

INSTALLATION INSTRUCTION

LDW480 Series DIN Rail Power Supply



LDW480-24 INPUT: 200 – 500 VAC, 2.9 – 1.3 A (single or two phase), 1.8 - 0.8 A (three phase), 50 - 60 Hz (UL certified) or 250 - 725 VDC, 2.1 - 0.8 A
OUTPUT: 24 VDC, 20 A

LDW480-48 INPUT: 200 – 500 VAC, 2.9 – 1.3 A (single or two phase), 1.8 - 0.8 A (three phase), 50 - 60 Hz (UL certified) or 250 - 725 VDC, 2.1 - 0.8 A
OUTPUT: 48 VDC, 10 A

LDW480-72 INPUT: 200 – 500 VAC, 2.9 – 1.3 A (single or two phase), 1.8 - 0.8 A (three phase), 50 - 60 Hz (UL certified) or 250 - 725 VDC, 2.1 - 0.8 A
OUTPUT: 72 VDC, 6 A

MAIN FEATURES

- Single, two or three phase input AC 187 – 550 VAC
- Wide DC input range 250 – 725 VDC
- Active PFC for optimal efficiency
- High efficiency and compact size
- Overload 140%
- Usable for broad range of industrial, telecom and renewable energy applications

READ THIS CAREFULLY BEFORE INSTALLATION!	LEGGERE ATTENTAMENTE PRIMA DELL'INSTALLAZIONE!	A LIRE ATTENTIVEMENT AVANT L'INSTALLATION!
<p>Before operating, read this document thoroughly and retain it for future reference. Non-respect of these instructions may reduce performances and safety of the devices and cause danger for people and property. The products must be installed, operated, serviced and maintained by qualified personnel in compliance with applicable standards and regulations. Don't open the device, it does not contain replaceable components, the tripping of the internal fuse (if included) is caused by an internal failure. Don't repair or modify the device, if malfunction or failure should occur during operation, send unit to the factory for inspection. No responsibility is assumed by Bel Power Solutions for any consequences deriving from the use of this material.</p>	<p>Prima dell'installazione, leggere attentamente questo documento istruzioni e conservarle per future consultazioni. L'inosservanza delle presenti istruzioni può compromettere le caratteristiche e la sicurezza dell'apparecchio e causare pericolo per le persone e le cose. Il prodotto deve essere installato, utilizzato e riparato da personale qualificato e nel rispetto delle normative vigenti. Non aprire il prodotto, esso non contiene componenti sostituibili, il guasto del fusibile interno (se previsto) è causato da un guasto interno. Non tentare di riparare o modificare il prodotto, se durante il funzionamento si verificano guasti o anomalie, inviarlo al produttore per il controllo. Bel Power Solutions non si assume nessuna responsabilità per qualunque conseguenza derivante dall'uso di questo materiale.</p>	<p>Lisez ces instructions avant l'installation, conservez ce manuel pour référence future. Défaut de se conformer à ces instructions peut affecter les caractéristiques et la sécurité du dispositif de danger et de causer aux personnes ou aux biens. Les produits doivent être installés, exploités et entretenus par personnel qualifié et en conformité avec les règlements. N'ouvrez pas le produit, il ne contient aucune pièce réparable, le déclenchement du fusible interne (le cas échéant) est causé par un défaut interne. Ne pas essayer de réparer ou modifier le produit ; si des défaillances se produisent pendant le fonctionnement ou les dysfonctionnements, le retourner au fabricant pour inspection. Bel Power Solutions n'assume aucune responsabilité des conséquences éventuelles découlant de l'utilisation des produits.</p>
CAUTION	ATTENZIONE	AVERTISSEMENT
<p>RISK OF BURNS, EXPLOSION, FIRE, ELECTRICAL SHOCK, PERSONAL INJURY.</p> <p>Never carry out work on live parts! Danger of fatal injury! The product's enclosure may be hot, allow time for cooling product before touching it. Do not allow liquids or foreign objects to enter into the products. To avoid sparks, do not connect or disconnect the device before having previously turned-off input power and wait for internal capacitors discharge (minimum 1 minute).</p>	<p>RISCHIO USTIONI, ESPLOSIONE, INCENDIO, SCOSSA, LESIONI GRAVI.</p> <p>Non effettuare mai operazioni sulle parti sotto tensione! Pericolo di lesioni letali! Il contenitore può scottare, lasciar quindi raffreddare il dispositivo prima di toccarlo. Non far entrare liquidi o oggetti estranei nel dispositivo. Per evitare scintille, non collegare o scollegare l'apparecchiatura prima di avere tolto tensione di ingresso e prima che sia avvenuta la scarica dei condensatori interni (min. 1 minuto).</p>	<p>RISQUE DE BRULURES, EXPLOSION, INCENDIE, ELECTROCUTION, DOMMAGE AUX PERSONNES.</p> <p>Ne jamais effectuer des opérations sur les parties sous tension! Danger de mort! Le récipient peut produire des brulures, le laisser refroidir avant de toucher l'appareil. Ne faites pas pénétrer des liquides ou des corps étrangers dans l'appareil. Pour éviter des étincelles, ne pas connecter ou déconnecter l'équipement jusqu'à ce que vous avez supprimé la tension d'entrée et avant qu'elle n'ait lieu de décharge des condensateurs internes (minimum 1 minute).</p>

USER INSTRUCTIONS**1) DESCRIPTION**

DIN rail mountable primary switched-mode power supply with 187 - 550 VAC (250 - 725 VDC) input, suitable for single, two or three phase mains line and DC line.

2) INSTALLATION

Use DIN-rails according to EN60715. Installation should be made vertically (see Fig.4). For better device stability fix the rail to the wall close to the point where the device is to be mounted. In order to guarantee sufficient convection, we recommend observing a minimum distance to other modules (see Fig.3).

The device is provided with a thermal protection; a limited air flow can cause the thermal protection tripping.

The SMPS automatically restarts after cooling. To get normal operation reduce the temperature of the air surrounding the power supply, increase the ventilation or reduce the load (see Fig.8)

3) CONNECTIONS

The device is equipped with screw terminal blocks. To avoid sparks, do not connect or disconnect the connectors before having previously turned-off input power and waited for internal capacitors discharge (minimum 1 minute)

In order to comply with UL certification, use appropriate copper cables of indicated cross section, designed for an operating temperatures of:

60°C for ambient up to 45°C

75°C for ambient up to 60°C

90°C for ambient up to 70°C

Strip the connecting ends of the wires according to the indication and ensure that all strands of a stranded wire enter the terminal connection (see Fig.5)

4) INPUT PROTECTION

The device input is provided with varistors against overvoltage. Input isn't provided with internal fuses; thus an external short circuit/overcurrent protection must be provided by the end user (see Fig.6).

For operation on a single-phase or 2 phases system, a protection fuse on each phases must be provided.

Surge protection: it is strongly recommended to provide external surge arresters (SPD) according to local regulations.

5) AC INPUT CONNECTION

The device can be connected to single phase AC line with rated V_{in} 230 VAC and two or three phase line with rated V_{in} 200 – 500 VAC (see Fig.7). Please connect first the PE.

6) DC INPUT CONNECTION

Connect L/L1 terminal to (+) positive pole, N/L2 terminal to (-) negative pole, L3 do not connected, and \ominus terminal to GND. Rated voltage 250 – 725 VDC. The device is also suitable for photovoltaic or wind turbine applications (see Fig.7).

7) OUTPUT CONNECTION

The device is suitable for **SELV** and **PELV** circuitry. Pay attention LDW480-72 is not **SELV**.

V_{out} can be adjusted with a potentiometer to a wide range (see Fig.1)

Check V_{out} before connecting the power supply to the load. With output voltage set to the max. value, the continuous [current x voltage] must not exceed the nominal power.

8) PARALLEL CONNECTION AND REDUNDANCY

Power supplies can be connected in parallel to increase power.

V_{out} must be set uniformly (± 100 mV) on each power supply and the wiring must be symmetrical to ensure an equal current distribution.

For redundant connection, an external isolating device must be used (see accessory device).

9) OUTPUT PROTECTION

The device is protected against overload (OL) / short circuit (SC) / overvoltage (OV) / overtemperature (OT).

OL and SC: are controlled by a hiccup mode auto-reset protection with the following behaviour.

OL behaviour: Max. $OL = I_n \times 1.5$ with constant output voltage for max 5s. If the current is $\geq I_n \times 1.5$ the unit enters the OL protection and starts an ON/OFF cycle (hiccup mode).

SC behaviour: the device supplies the indicated short circuit peak current for 250ms if the output current exceeds $I_n \times 1.5$ the device enters into a controlled ON/OFF cycles (hiccup mode). The output voltage drops to a voltage value depending on the impedance of the failed load circuit.

Output OV circuit protection: the output is protected against potential OV due to internal malfunction or coming from the load for

$V_{out} \geq V_{nom} \times 1.2 - 1.3$, depending on the model.

OT protection: turns off the device if the internal temperature exceeds a safe limit.

The device restarts automatically after cooling down. To recover to normal operation reduce air temperature surrounding the power supply, increase cooling or reduce load (see Fig.8).

10) FEEDING DC MOTORS

It is possible to feed DC motors considering that when a motor starts-up under effort its consumption is much higher than the nominal current and it can trigger overcurrent protection (see accessory device).

NOTE: motors can generate high conducted noise on the DC line. Therefore, it is not recommended to feed on the same line motors and equipment sensitive to noise.

11) OPERATION WITH BATTERY

When a battery is connected in parallel to the Output for backup purposes (see accessory device).

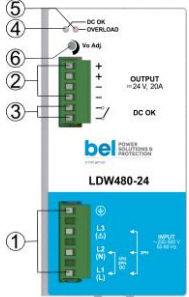
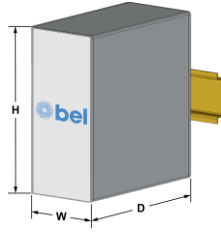
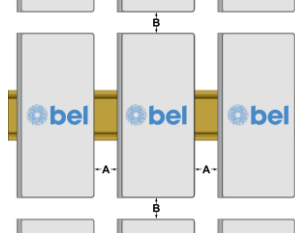
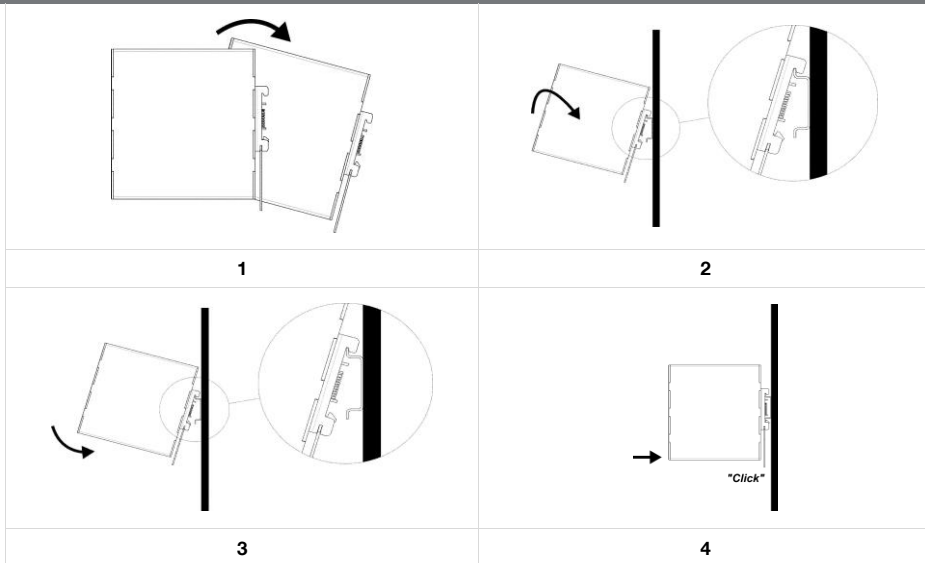
FIG.1 - CONNECTIONS	FIG.2 - DIMENSIONS	FIG.3 - DISTANCES															
 <p>Just for reference</p>																	
			<p>(1) AC/DC input (2) DC output (load) (3) Diagnostic Output (dry contact, NC output OK) (4) Green LED: Output OK (5) Red LED: overload (6) Output voltage adjustment</p> <p>Input AC Line: Single Phase <ul style="list-style-type: none"> L = Line N = Neutral L3 = do not connect ⊕ = earth ground 2 Phases <ul style="list-style-type: none"> L1 = Phase 1 L2 = Phase 2 L3 = do not connect ⊕ = earth ground 3 Phases <ul style="list-style-type: none"> L1 = Phase 1 L2 = Phase 2 L3 = Phase 3 ⊕ = earth ground Input DC Line: <ul style="list-style-type: none"> L = + Positive DC N = - Negative DC L3 = do not connect ⊕ = earth ground Output: + = Positive DC / - = Negative DC / Dry contact = NC </p>	<table border="1"> <thead> <tr> <th>Dimension</th> <th>mm (inc)</th> <th>Distance</th> <th>mm (inc)</th> </tr> </thead> <tbody> <tr> <td>W</td> <td>73 (2.83)</td> <td>A</td> <td>20 (0.8)</td> </tr> <tr> <td>D</td> <td>125 (4.92)</td> <td>B</td> <td>100 (3.9)</td> </tr> <tr> <td>H</td> <td>140 (5.52)</td> <td></td> <td></td> </tr> </tbody> </table>	Dimension	mm (inc)	Distance	mm (inc)	W	73 (2.83)	A	20 (0.8)	D	125 (4.92)	B	100 (3.9)	H
Dimension	mm (inc)	Distance	mm (inc)														
W	73 (2.83)	A	20 (0.8)														
D	125 (4.92)	B	100 (3.9)														
H	140 (5.52)																

FIG.4 - MOUNTING / DISMOUNTING INSTRUCTIONS

For DIN rail fastening according to IEC 60715 TH35-7.5(-15)
 Mounting as shown in figure, with input terminals on lower side, with suitable cooling and maintaining a proper distance between adjacent devices as specified in the Installation Instruction of each family.

MOUNTING:

1. Tilt the unit slightly backwards.
2. Fit the unit over the top edge of the rail.
3. Slide it downward until it hits the stop.
4. Press against the bottom for locking.



DISMOUNTING:

1. Pull down the slide clamp lever
2. Tilt the unit upward
Unhook the unit from the rail

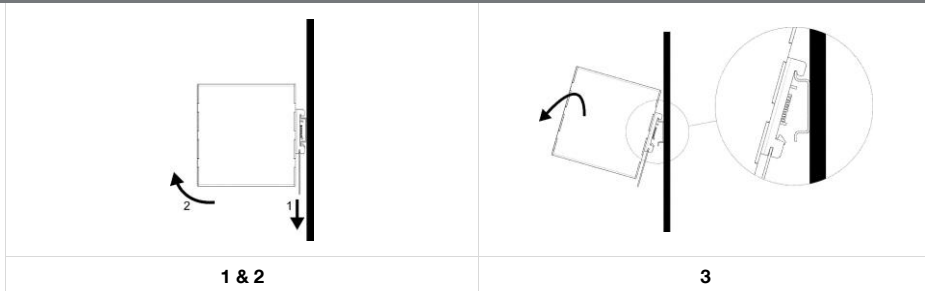


FIG.5 - RECOMMENDED CONNECTING CABLE

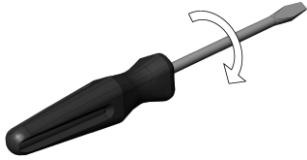
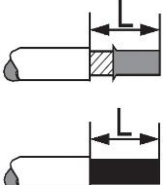
	<p>Recommended Tightening torque 0.5 - 0.6 Nm 4.42 - 5.30 lbf in</p>		<p>Solid: 2.5 mm² / 12 AWG Stranded: 1.5 mm² / 12 AWG L: 6.0 - 7.5 mm / 0.24 - 0.30 in</p>
---	---	--	--

FIG.6 - INPUT PROTECTION

Fuse 6.3AT or MCB 6 A C curve or 4 A D curve.
For USA and Canada, use the fuse type closest to the European equivalent type.

Surge protection: it is strongly recommended to provide external surge arresters (SPD) according to local regulations.

FIG.7 - INPUT CONNECTIONS

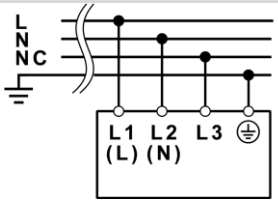
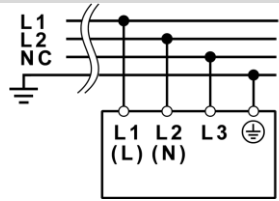
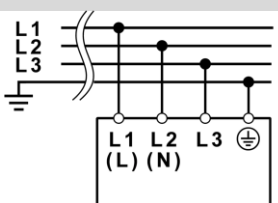
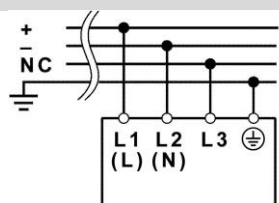
AC LINE - SINGLE PHASE	AC LINE - TWO PHASES
	
AC LINE - THREE PHASES	DC LINE
	

FIG.8 - ENVIRONMENT

OPERATING TEMPERATURE	DERATING
<p>- 40°C to + 70°C 5 - 95% r.H. non condensing UL Certified up to 45°C</p>	<p>- 10 W / °C over 45°C</p>

NOTES:

- Data may change without prior notice in order to improve the product.
- Please refer to the latest version of the Installation Instruction for each product by visiting belpowersolutions.com.

ACCESSORIES

- LDX-D20 20 A Active ORing controller
- LDX-D50 50 A Active ORing controller
- LDX-U20 20 A High performance DC UPS
- LDX-B20 150J Buffer Module
- LDX-C120 Battery charger and DC UPS Module
- LDX-L30 Sealed Lead acid Battery pack