

# LDB120 Series

## 120W 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 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



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## 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          | Rated<br>Operating  | 120 - 240 VAC<br>100 - 264 VAC |
| Input DC Voltage Range          | Rated   | 140 - 345 VDC                  |
| Input Frequency                 |   | 47 - 63 Hz                     |
| Input AC Current                | Vin = 120 VAC<br>Vin = 240 VAC  | 2.0 A<br>1.1 A                 |
| Input DC Current                | Vin = 140 VDC<br>Vin = 345 VDC  | 1.0 A<br>0.5 A                 |
| Inrush Peak Current             |   | ≤ 40 A                         |
| Touch (Leakage) Current         |   | ≤ 0.6 mA                       |
| Internal Protection Fuse        | Not user replaceable  | Fuse 3.15 AT                   |
| Recommended External Protection | It is strongly recommended to provide external surge arresters (SPD) according to local regulations | Fuse 4 AT or MCB 4 A C curve   |

## 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)<br>LDB120-24 (to be set at 27 VDC for battery charging)      | 12 VDC (12 – 15 VDC)<br>24 VDC (23 – 28 VDC)   |
| Continuous Current                       | LDB120-12<br>LDB120-24  | 7 A<br>5 A   |
| Overload Limit                           | LDB120-12<br>LDB120-24  | 11.5 A<br>6.5 A  |
| Short Circuit Peak Current               | LDB120-12<br>LDB120-24  | > 20 A / 40 ms<br>> 16 A / 80 ms   |
| Load Regulation                          |   | ≤ 1%   |
| Ripple & Noise <sup>1</sup>              |   | ≤ 100 mVpp   |
| Hold up Time                             | LDB120-12<br>LDB120-24  | Vin = 120 VAC ≥ 10 ms<br>Vin = 240 VAC ≥ 80 ms<br>Vin = 120 VAC ≥ 10 ms<br>Vin = 240 VAC ≥ 55 ms |
| Protections                              | Overload/short circuit: Hiccup mode<br>Thermal protection<br>Output overvoltage                                   |  |
| Output Overvoltage Protection (Active)   | LDB120-12<br>LDB120-24  | ≥ 18 VDC<br>≥ 33 VDC   |
| Battery Protections                      | Against short-circuit with resettable fuse (9 A)<br>Against reverse polarity connection<br>Against deep discharge |  |
| Deep Discharge Cut-Off Voltage           | LDB120-12<br>LDB120-24  | 9 VDC ± 0.5 V<br>18 VDC ± 0.5 V  |
| Status Signals                           | LOAD ON PSU - green LED<br>LOAD ON BATTERY - amber LED<br>Dry contact (SPDT, 24 VDC / 1 A)                        |  |

|                            |                 |               |
|----------------------------|-----------------|---------------|
| Parallel Connection        | Not Recommended |               |
| Efficiency                 | LDB120-12       | > 83.5%       |
|                            | LDB120-24       | > 86%         |
| Dissipated Power           | LDB120-12       | < 21 W        |
|                            | LDB120-24       | < 20 W        |
| <b>Battery Information</b> |                 |               |
| Rated Voltage              | LDB120-12       | 12 - 14.4 VDC |
|                            | LDB120-24       | 24 - 28.8 VDC |
| Max Charging Current       | 0.8 A           |               |

<sup>1</sup> 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        | Overtemperature protection<br>(Start-up type tested: - 40°C <sup>2</sup> ) | - 40 to + 70°C  |         |
| Storage Temperature          |  | - 40 to + 80°C  |         |
| Derating                     | LDB120-12  | - 0.75 W/°C over 50°C   |         |
|                              | LDB120-24  | - 1.2 W/°C over 50°C  |         |
| Humidity                     | Non-condensing   | 5 - 95% RH  |         |
| Overvoltage Category         |  | III (EN50178)   |         |
| Pollution Degree             |  | 2 (IEC60664-1)  |         |
| Protection Class             |  | Class I   |         |
| Isolation Voltage            | Input to Output  | 4.2 kVDC  |         |
|                              | Input to Ground  | 2.2 kVDC  |         |
|                              | Output to Ground   | 0.75 kVDC   |         |
| Safety Standards & Approvals | UL508 (reference)  |   |         |
|                              | EN60950 (reference)  |   |         |
|                              | EN50178 (reference)  |   |         |
| EMC Standards                | Emission   | Class A   |         |
|                              | Immunity   | EN55022 (CISPR22)   | Class A |
|                              |  | EN55011 (CISPR11)   | Level 3 |
|                              |  | EN61000-4-2   | Level 2 |
|                              |  | EN61000-4-3   | Level 2 |
|                              |  | EN61000-4-4   | Level 3 |
| EN61000-4-5                  | Level 2  |   |         |
| EN61000-4-11                 | Level 2  |   |         |
| Protection Degree            | EN60529  | IP20  |         |
| Vibration Sinusoidal         | IEC 60068-2-6  | 5-17.8 Hz: ±1.6 mm; 17.8-500 Hz: 2g 2Hours / axis (X,Y,Z)     |         |
| Shock                        | IEC 60068-2-27   | 30 g 6 ms, 20 g 11 ms;<br>3 bumps / direction, 18 bumps total |         |

<sup>2</sup> Possible at nominal voltage with load deration.

## 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 mm <sup>2</sup>         |
| Case Material        | Aluminum                           |                             |



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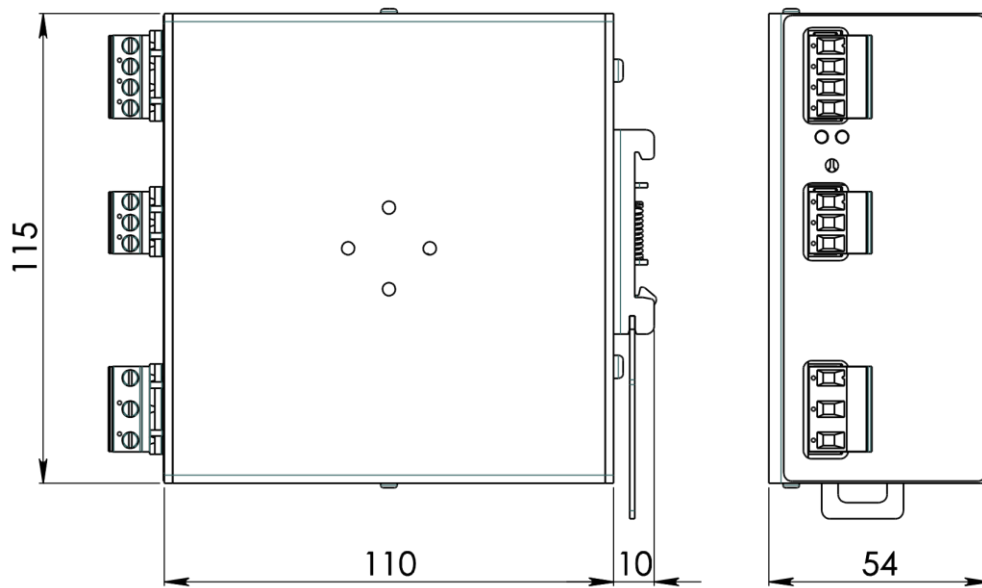


Figure 1. Mechanical Drawing

## 6. PIN LAYOUT & DESCRIPTION



| INPUT CONNECTION  | OUTPUT CONNECTION  |
|---|--|
| Single phase:<br>L = Line<br>N = Neutral<br>⊕ = Earth ground<br><br>DC:<br>L = + Positive DC<br>N = - Negative DC<br>⊕ = Earth ground | <ul style="list-style-type: none"> <li>▪ LOAD (+/-) = connect to DC (+/-) Load</li> <li>▪ BATTERY (+/-) = connect to Battery (+/-)</li> <li>▪ PS ON PSU = dry contact NC</li> <li>▪ LOAD ON BATTERY = dry contact NO</li> </ul> Signaling:<br>SPDT dry contact <ul style="list-style-type: none"> <li>▪ NO</li> <li>▪ NC</li> <li>▪ COM</li> </ul> |

For more information on these products consult: [tech.support@psbel.com](mailto: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.

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