

# LDN20 Series

## 20 W DIN Rail Switching Power Supply



LDN20 Series are single phase DIN Rail Switching Power Supplies, ideal mainly for general purposes such as home automation, simple automation in machines, survey systems, telecom, but also the renewable energy field.

Its compact size, high efficiency, excellent reliability and excellent power/volume ratio, together with easy installation makes it ideal for various industrial applications.

LDN20 Series are Class II isolation devices designed to be mounted on DIN rail and installed inside a protective enclosure.

### FEATURES

- Input voltage 90 - 264 VAC or 110 - 345 VDC
- Output voltage 5 V, 12 V, 24 V
- High operating temperature range -40°C to +70°C
- Efficiency up to 81 %
- Overload 170%
- Simplified wiring (no PE connection)
- Compact size in plastic enclosure (circuit breaker shape)
- Dimensions: 35.0 x 90.0 x 61.5 mm



### APPLICATIONS

- Industrial Automation
- Telecom
- Survey Systems
- Process Control

## 1. MODEL SELECTION

| MODEL    | INPUT VOLTAGE                 | OUTPUT VOLTAGE | MAX OUTPUT CURRENT | EFFICIENCY | MAX OUTPUT POWER |
|----------|-------------------------------|----------------|--------------------|------------|------------------|
| LDN20-5  | 120 - 240 VAC (110 - 345 VDC) | 5 V            | 4 A                | 81 %       | 20 W             |
| LDN20-12 | 120 - 240 VAC (110 - 345 VDC) | 12 V           | 1.65 A             | 80 %       | 20 W             |
| LDN20-24 | 120 - 240 VAC (110 - 345 VDC) | 24 V           | 0.85 A             | 80 %       | 20 W             |

 Discontinued model

## 2. INPUT SPECIFICATIONS

| PARAMETER                                    | DESCRIPTION / CONDITIONS   | SPECIFICATION                                   |
|--|--|---|
| AC Input Voltage                             | Nominal (UL certified)<br>Range  | 100 - 240 VAC<br>90 - 264 VAC                   |
| DC Input Voltage                             |  | 110 - 345 VDC                                   |
| Input Frequency                              |  | 47 - 63 Hz                                      |
| AC Input Current                             | V <sub>in</sub> = 120 VAC<br>V <sub>in</sub> = 240 VAC   | 0.4 A<br>0.3 A                                  |
| DC Input Current                             | V <sub>in</sub> = 110 VDC<br>V <sub>in</sub> = 345 VDC   | 0.3 A<br>< 0.1 A                                |
| Inrush Peak Current<br>I <sub>pt</sub>       | Peak Current measured after 0.2 ms from main connection;<br>240 VAC / 50 Hz; T <sub>a</sub> = 25°C; Cold Start | ≤ 27 A<br>0.32 A <sup>2</sup> s                 |
| Touch (Leakage) Current                      |  | ≤ 0.2 mA  |
| Internal Protection Fuse                     | Not user replaceable   | LDN20-5<br>LDN20-12 / LDN20-24<br>2 AT<br>1 AT  |
| Recommended External Protection <sup>1</sup> | It is strongly recommended to provide external surge<br>arresters (SPD) according to local regulations.        | MCB 6 A C curve<br>Cartridge Fuse Class CC 4 AT |

<sup>1</sup> In order to be UL compliant, for LDN20-5 use only Listed Cartridge non-renewable (JDDZ) fuse Class CC 4 AT, 250 VAC.

## 3. OUTPUT SPECIFICATIONS

| PARAMETER                   | DESCRIPTION / CONDITIONS                             | SPECIFICATION             |
|-----------------------------|--|---------------------------|
| Output Voltage (Fixed)      | LDN20-5<br>LDN20-12<br>LDN20-24                      | 5 VDC<br>12 VDC<br>24 VDC |
| Output Current (Continuous) | LDN20-5<br>LDN20-12<br>LDN20-24                      | 4 A<br>1.65 A<br>0.85 A   |
| Load Regulation             |  | ≤ 1 %                     |
| Ripple & Noise <sup>2</sup> | LDN20-5<br>LDN20-12 / LDN20-24                       | ≤ 50 mVpp<br>≤ 100 mVpp   |
| Hold-up Time                | LDN20-5<br>LDN20-12 / LDN20-24                       | ≥ 40 ms<br>≥ 5 ms         |
| Status Signals              | DC OK - green LED                                    |                           |
| Parallel Connection         | Possible for redundancy (with external ORing module) |                           |

<sup>2</sup> Ripple and Noise are measured with 20 MHz bandwidth, probe terminated with a 0.1 μF MKP parallel capacitor.

## 4. PROTECTIONS

| PARAMETER                | DESCRIPTION / CONDITIONS                 |          | SPECIFICATION |
|--------------------------|--|----------|---------------|
| Short Circuit Protection | Hiccup mode, Short circuit peak current: | LDN20-5  | 10 A          |
|                          |  | LDN20-12 | 8 A           |
|                          |  | LDN20-24 | 4 A           |
| Overload Protection      | Vin = 120 VAC                            | LDN20-5  | 5 A           |
|                          |  | LDN20-12 | 2.6 A         |
|                          |  | LDN20-24 | 1.3 A         |
|                          | Vin = 240 VAC                            | LDN20-5  | 5.5 A         |
|                          |  | LDN20-12 | 3.25 A        |
|                          |  | LDN20-24 | 1.7 A         |
| Thermal Protection       |  |          |               |
| Over Voltage Protection  |  |          |               |

## 5. ENVIRONMENTAL, EMC & SAFETY SPECIFICATIONS

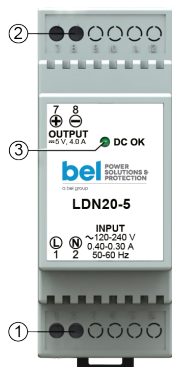
| PARAMETER                          | DESCRIPTION / CONDITIONS   | SPECIFICATION                  |  |
|------------------------------------|--|--------------------------------|--|
| Operating Temperature <sup>3</sup> | UL certified up to 70°C<br>UL certified up to 50°C                         | LDN20-5<br>LDN20-12 / LDN20-24 | -40 to +70 °C  |
| Storage Temperature                |  |                                | -40 to +80 °C  |
| Derating                           | No derating<br>Over 50°C   | LDN20-5<br>LDN20-12 / LDN20-24 | - 0.5 W/°C   |
| Dissipated Power                   |  | LDN20-5<br>LDN20-12 / LDN20-24 | < 5 W<br>< 6 W   |
| Humidity                           | Non-condescending  |                                | 5 - 95 % RH  |
| Life Time Expectancy               | Ta = 25°C, full load   |                                | 58 629 (6.6) hrs (years)                                       |
| MTBF                               | MIL-HDBK-217F at Ta = 25°C, full load                                      |                                | > 500 000 hrs  |
| Overvoltage Category               | EN 50178   |                                | III  |
| Pollution Degree                   | IEC 60664-1  |                                | 2  |
| Protection Class                   | Class II   |                                |  |
| Isolation                          | Input to Output  |                                | 4.2 kVDC   |
| Safety Standards & Approvals       | UL 508 (certified)<br>IEC/EN 61010-1<br>IEC/EN 61010-2-201<br>IEC/EN 60950 |                                |  |
| EMC Emissions                      | EN 55011 / CISPR 11  | LDN20-5<br>LDN20-12 / LDN20-24 | Class B<br>Class A   |
|                                    | EN 55022 / CISPR 22  | LDN20-5<br>LDN20-12 / LDN20-24 | Class B<br>Class A   |
| EMC Immunity                       | EN 61000-4-2   |                                | Level 3  |
|                                    | EN 61000-4-3   |                                | Level 3  |
|                                    | EN 61000-4-4   | LDN20-5<br>LDN20-12 / LDN20-24 | Level 4<br>Level 3   |
|                                    | EN 61000-4-5   | LDN20-5<br>LDN20-12 / LDN20-24 | Level 4<br>Level 3   |
|                                    | EN 61000-4-11  |                                | Level 2  |
|                                    |  |                                |  |
| Protection Degree                  | EN 60529   |                                | 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;<br>3 bumps / direction, 18 bumps total  |

<sup>3</sup> Start-up type tested: - 40°C, possible at Vnom with load deration.

## 6. MECHANICAL SPECIFICATIONS

| PARAMETER            | DESCRIPTION / CONDITIONS          | SPECIFICATION                              |
|----------------------|-----------------------------------|--|
| Dimensions           |                                   | 35 x 90 x 61.5 mm<br>1.38 x 3.54 x 2.42 in |
| Weight               |                                   | 100 g                                      |
| Mounting Rail        | IEC 60715/H15/TH35-7.5(-15)       |  |
| Connection Terminals | Screw type header (24 - 12 AWG)   | 2.5 mm <sup>2</sup>                        |
| Case Material        | Plastic, Flame retardant UL94 V-0 |  |

## 7. PIN LAYOUT & DESCRIPTION



| PIN | DESCRIPTION          |
|-----|----------------------|
| 1   | AC/DC input          |
| 2   | DC output (load)     |
| 3   | Green LED: Output OK |

| INPUT CONNECTION  | Single phase                               | DC Input                                       |
|-------------------|--|--|
|                   | L = Line (1)<br>N = Neutral (2)            | L = + Positive DC (1)<br>N = - Negative DC (2) |
| OUTPUT CONNECTION | + = Positive DC (7)<br>- = Negative DC (8) |  |

## 8. MECHANICAL DRAWING

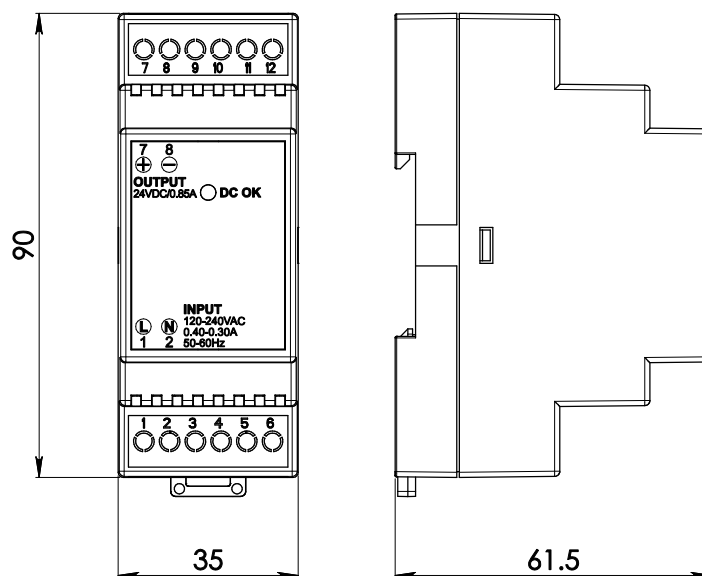


Figure 1. Mechanical Drawing

### 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.

**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.