

# LDN120 Series

## 120W DIN Rail Switching Power Supply

LDN120 Series are single phase DIN Rail Switching Power Supplies, suitable for worldwide applications such as process control, heavy duty applications, but also building automation.

These units have received excellent market approval for their high efficiency, excellent reliability and compactness. Simple but elegant look and ease of installation due to pluggable connectors make them ideal for various industrial applications.

LDN120 Series are Class I 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

- Single phase AC input 90 – 264 VAC (110 - 345 VDC)
- High efficiencies and in compact size
- 150% overload capability
- Only 40 mm width aluminum enclosure
- Up to 60°C operating temperature with no derating
- Short circuit, overload and over temperature protection
- RoHS Compliant

### Applications

- Automation
- Process Control
- Communication
- Instrumentation Equipment

## 1. MODEL SELECTION

| MODEL      | INPUT VOLTAGE                 | # of PHASES | OUTPUT VOLTAGE | OUTPUT CURRENT | REDUNDANCY           |
|------------|-------------------------------|-------------|----------------|----------------|----------------------|
| LDN120-12  | 120 - 240 VAC (110 - 345 VDC) | 1           | 12 VDC         | 7 A            | No ORing diode       |
| LDN120-24  | 120 - 240 VAC (110 - 345 VDC) | 1           | 24 VDC         | 5 A            | No ORing diode       |
| LDN120-24P | 120 - 240 VAC (110 - 345 VDC) | 1           | 24 VDC         | 5 A            | Internal ORing diode |
| LDN120-48P | 120 - 240 VAC (110 - 345 VDC) | 1           | 48 VDC         | 2.5 A          | Internal ORing diode |

## 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, UL certified Operating   | 120 - 240 VAC<br>90 - 264 VAC              |  |
| Input DC Voltage Range         | Rated   | 110 - 345 VDC                              |  |
| Input Frequency Range          |   | 47 - 63 Hz                                 |  |
| Input AC Current               | LDN120-12   | Vin = 120 VAC 1.9 A<br>Vin = 240 VAC 1.1 A |  |
|                                | LDN120-24 / LDN120-24P / LDN120-48P   | Vin = 120 VAC 2.1 A<br>Vin = 240 VAC 1.2 A |  |
|                                | Input DC Current  | LDN120-12                                  | Vin = 110 VDC 1.3 A<br>Vin = 345 VDC 0.5 A |
|                                |   | LDN120-24 / LDN120-24P / LDN120-48P        | Vin = 110 VDC 1.4 A<br>Vin = 345 VDC 0.6 A |
| Inrush Peak Current            |   | ≤ 40 A                                     |  |
| Touch (Leakage) Current        |   | ≤ 0.45 mA                                  |  |
| Internal Protection Fuse       | Not user replaceable  | Fuse 3.15 AT                               |  |
| External Protection on AC Line | It is strongly recommended to provide external surge arresters (SPD) according to local regulations | Fuse 6AT or MCB 6 A C curve                |  |

## 3. OUTPUT SPECIFICATIONS

| PARAMETER                                | DESCRIPTION / CONDITION             | SPECIFICATION         |
|--|-------------------------------------|-----------------------|
| Output Power                             |                                     | 120 W                 |
| Rated Voltage (Adjustable Voltage Range) | LDN120-12                           | 12 VDC (12 - 15 VDC)  |
|  | LDN120-24 / LDN120-24P              | 24 VDC (23 - 28 VDC)  |
|  | LDN120-48P                          | 48 VDC (45 - 55 VDC)  |
| Continuous Current                       | LDN120-12                           | 7 A                   |
|  | LDN120-24 / LDN120-24P              | 5 A                   |
|  | LDN120-48P                          | 2.5 A                 |
| Overload Limit                           | LDN120-12                           | 11 - 9.5 A            |
|  | LDN120-24 / LDN120-24P              | 7 A                   |
|  | LDN120-48P                          | 3.7 A                 |
| Short Circuit Peak Current               |                                     | 30 A                  |
| Load Regulation                          | LDN120-12                           | ≤ 2%                  |
|  | LDN120-24                           | ≤ 1%                  |
|  | LDN120-24P                          | ≤ 2.5%                |
|  | LDN120-48P                          | ≤ 1.5%                |
| Ripple & Noise <sup>1</sup>              | LDN120-12                           | ≤ 120 mVpp            |
|  | LDN120-24 / LDN120-24P / LDN120-48P | ≤ 60 mVpp             |
| Hold up Time                             | LDN120-12                           | Vin = 120 VAC ≥ 10 ms |
|  |                                     | Vin = 240 VAC ≥ 60 ms |

|                                |   |               |          |
|--------------------------------|---|---------------|----------|
|                                | LDN120-24   | Vin = 120 VAC | ≥ 20 ms  |
|                                |   | Vin = 240 VAC | ≥ 50 ms  |
|                                | LDN120-24P / LDN120-48P   | Vin = 120 VAC | ≥ 10 ms  |
|                                |   | Vin = 240 VAC | ≥ 50 ms  |
| Protections                    | Overload, short circuit: Hiccup mode<br>Thermal protection<br>Output overvoltage                    |               |          |
| Output Over Voltage Protection | LDN120-12   |               | ≥ 18 VDC |
|                                | LDN120-24 / LDN120-24P  |               | ≥ 33 VDC |
|                                | LDN120-48P  |               | ≥ 68 VDC |
| Status Signals                 | DC OK - green LED<br>DC OK - dry contact (NO, 24 VDC / 1 A)   |               |          |
| Parallel Connection            | Possible for redundancy (with external ORing module)<br>P (models) - include internal ORing circuit |               |          |
| Efficiency                     | LDN120-12   |               | > 84%    |
|                                | LDN120-24   |               | > 87%    |
|                                | LDN120-24P  |               | > 85%    |
|                                | LDN120-48P  |               | > 86%    |
| Dissipated Power               | LDN120-12   |               | < 20 W   |
|                                | LDN120-24   |               | < 18 W   |
|                                | LDN120-24P  |               | < 21 W   |
|                                | LDN120-48P  |               | < 19 W   |

<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        | UL certified up to 60°C<br>(Start-up type tested: - 40°C) <sup>2</sup>   | - 40 to + 70°C   |
| Storage Temperature          |  | - 40 to + 80°C   |
| Derating                     |  | - 2.4 W / °C over 60°C   |
| Humidity                     | Non-condensing   | 5 - 95% RH   |
| Life Time Expectation        | At 25°C ambient full load  | 106880 h (12.2 years)  |
| Overvoltage Category         |  | III (EN50178)  |
| Pollution Degree             |  | 2 (IEC60664-1)   |
| Protection Class             |  | Class I  |
| Isolation Voltage            | Input to Output<br>Input to Ground<br>Output to Ground                   | 4.2 kVDC<br>2.2 kVDC<br>0.75 kVDC                                    |
| Safety Standards & Approvals | UL508 (certified)<br>EN60950 (reference)<br>EN50178 (reference)          |  |
| EMC Emission                 | EN55011 (CISPR11)<br>EN55022 (CISPR22)                                   | Class A<br>Class A   |
| EMC Immunity                 | EN61000-4-2<br>EN61000-4-3<br>EN61000-4-4<br>EN61000-4-5<br>EN61000-4-11 | Level 3<br>Level 3<br>Level 3<br>Level 3<br>Level 2                  |
| Protection Degree            | EN60529  | IP20   |
| Vibration sinusoidal         | IEC 60068-2-6  | 5 - 17.8 Hz: ±1.6 mm; 17.8 - 500 Hz:<br>2 g 2 Hours / axis (X, Y, Z) |
| Shock                        | IEC 60068-2-27   | 30 g 6 ms, 20 g 11 ms; 3 bumps /<br>direction, 18 bumps total        |

<sup>2</sup> Possible with load derating.

### 5. MECHANICAL SPECIFICATIONS

| PARAMETER            | DESCRIPTION / CONDITION            | SPECIFICATION               |
|----------------------|------------------------------------|-----------------------------|
| Weight               |                                    | 450 g                       |
| Dimensions           |                                    | 40 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                           |                             |



Figure 1. Mechanical Drawing

### 6. PIN LAYOUT & DESCRIPTION



| PIN | DESCRIPTION                                   |
|-----|---|
| 1   | AC/DC input                                   |
| 2   | DC output (load)                              |
| 3   | Diagnostic Output (dry contact, NC output OK) |
| 4   | Green LED: Output OK                          |
| 5   | Output voltage adjustment                     |

| INPUT CONNECTION  | OUTPUT CONNECTION                             |
|---|---|
| Single phase:<br>L = Line<br>N = Neutral<br>⊕ = Earth ground      | + = Positive DC<br>- = Negative DC            |
| DC:<br>L = + Positive DC<br>N = - Negative DC<br>⊕ = Earth ground | Signaling:<br>DC OK: dry contact<br>NO<br>COM |

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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- Подбор аналогов;
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- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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