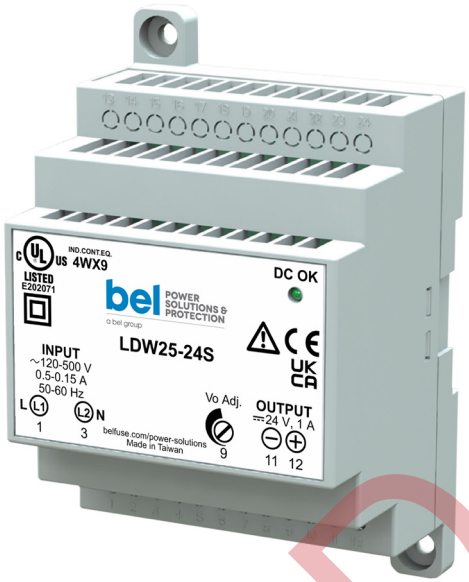
# LDW25 Series

## 25 W Wide Input Range
## DIN Rail Power Supply




LDW25 Series are 25 W single- or two-phase wide input range DIN rail power supplies.

Its compact size, high efficiency, excellent reliability together with easy installation due to pluggable connectors makes it market leader for various industrial and renewable energy applications and applications with harsh main conditions.

LDW25 Series are Class II isolation devices designed to be mounted on DIN rail and installed inside a protective enclosure.

## FEATURES

- Single or two or phase AC input 90 - 550 VAC or wide DC input voltage range 150 - 725 VDC
- Output voltages 12 V 24 V, 48 V (adjustable)
- Operating temperature range -40°C to +70°C with derating
- Overload 130%
- Compliant to renewable energy system and high voltage DC BUS
- Models with suffix S have conformal coating on PCB
- Class II insulation
- Simplified wiring (no PE connection)
- Compact size in plastic enclosure (circuit breaker shape)
- Dimensions: 72 x 114.2 x 61.5 mm

## APPLICATIONS

- Industrial control and instrumentation equipment
- Renewable energy applications
- Harsh environment applications

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## 1. MODEL SELECTION

| MODEL [1] | INPUT VOLTAGE RANGE | # OF PHASES | OUTPUT VOLTAGE | MAX OUTPUT CURRENT | EFFICIENCY | MAX OUTPUT POWER |
|---|---|---|---|---|---|---|
| LDW25-12<br>LDW25-12S | 120 - 500 VAC (150 - 725 VDC) | 1 / 2 | 12 V | 2.0 - 1.6 A | 81.5 % | 25 W |
| LDW25-24<br>LDW25-24S | 120 - 500 VAC (150 - 725 VDC) | 1 / 2 | 24 V | 1.0 A | 84.5 % | 25 W |
| LDW25-48<br>LDW25-48S | 120 - 500 VAC (150 - 725 VDC) | 1 / 2 | 48 V | 0.5 A | 84 % | 25 W |

*[1] Models with suffix S have conformal coating on PC-Board. For models without suffix S consult factory.*

## 2. INPUT SPECIFICATIONS.

| PARAMETER | | DESCRIPTION / CONDITIONS | SPECIFICATION |
|---|---|---|---|
| AC Input Voltage | | Nominal 1 / 2 phases<br>Range | 120 - 500 VAC<br>90 - 550 VAC |
| DC Input Voltage | | Range | 150 - 725 VDC |
| Input Frequency | | | 47 - 63 Hz |
| AC Input Current | Vin = 120 VAC | Single phase | 0.50 A |
| | Vin = 500 VAC | Two phase | 0.15 A |
| DC Input Current | Vin = 150 VDC | | 0.30 A |
| | Vin = 725 VDC | | < 0.10 A |
| Inrush Peak Current<br>$I^2t$ | | Peak Current measured after 0.2 ms from main connection; 400 VAC / 50 Hz; Ta = 25°C; Cold Start | ≤ 17 A<br>0.10 $A^2s$ |
| Touch (Leakage) Current | | | ≤ 0.2 mA |
| Internal Protection Fuse | | None, external fuse must be provided | |
| Recommended External Protection [2] | | It is strongly recommended to provide external surge arresters (SPD) according to local regulations. | MCB 2 A C curve<br>or Cartridge fuse Class CC 2 AT 600 VAC |

*[2] In order to be UL compliant use Listed Cartridge non-renewable (JDDZ) fuse Class CC 2 AT 600 VAC.*

## 3. OUTPUT SPECIFICATIONS

| PARAMETER | DESCRIPTION / CONDITIONS | SPECIFICATION |
|---|---|---|
| Output Voltage (Adjustable) | 12 V model<br>24 V model<br>48 V model | 12 - 15 VDC<br>23 - 28 VDC<br>45 - 55 VDC |
| Output Current (Continuous) | 12 V model<br>24 V model<br>48 V model | 2.0 - 1.6 A<br>1.0 A<br>0.5 A |
| Load Regulation | | ≤ 0.5 % |
| Ripple & Noise [3] | | ≤ 50 mVpp |
| Hold-up Time<br>Vin = 240 VAC<br>Vin = 500 VAC | | ≥ 35 ms<br>≥ 180 ms |
| Status Signals | DC OK - green LED | |
| Parallel Connection | Possible for redundancy (with external ORing module) | |

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

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## 4. PROTECTIONS

| PARAMETER | | DESCRIPTION / CONDITIONS | | SPECIFICATION |
|---|---|---|---|---|
| Short Circuit Protection | | Hiccup mode,<br>Short Circuit Peak Current: | 12 V model<br>24 V model<br>48 V model | 6.5 A<br>4.0 A<br>2.5 A |
| Overload Protection | Vin = 120 VAC | Hiccup mode, Overload Limit [4]: | 12 V model<br>24 V model<br>48 V model | 2.65 A<br>1.45 A<br>0.75 A |
| | Vin = 240/400/500 VAC | | 12 V model<br>24 V model<br>48 V model | 2.9 A<br>1.7 A<br>0.9 A |
| Thermal Protection | | | | |
| Over Voltage Protection | | | 12 V model<br>24 V model<br>48 V model | ≥ 18 VDC<br>≥ 33 VDC<br>≥ 68 VDC |

[4] *On LDW25-12S measures are performed with output set to 12 VDC.*

## 5. ENVIRONMENTAL, EMC & SAFETY SPECIFICATIONS

| PARAMETER | DESCRIPTION / CONDITIONS | SPECIFICATION |
|---|---|---|
| Operating Temperature | Start-up type tested: - 40°C, possible at Vnom with load deration. | -40 to +70 °C |
| Storage Temperature | | -40 to +80 °C |
| Derating | See derating curves (*Figure 1.* and *Figure 2.*) | |
| Dissipated Power | 12 V model<br>24 V model<br>48 V model | < 5.5 W<br>< 4.5 W<br>< 4.6 W |
| Humidity | Non-condescending | 5 - 95 % RH |
| Life Time Expectancy | Ta = 25°C, full load | 179 477 (20.4) 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 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<br>EN 55022 / CISPR 22 | Class B<br>Class B |
| EMC Immunity | EN 61000-4-2<br>EN 61000-4-3<br>EN 61000-4-4<br>EN 61000-4-5<br>EN 61000-4-11 | Level 3<br>Level 3<br>Level 3<br>Level 4<br>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 |

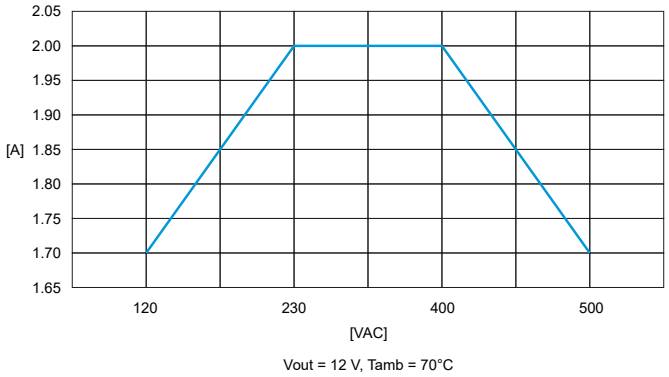
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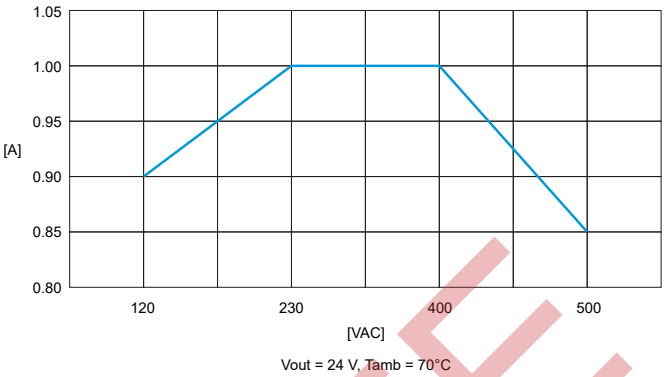
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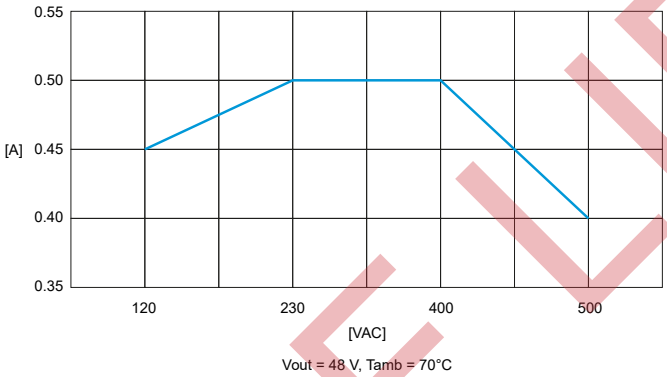
## 6. DERATING CURVES




Vout = 12 V, Tamb = 70°C

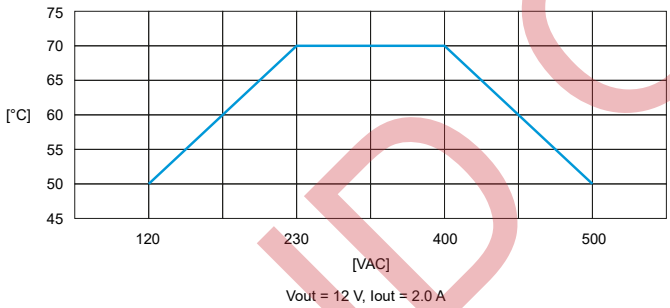



Vout = 24 V, Tamb = 70°C

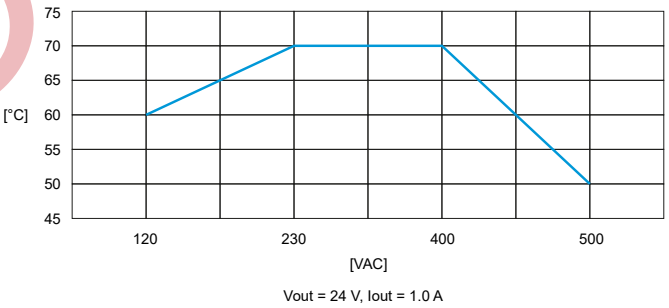



Vout = 48 V, Tamb = 70°C

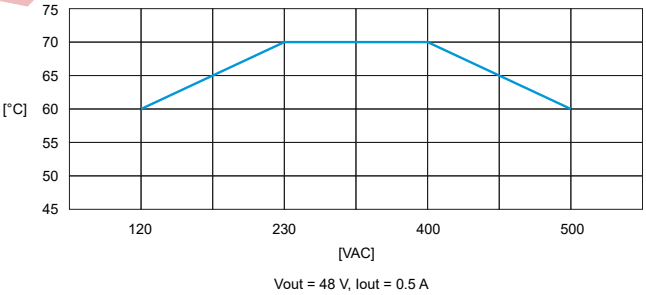
*Figure 1. Input voltage vs Output current derating*




Vout = 12 V, Iout = 2.0 A




Vout = 24 V, Iout = 1.0 A




Vout = 48 V, Iout = 0.5 A

*Figure 1. Input voltage vs Temperature derating*

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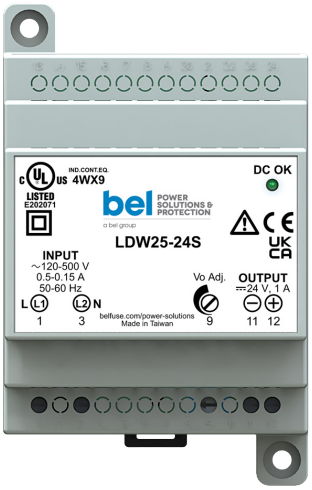


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## 7. MECHANICAL SPECIFICATIONS

| PARAMETER | DESCRIPTION / CONDITIONS | SPECIFICATION |
|---|---|---|
| Dimensions | | 72 x 114.2 x 61.5 mm<br>2.83 x 4.5 x 2.42 in |
| Weight | | 170 g |
| Mounting Rail | IEC 60715/H15/TH35-7.5(-15) | |
| Connection Terminals | Screw type pluggable (24 - 12 AWG) | 2.5 mm² |
| Case Material | Aluminum | |

## 8. PIN LAYOUT & DESCRIPTION




| PIN | DESCRIPTION |
|---|---|
| 1, 3 | AC/DC input |
| 11, 12 | DC output (load) |
| 9 | Output voltage adjustment |
| | Green LED: Output OK |

| INPUT CONNECTION | Single-phase | Two-phase | DC Input |
|---|---|---|---|
| | L = Line (1)<br>N = Neutral (3) | L1 = Phase 1 (1)<br>L2 = Phase 2 (3) | L (L1) = + Positive DC (1)<br>N (L2) = - Negative DC (3) |
| **OUTPUT CONNECTION** | + = Positive DC (12)<br>- = Negative DC (11) | | |

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## 9. MECHANICAL DRAWING

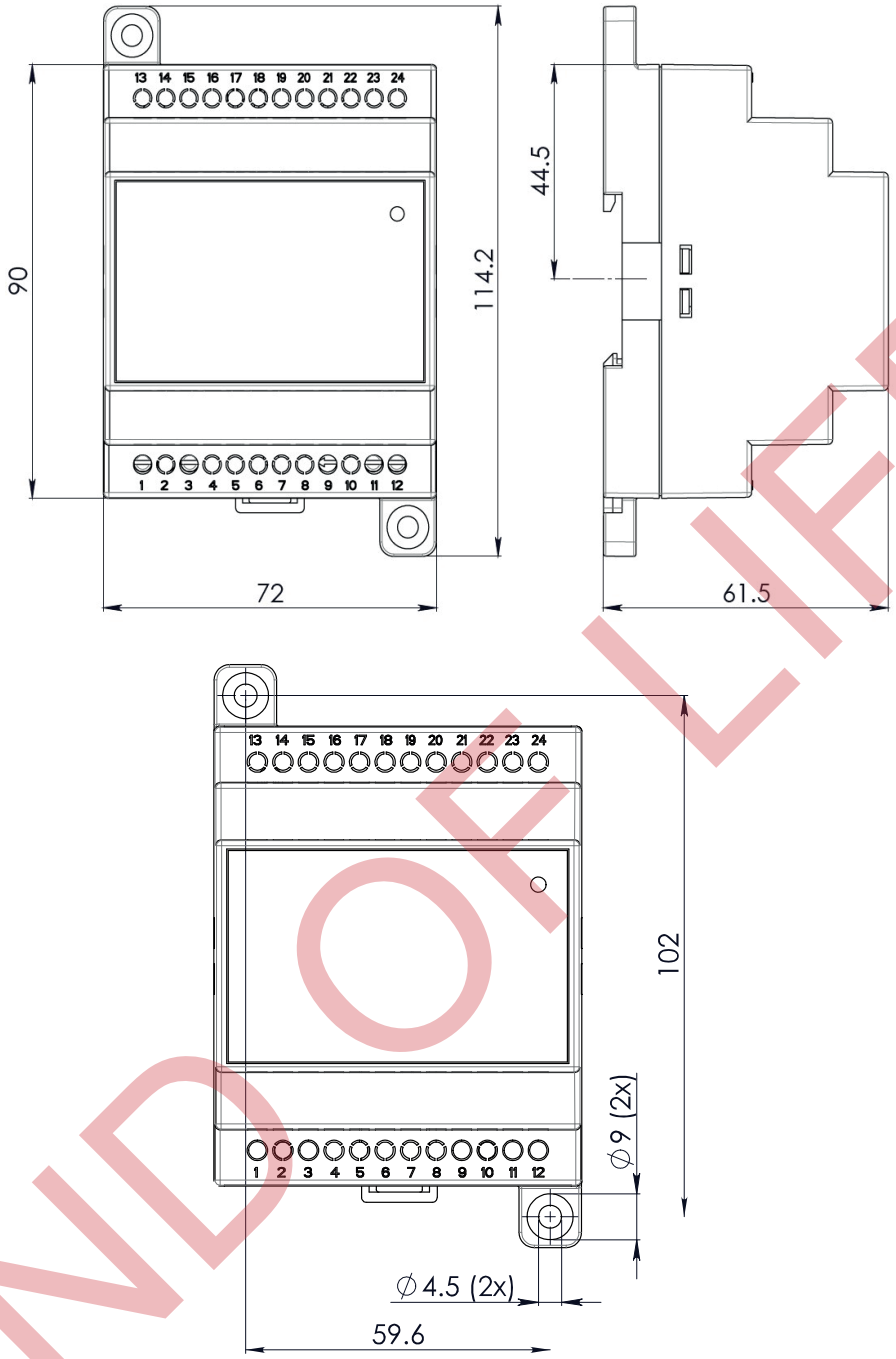



*Figure 1. Mechanical Drawing*

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***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.



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