LDB120 Series

120W Basic DIN Rail Power Supply
Battery Charger / DC UPS Module



RoHS Compliant

LDB120 Series is a single phase 120 W integrated DIN Rail Battery Charger / DC UPS Power Supplies, suitable for wide variety of industrial applications.

In case of mains or unit failure the DC UPS function enables the power supply to feed the load from the battery without any interruption, until the mains is recovered or the battery reaches the “Deep Discharge Voltage” threshold.

These units have received excellent market approval for their high efficiency, excellent reliability and compactness. Simple but elegant look and easy installation make them market leaders for various industrial applications.

LDB120 Series are isolation devices suitable for SELV and PELV circuitry and are designed to be mounted on DIN rail and installed inside a protective enclosure.

Key Features & Benefits

- Input: 120 - 240 VAC
- Output: 12 or 24 VDC model dependent
- To be used with Lead Acid batteries or lithium batteries (compatible with Lead Acid batteries)
- Efficiency up to 86%
- Economic solution for general purpose applications
- Instantaneous LOAD switch BACKUP mode

1. MODEL SELECTION

MODEL	INPUT VOLTAGE	# of PHASES	OUTPUT VOLTAGE	OUTPUT CURRENT
LDB120-12	120 - 240 VAC (140 - 345 VDC)	1	12 VDC	7 A
LDB120-24	120 - 240 VAC (140 - 345 VDC)	1	24 VDC	5 A

2. INPUT SPECIFICATIONS

Technical parameters are typical, measured in laboratory environment at 25°C and 240 VAC / 50 Hz, at nominal values, after minimum 5 minutes of operation.

PARAMETER	DESCRIPTION / CONDITION		SPECIFICATION
Input AC Voltage Range	Nominal Range		120 - 240 VAC 100 - 264 VAC
Input DC Voltage Range	Rated		110 - 345 VDC
Input Frequency			47 - 63 Hz
Input AC Current		Vin = 120 VAC Vin = 240 VAC	2.0 A 1.1 A
Input DC Current		Vin = 140 VDC Vin = 345 VDC	1.4 A 0.5 A
Inrush peak current [2] / I²t			≤ 24 A / 0.50 A²s
Touch (Leakage) Current			≤ 0.6 mA
Internal Protection Fuse	Not user replaceable		Fuse 3.15 AT
Recommended External Protection [1]	It is strongly recommended to provide external surge arresters (SPD) according to local regulations		Fuse 4 AT or MCB 4 A C curve / Cartridge fuse Class CC 4AT 250 VAC

[1] In order to be UL compliant use Listed Cartridge nonrenewable (JDDZ) fuse Class CC 4AT 250 VAC.
[2] Peak current measured after 0.2 ms from main connection; 240 VAC/ 50 Hz; Ambient temperature at 25°C; Cold Start.

3. OUTPUT SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION		SPECIFICATION
Output Power			120 W
Rated Voltage (Adjustable Voltage Range)	LDB120-12 (to be set at 14 VDC for battery charging) LDB120-24 (to be set at 27 VDC for battery charging)		12 VDC (12 – 15 VDC) 24 VDC (23 – 28 VDC)
Continuous Current	LDB120-12 LDB120-24		7 A 5 A
Overload Limit	LDB120-12 LDB120-24		11.5 A 6.5 A
Short Circuit Peak Current	LDB120-12 LDB120-24		> 20 A / 40 ms > 16 A / 80 ms
Load Regulation			≤ 1%
Ripple & Noise [3]			≤ 100 mVpp
Hold up Time	LDB120-12 LDB120-24 	Vin = 120 VAC Vin = 240 VAC Vin = 120 VAC Vin = 240 VAC	≥ 10 ms ≥ 80 ms ≥ 10 ms ≥ 55 ms
Protections	Overload/short circuit: Hiccup mode Thermal protection Output overvoltage		
Output Overvoltage Protection (Active)	LDB120-12 LDB120-24		≥ 18 VDC ≥ 33 VDC
Battery Protections	Against short-circuit with resettable fuse (9 A) Against reverse polarity connection Against deep discharge		

Deep Discharge Cut-Off Voltage	LDB120-12 LDB120-24	10.5 VDC ± 0.5 V 20.5 VDC ± 0.5 V
Status Signals	LOAD ON PSU - green LED LOAD ON BATTERY - amber LED Dry contact (SPDT, 24 VDC / 1 A)	
Parallel Connection	Not Recommended	
Efficiency	LDB120-12 LDB120-24	> 83.5% > 86%
Dissipated Power	LDB120-12 LDB120-24	< 21 W < 20 W
Battery Information		
Rated Voltage	LDB120-12 LDB120-24	12 - 14.4 VDC 24 - 28.8 VDC
Max Charging Current		0.8 A

[3] Ripple and Noise are measured with 20MHz bandwidth, probe terminated with a 0.1µF MKP parallel capacitor.

NOTE: Power rating, losses, efficiency, ripple, thermal behaviour and start-up may change outside of the nominal rated input range. Contact factory for details.

4. ENVIRONMENTAL, EMC & SAFETY SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Operating Temperature [4]	UL certified up to 50°C	- 40 to + 70°C
Storage Temperature		- 40 to + 80°C
Derating	LDB120-12 LDB120-24	- 0.75 W/°C over 50°C - 1.2 W/°C over 50°C
Humidity	Non-condensing	5 - 95% RH
Lifetime Expectancy	at 25°C ambient full load	167'953 h (19.1 years)
MTBF	at 25°C ambient full load, according to MIL-HDBK-217F	> 600 000 h
Overvoltage Category Pollution Degree	EN 50178 IEC 60664-1	III 2
Protection Class		Class I
Isolation Voltage	Input to Output Input to Ground Output to Ground	4.2 kVDC 2.2 kVDC 0.75 kVDC
Safety Standards & Approvals	UL508 (certified) EN 60950 (reference) EN 50178 (reference)	
EMC Standards — Emission	EN 55022 (CISPR22) EN 55011 (CISPR11)	Class A Class A
EMC Standards — Immunity	EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-5 EN 61000-4-11	Level 3 Level 2 Level 2 Level 3 Level 2
Protection Degree	EN 60529	IP20
Vibration Sinusoidal	IEC 60068-2-6	5-17.8 Hz: ±1.6 mm; 17.8-500 Hz: 2 g 2 hours / axis (X, Y, Z)
Shock	IEC 60068-2-27	30 g 6 ms, 20 g 11 ms; 3 bumps / direction, 18 bumps total

[4] Start-up type tested: - 40°C, possible at nominal voltage with load deration.

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5. MECHANICAL SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Weight		500 g
Dimensions		54 x 115 x 110 mm
Mounting Rail		IEC 60715/H15/TH35-7.5(-15)
Connection Terminals	Screw type pluggable (24 - 12 AWG)	2.5 mm²
Case Material	Aluminum	

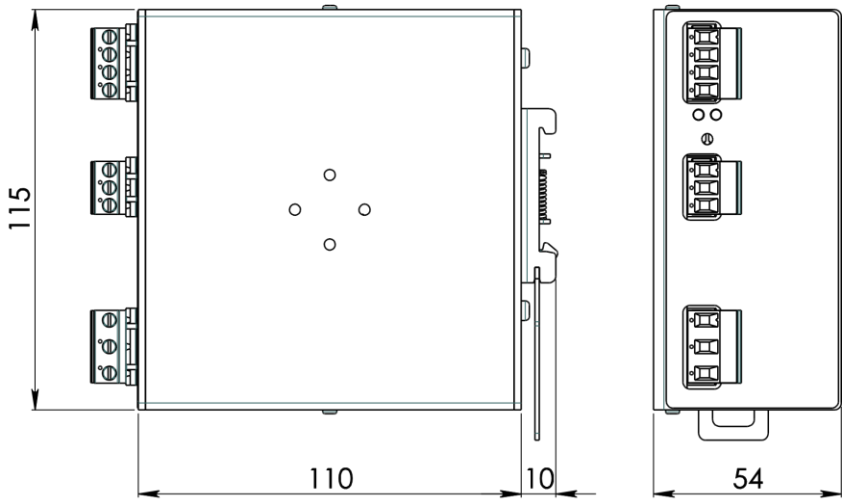


Figure 1. Mechanical Drawing

6. PIN LAYOUT & DESCRIPTION



INPUT CONNECTION	OUTPUT CONNECTION
Single phase: L = Line N = Neutral ⏚ = Earth ground	▪ LOAD + = Positive DC ▪ LOAD - = Negative DC ▪ BATTERY + = Positive DC Battery ▪ BATTERY - = Negative DC Battery
DC: L = + Positive DC N = - Negative DC ⏚ = Earth ground	Signaling: SPDT dry contact ▪ NO ▪ NC ▪ COM

For more information on these products consult: tech.support@psbel.com

NUCLEAR AND MEDICAL APPLICATIONS - Products are not designed or intended for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems.
TECHNICAL REVISIONS - The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.