LDB120 Series

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

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 designed to be mounted on DIN rail and installed inside a protective enclosure.

FEATURES

- Input voltage 100 - 264 VAC or 110 - 345 VDC
- Output voltages 12 V, 24 V (adjustable, model dependent)
- Operating ambient temperature range -40°C to +70°C
- Efficiency up to 86%
- To be used with lead acid and lithium batteries (compatible with lead acid batteries)
- Instantaneous LOAD switch BACKUP mode
- Compact size in aluminum enclosure
- Dimensions: 54 x 115 x 110 mm

APPLICATIONS

- “All-in-one” economic solution for general purposes

1. MODEL SELECTION

MODEL	INPUT VOLTAGE RANGE	OUTPUT VOLTAGE	MAX OUTPUT CURRENT	EFFICIENCY	MAX OUTPUT POWER
LDB120-12	120 - 240 VAC (110 - 345 VDC)	12 V	7 A	83.5 %	120 W
LDB120-24	120 - 240 VAC (110 - 345 VDC)	24 V	5 A	86 %	120 W

2. INPUT SPECIFICATIONS

PARAMETER		DESCRIPTION / CONDITIONS	SPECIFICATION
AC Input Voltage		Nominal Range	120 - 240 VAC 100 - 264 VAC
DC Input Voltage			110 - 345 VDC
Input Frequency			47 - 63 Hz
AC Input Current	Vin = 120 VAC Vin = 240 VAC		2.0 A 1.1 A
DC Input Current	Vin = 110 VDC Vin = 345 VDC		1.4 A 0.5 A
Inrush Peak Current I^2t		Peak Current measured after 0.2 ms from main connection; 240 VAC / 50 Hz; Ta = 25°C; Cold Start	≤ 24 A 0.50 A^2s
Touch (Leakage) Current			≤ 0.6 mA
Internal Protection Fuse		Not user replaceable	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 4 AT

[1] *In order to be UL compliant use Listed Cartridge non-renewable (JDDZ) fuse Class CC 4 AT (250 VAC).*

3. OUTPUT SPECIFICATIONS

PARAMETER		DESCRIPTION / CONDITIONS	SPECIFICATION
Output Voltage (Adjustable)		LDB120-12 (to be set at 14 VDC for correct battery charging) LDB120-24 (to be set at 27 VDC for correct battery charging)	12.5 - 15.5 VDC 23 - 28 VDC
Output Current (Continuous)		LDB120-12 LDB120-24	7 A 5 A
Load Regulation			≤ 1 %
Ripple & Noise		20 MHz BW probe terminated with a 0.1 µF MKP parallel capacitor	≤ 100 mVpp
Hold-up Time	Vin = 120 VAC	LDB120-12 / LDB120-24	≥ 10 ms
	Vin = 240 VAC	LDB120-12 LDB120-24	≥ 80 ms ≥ 55 ms
Status Signals		LOAD ON PSU - green LED LOAD ON BATTERY - red LED Dry contact (SPDT, 24 VDC / 1A)	
Parallel Connection		Not recommended	

4. BATTERY SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITIONS	SPECIFICATION
Rated Voltage	LDB120-12 LDB120-24	12 - 14.4 VDC 24 - 28.8 VDC
Charging Current (max.)		0.8 A

5. PROTECTIONS

PARAMETER	DESCRIPTION / CONDITIONS		SPECIFICATION
Short Circuit Protection	Hiccup mode, Short circuit peak current	LDB120-12 LDB120-24	> 20 A for 40 ms > 16 A for 80 ms
Overload Protection	Hiccup mode, Overload limit	LDB120-12 LDB120-24	11.5 A 6.5 A
Thermal Protection			
Over Voltage Protection	Active	LDB120-12 LDB120-24	≥ 18 VDC ≥ 33 VDC
Battery Protections	Against short-circuit with resettable fuse Against reverse polarity connection Against deep discharge		9 A
Deep Discharge Cut-Off Voltage		LDB120-12 LDB120-24	10.5 VDC ± 0.5 V 20.5 VDC ± 0.5 V

6. ENVIRONMENTAL, EMC & SAFETY SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITIONS		SPECIFICATION
Operating Temperature	UL certified up to 50°C Start-up type tested: - 40°C, possible at Vnom with load deration.		-40 to +70 °C
Storage Temperature			-40 to +80 °C
Derating	Over 50°C	LDB120-12 LDB120-24	- 0.75 W/°C - 1.2 W/°C
Dissipated Power		LDB120-12 LDB120-24	< 21 W < 20 W
Humidity	Non-condescending		5 - 95 % RH
Life Time Expectancy	Ta = 25°C, full load		167 953 (19.1) hrs (years)
MTBF	MIL-HDBK-217F at Ta = 25°C, full load		> 600 000 hrs
Overvoltage Category	EN 50178		III
Pollution Degree	IEC 60664-1		2
Protection Class	Class I		
Isolation	Input to Output Input to Ground Output to Ground		4.2 kVDC 2.2 kVDC 0.75 kVDC
Safety Standards & Approvals	UL 508 (certified) IEC/EN 61010-1 IEC/EN 61010-2-201 IEC/EN 60950		
EMC Emissions	EN 55011 / CISPR 11 EN 55022 / CISPR 22		Class A Class A
EMC 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

Notes:

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

7. MECHANICAL SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITIONS	SPECIFICATION
Dimensions		54 x 115 x 110 mm 2.12 x 4.53 x 4.33 in
Weight		500 g
Mounting Rail	IEC 60715/H15/TH35-7.5(-15)	
Connection Terminals	Screw type pluggable (24 - 12 AWG)	2.5 mm²
Case Material	Aluminum	

PIN LAYOUT & DESCRIPTION

INPUT CONNECTION	**Single phase**	**DC Input**
	L = Line	L = + Positive DC
	N = Neutral	N = - Negative DC
	⏚ = Earth ground	⏚ = Earth ground
OUTPUT CONNECTION	LOAD + = Positive DC LOAD – = Negative DC BATT + = Positive DC Battery BATT – = Negative DC Battery	
SIGNALLING	SPDT dry contact • NO • NC • COM	

8. MECHANICAL DRAWING

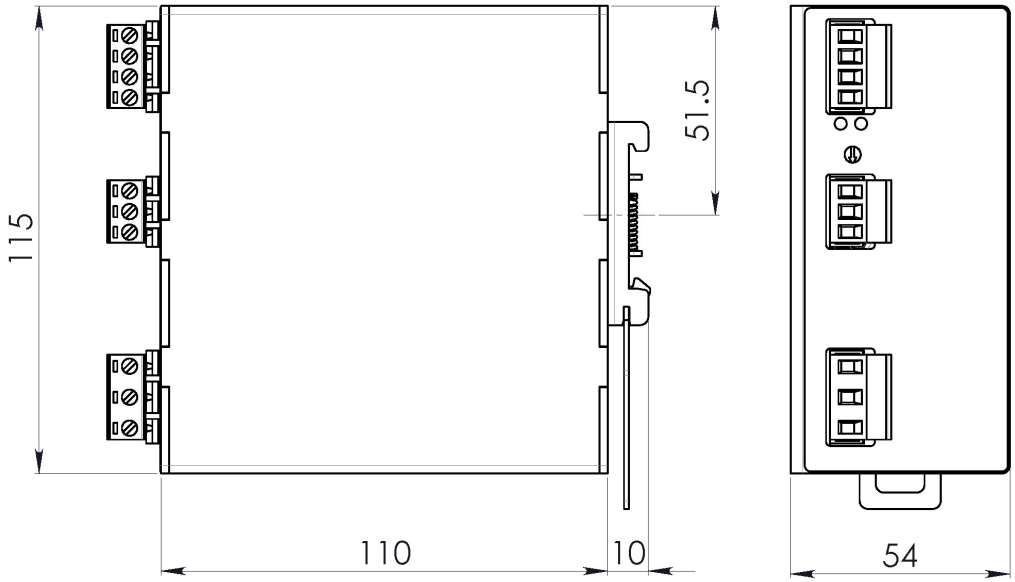

Figure 1. Mechanical Drawing

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.