

15, 30, 50 Watt AC-DC (DC-DC) Converters Convert Simply



Features

- RoHS lead-free-solder and lead-solder-exempted products available
- Universal input range 100 – 240 VAC nominal
- Additional DC input 90 – 250 VDC
- Class I equipment
- Single output 5.1, 12, 24, or 48 VDC
- Extremely compact design
- Battery charger versions
- Operating ambient temperature range –10 to 50 °C with convection cooling
- Short-circuit and no-load proof

Safety according to IEC/EN 60950-1¹, UL/CSA 60950-1, and UL 508²



¹ LOK

² LOS/LOR

Description

The Convert Simply front-end converters represent a family of 15, 30, and 50 watt DIN-rail mountable AC-DC converters for use as rectifiers or battery chargers. Plastic casing, compact size, and high reliability make the LOS, LOR, LOK4000 Series an excellent choice for space-critical applications, where a DIN-Rail mountable AC-DC converter is required. The universal input range and a built-in input filter allow flexible operation in a wide variety of electronic equipment and enables worldwide connection to the mains.

The converters are available as rectifiers with 12 V, 24 V, or 48

V single output and as battery chargers for 12 V, 24 V, or 48 V batteries. The output voltage of LOK converters can be adjusted via the R input.

Safety approvals fully comply with worldwide requirements.

Applications

Typical applications are: powering building controls, factory automation, industrial controls, instrumentation, electromagnetic drives, fans, and other DC loads.

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Model Selection

Table 1: Type survey

Output		Operating input voltage ¹	Rated power ¹ $T_A = 50\text{ }^\circ\text{C}$ $P_{o\text{ tot}} [\text{W}]$	Efficiency ⁵ $\eta_{\text{typ}} [\%]$	Model	Options ⁴
$V_{o\text{ nom}}$ [VDC]	$I_{o\text{ nom}}$ [A]					
5.1	5.2	85 - 264 VAC 47 - 63 Hz 90 - 250 VDC	26	70	LOK4001-2RLD	F ² , K, G
12	1.25		15	74	LOS4301-2	
12	2.5		30	80	LOR4301-2	
12	4		48	82	LOK4301-2R	
12 - 12.84 ³ - 15	3.6		49	82	LOK4140-2RLD	
24	0.65		15	76	LOS4601-2	
24	1.25		30	82	LOR4601-2	
24	2		48	82	LOK4601-2R	
24 - 25.7 ³ - 30	1.8		49	82	LOK4240-2RLD	
48	1		48	82	LOK4801-2R	
48 - 51.4 ³ - 60	0.9	49	81	LOK4740-2RLD		

¹ Linear derating to 85% of $P_{o\text{ nom}}$ below $V_i = 105\text{ VAC}$, 110 VDC

² LOK types only

³ Setting voltage $V_{o\text{ set}}$ for battery chargers with R-input left open-circuit.

⁴ For minimum order quantities and lead times contact Power-One.

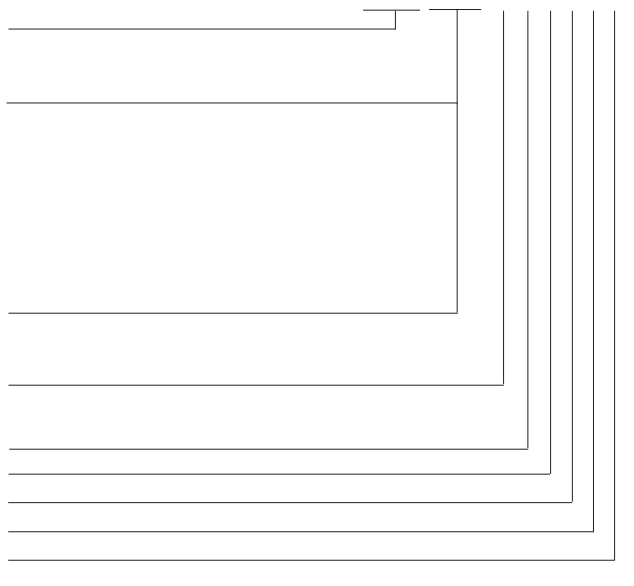
⁵ Efficiency at $V_{i\text{ rated}}$ and $I_{o\text{ nom}}$

Models in yellow (or shaded) are not recommended for new designs.

Part Number Description

- Series 15 W LOS 4
- 30 W LOR 4
- 50 W LOK 4
- Output 5.1 V rectifier version 001
- 12 V rectifier version 301
- 24 V rectifier version 601
- 48 V rectifier version 801
- 12 – 15 V battery charger 140
- 24 – 30 V battery charger 240
- 48 – 60 V battery charger 740
- other voltages or specs. 02 – 99
- Ambient temperature range T_A :
-10 to 50 °C -2³
- Features and options:
Output voltage control input R²
- Rectangular output characteristic L¹
- Output voltage OK signal D¹
- Built-in second fuse (option) F²
- K system connector (option) K
- RoHS compliant for all 6 substances G⁴

LOK4 3 0 1 -2 R L D F K G



¹ Battery chargers and LOK4001-2RLD

² LOK models only

³ Up to 70 °C with derating

⁴ G is always placed at the end of the part number.

Examples: LOK4140-2RLD: AC-DC converter, battery charger version, providing 12 - 15 V/3.6 A at the output
LOK4601-2R: AC-DC converter, rectifier version, providing 24 V/2 A, 48 W at the output

Immunity to Environmental Conditions

Table 6: Mechanical stress

Test Method		Standard	Test Conditions	Status
Cab	Damp heat steady state	IEC/EN 60068-2-78 MIL-STD-810D section 507.2	Temperature: 40 ±2 °C Relative humidity: 93 +2/-3 % Duration: 21 days	Converter not operating
Ea	Shock (half-sinusoidal)	IEC/EN 60068-2-27 MIL-STD-810D section 516.3	Acceleration amplitude: 15 g _n = 147 m/s ² Bump duration: 11 ms Number of bumps: 18 (3 each direction)	Converter operating
Eb	Bump (half-sinusoidal)	IEC/EN 60068-2-29 MIL-STD-810D section 516.3	Acceleration amplitude: 10 g _n = 98 m/s ² Bump duration: 11 ms Number of bumps: 6000 (1000 each direction)	Converter operating
Fc	Vibration (sinusoidal)	IEC/EN 60068-2-6 MIL-STD-810D section 514.3	Acceleration amplitude: 0.15 mm (10 - 60 Hz) 2 g _n = 20 m/s ² (60 - 150 Hz) Frequency (1 Oct/min): 10 - 150 Hz Test duration: 3.75 h (1.25 h each axis)	Converter operating

Table 7: Temperature specifications

Characterisitcs		Conditions	min	max	Unit
T _A	Ambient temperature	Operational ¹	-10	50	°C
T _C	Case temperature		-10	80	
T _S	Storage temperature	Non operational	-40	85	

¹ See: Thermal Consideration.

Table 8: MTBF Values

MTBF	Type	Ground benign	Ground fixed		Ground mobile	Unit
		T _C = 40 °C	T _C = 40 °C	T _C = 70 °C	T _C = 50 °C	
According to MIL-HDBK-217F, Notice 2	LOK	1 600 000	400 000	200 000	120 000	h

Mechanical Data

Dimensions in mm.

Weight:

LOS/LOR: approx. 0.25 kg

LOK: approx. 0.35 kg

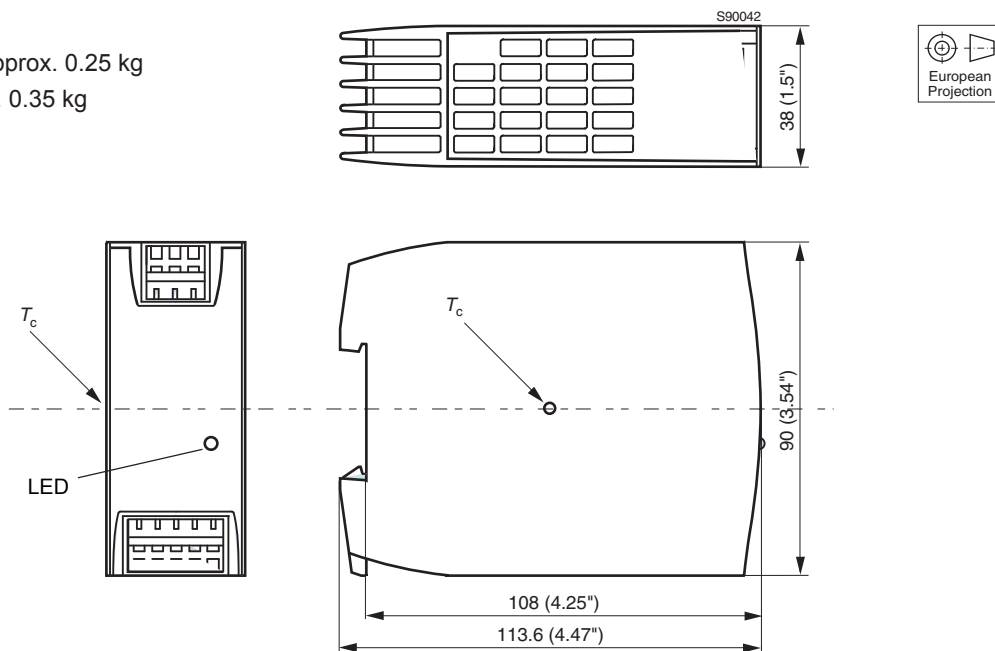


Fig. 10
Case