPUT VOLTAGE VS LOAD

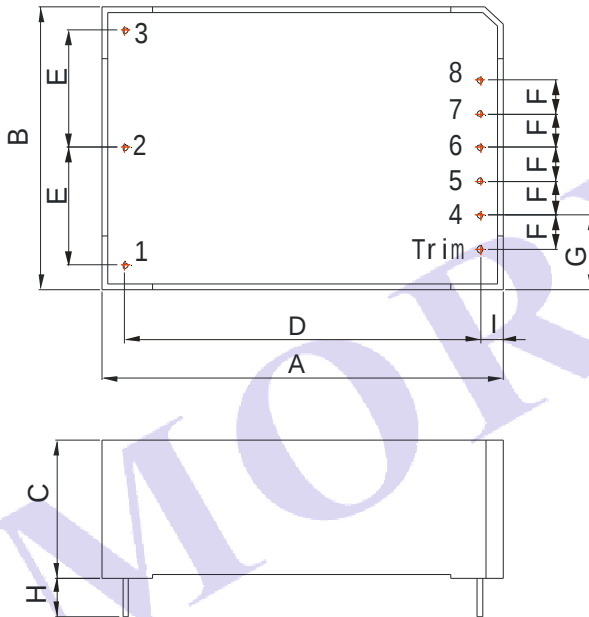


The relationship of dc and ac is as follows while input voltage is dc:
 $V_{dc} = 1.414V_{ac} - 20V_{dc}$

TEMPERATURE VS LOAD



OUTLINE DIMENSIONS & FOOTPRINT DETAILS



Note:
 First Angle projection
 Unit: mm[inch]
 Pin diameter: $\pm 1.00\text{mm}[\pm 0.039\text{inch}]$
 Pin length(H): $\geq 6.00\text{mm}[0.236\text{inch}]$
 Pin tolerances: $\pm 0.10\text{mm}[\pm 0.004\text{inch}]$
 General tolerances: $\pm 0.50\text{mm}[\pm 0.020\text{inch}]$

OUTLINE AND DIMENSIONS (Unit: mm)

NO.	LB03	LB05	LB10	LB15
A	48.50	55.00	62.00	70.00
B	36.00	45.00	45.00	48.00
C	20.50	21.00	22.50	23.50
D	40.50	47.00	54.00	62.00
E	12.50	17.50	17.50	20.00
F	4.00	5.00	5.00	5.75
G	10.00	12.50	12.50	12.50
I	4.00	4.00	4.00	4.00

FOOTPRINT DETAILS

Pin	LB**-10B	LB**-10A	LB**-10C	LB**-10D
1				
2	AC(N)	AC(N)	AC(N)	AC(N)
3	AC(L)	AC(L)	AC(L)	AC(L)
4	-Vo	-Vo	-Vo1	-Vo1
5	No Pin	No Pin	+Vo1	+Vo1
6	No Pin	COM	-Vo2	No Pin
7	No Pin	No Pin	COM	-Vo2
8	+Vo	+Vo	+Vo2	+Vo2
Trim	Trim**	No Pin	No Pin	No Pin

There is no pin "1" on LB10-10BXX
 Trim**: only for LB15-10BXX Series.

MODLES WEIGHT

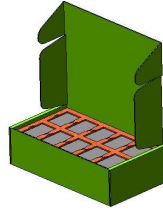
WEIGHT	LB03	LB05	LB10	LB15
(Typ.)	50g	70g	80g	120g

PACKAGE DIAGRAM

(LB03 Series)



(other series)



Inner packaging box dimensions: L*W*H=355*192*93mm
Outer packaging box dimensions: L*W*H=405*380*305mm

Packaging quantity: 20pcs (LB03 Series:40pcs)
Packaging quantity:120pcs (LB03 Series:240pcs)