

CONVERT SELECT 120 & 240 WATT PFC 125/250 WATT AC-DC (DC-DC) CONVERTER DIN-RAIL SNAP-FIT OR WALL MOUNTING

FEATURES

- Universal AC input range (single phase), or DC input
- High electromagnetic immunity
- Power factor correction (according to IEC/EN 61000-3-2, class D)
- Humidity resistant, pollution degree 3 (AC input)
- Protection degree IP20
- Rugged 35 mm DIN-rail snap-fit design, chassis or wall mounting also possible
- Size (W x H x D): 103 x 138 x 114 mm
- Very high reliability, MTBF >600 000 h (G_B , 40°C)

INPUT DATA

- Operating input range: 85 – 264 VAC, 47 – 63 Hz*
90 – 350 VDC (opt. F: 250 VDC)
- Nominal input range: 100 – 240 VAC, 50 – 60 Hz
- Over voltage switch-off: 275 VAC typ.
- Power factor: > 0.86 ($V_i = 230$ VAC, I_o nom)
- Inrush peak current: typ. 5 A ($V_i = 230$ VAC, P_o nom)
- Leakage current: ≤ 5 mA (accord. to IEC 62368-1)
- Nominal input current:
0.70 A ($V_i = 230$ V, $P_o = 125$ W)
1.35 A ($V_i = 125$ V, $P_o = 125$ W)
1.45 A ($V_i = 230$ V, $P_o = 250$ W)
2.70 A ($V_i = 125$ V, $P_o = 250$ W)
- Built-in input fuse in the pos.input line: 6.3 A, 250 V, 4 x 9 mm
- Efficiency: 87% ($V_i = 230$ V, I_o nom)

OUTPUT DATA

Available output configurations for power supplies:

MODELS	Vo1 [VDC]	Vo2 [VDC]	Io1/2 [A]	Po nom [W]
LWR1301-6E	12.35	-	7.5	93
LWN1301-6E	12.35	-	14	173
LWR1601-6E	24.7	-	5	124
LWN1601-6E	24.7	-	10	247
LWR1701-6E	37.05	-	3.3	123
LWN1701-6E	37.05	-	6.6	245
LWR1801-6E	49.4	-	2.5	124
LWN1801-6E	49.4	-	5	247

LWN2320-6E	12.35	12.35	7	173
LWN2660-6E	24.7	24.7	5	247
LWN2770-6E	37.05	37.05	3.3	245
LWN2880-6E	49.4	49.4	2.5	247

Available output configurations for battery chargers:

MODELS	Vo1 [VDC]	Io1 [A]	Po nom [W]
LWR1140-6EMI	12.84 – 14.65	7.5	104
LWN1140-6EMI	12.84 – 14.65	14	194
LWR1240-6EM1	25.68 – 29.3	4.2	115
LWN1240-6EM1	25.68 – 29.3	8.4	230
LWR1840-6EM1	38.52 – 43.95	2.8	115
LWN1840-6EM1	38.52 – 43.95	5.6	230
LWR1740-6EM1	51.36 – 58.6	2.1	115
LWN1740-6EM1	51.36 – 58.6	4.2	230

- Output power derating at low input voltage see datasheet of W series.
- LWN2660 and LWN2880 have 2 isolated and independently regulated outputs.
- Rectangular current limit characteristic typ. $1.1 \cdot I_o$ nom
- Short-term peak power capability $1.5 \cdot P_o$ nom, 1s typ.
- Outputs continuously no-load, overload and short-circuit proof
- Max. 3 converters can be connected in parallel, provided that none of the options R, D, M1 or M2 is fitted.

CONTROL FUNCTIONS

- LED Output(s) OK

PROTECTION CIRCUITS

- Input surge and transient protection
- Input over- and under voltage lock-out
- Built-in over temperature protection
- OVP by a second control loop; V_o max = 30 V, for rated voltage 24 V, 60 V for rated voltage 48 V.

OPTIONS

- **E:** Models with improved EMC performance.
- **F:** Built-in second fuse in the neutral line N. DC input voltage is limited to 250 VDC. Caution! Double pole/ neutral fusing.
- **S*:** Remote on/off control by means of a logic signal.
- **D1*:** Monitors the output voltage. If the voltage drops below 23 V / 46 V, the D-signal becomes high

impedance. For use with battery charger models.

- **D2:** Monitors the input voltage. In the case of AC or DC input failure the D-signal becomes high impedance.
- **D5*:** Monitors the output voltage. If the voltage drops below 21 V / 42 V, the D-signal becomes high impedance.
- **R*:** Output voltage adjustment by an external voltage source V_{ext} (1 to 2.75 V) or a resistor: $V_o > 60\%$ to 110% of V_o nom
- **M1:** Multiple options via D-Sub connector (R*, D1*, D2, D5*, S)
- **M2:** Multiple options via D-Sub connector (R*, D2, D5*)

* On LWN2660 and LWN2880 the options D1, D5, and R concern only the output connected to the terminals 6, 7, 8 & 9.

ENVIRONMENTAL CONDITIONS

- Ambient operating temperature T_A : -40 to 60 °C
- Case temperature T_C : -40 to 80 °C
- Storage temperature: -40 to 100 °C

Sufficient cooling allows the ambient temperature to be higher than 60 °C, if the case temperature T_C is not exceeded.

SAFETY STANDARDS AND APPROVALS

The devices are:

- Safety certified to IEC/EN 62368-1, IEC 61010-1, EN 50178 and UL 508-listed
- Class I equipment according to IEC/EN 62368-1
- Overvoltage category II
- 2 kVAC input to case electric strength test voltage
- Built-in device for vertical mounting on DIN-Rail or wall
- Self cooling, no forced cooling required

SAFETY AND INSTALLATION INSTRUCTIONS

- Built-in device for vertical mounting on DIN-rail or wall
- Protective cover over terminals on request
- Cage-clamp terminals: 15 A max per pin.
- Self-cooling, no forced cooling required
- Minimum space to next device:
 - Top/bottom: 30 mm; left/right: 20 mm
 - DIN-rail surface to converter front side: 110 mm
- Use proper tool (e.g. 3 mm screwdriver) and adequate force for dismantling the converter.
- Wire gauges see fig. 5 and 6
- At source voltages above 250 VDC an appropriate external fuse or a circuit breaker must be installed.
- A second fuse in the wiring to the neutral terminal N or the use of models with option F is needed if:
 - Local requirements demand an individual fuse in

each source line.

- Neutral and earth impedance is high or undefined
- Phase and neutral of the mains are not defined or cannot be assigned to the corresponding terminals (L = to phase and N = to neutral).

WARNINGS

- Installation must strictly follow the national safety regulations.
- Only qualified personnel is allowed to work around or on the equipment itself.
- Failure to properly install and maintain this equipment may result in failure, severe personal injury or substantial damage to property.
- Do not open this apparatus.
- Switch off the system before connecting to the supply.
- Energy danger at the output terminals even after the supply was switched off.
- Any penetration of liquid or foreign solid objects has to be prevented, since the power supply is not hermetically sealed.
- Ensure that a converter failure (e.g. by an internal short circuit) does not result in a hazardous condition.

ACCESSORIES

- Mounting brackets HZZ00618-G (UMB-W)
- DIN-rail fixing brackets HZZ00624-G (DMB-EWG)
- Protective covers over terminals HZZ01219-G / HZZ01219A-G
- Battery temperature sensors

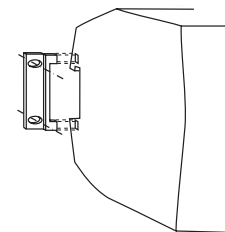


Figure 1. Wall mounting brackets HZZ00618-G (UMB- W)

MECHANICAL DIMENSIONS

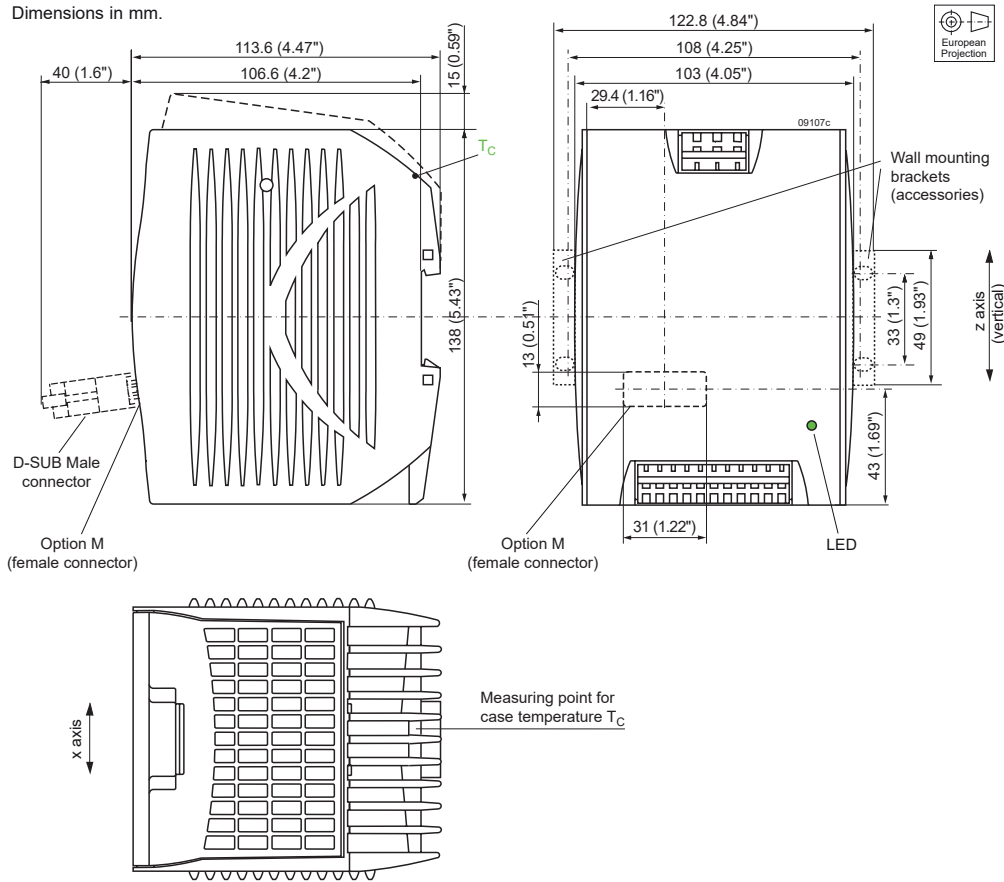


Figure 2. Case W

MOUNTING & DISMOUNTING

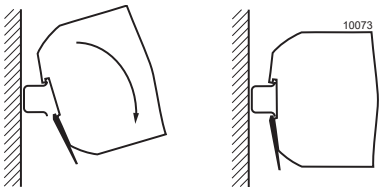


Figure 3. Snap-fit mounting to DIN-rail

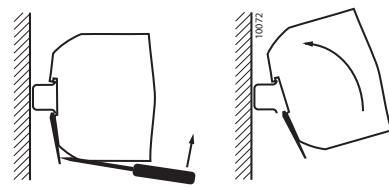


Figure 4. Dismounting from DIN-rail. Use proper tool (min. 3 mm screw driver) and adequate force.

CONNECTOR PIN ALLOCATION

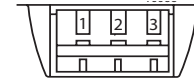


Figure 5. Input Terminals

Pin no.	Pin designation	Electrical determination
1	\perp	Protective earth PE
2	N \approx	Input phase/DC positive
3	L \approx	Input phase/DC positive

Table 1. Terminal allocation input side

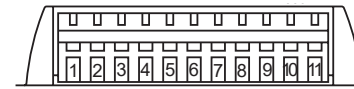


Figure 6. Output Terminals

Pin no.	Pin des.	Single output	Double output
1		Funct. earth to load	Funct. earth to load
2	+	Output positive	Output 2 positive
3	+	Output positive	Output 2 positive
4	-	Output negative	Output 2 negative
5	-	Output negative	Output 2 negative
6	+	Output positive	Output 1 positive
7	+	Output positive	Output 1 positive
8	-	Output negative	Output 1 negative
9	-	Output negative	Output 1 negative
10	AUX	Option	Option
11		Funct. earth to load	Funct. earth to load

Table 2. Terminal allocation output side

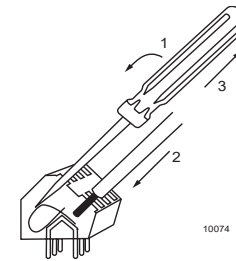


Figure 7. Cage clamp terminals (standard). Use 0.5 to 2.5 mm² (AWG 20 to 12) solid wires or stranded wires, depending on local requirements.

NUCLEAR AND MEDICAL APPLICATIONS

Bel Power Solutions products are not authorized for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems without the express written consent of the President of Bel Fuse, Inc.

TECHNICAL REVISIONS

The appearance of products, including safety agency certifications pictured on labels, may change without prior notice.

IMPORTANT NOTE ON CE MARK

Bel Power Solutions power supplies are components only and are intended for inclusion within other equipment by professional installers. They are not intended for stand alone use.

The EMC behaviour is described in our data sheet. This data provide the necessary basis for establishing the conformity declaration by the OEM.