

## Technical data sheet

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### LION safe power supply 72 W



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#### Identification

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Type	LION-SAFE-PS-24V-110V-72W-LUE
Part No.	<a href="#">800101</a>

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#### Product version

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Hardware revision	C
Software version	1.20
Datasheet version	08

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#### Use/Application/Properties

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Description	Safe power supply (SIL2) for supplying the connected L-Bus <sup>2</sup> modules in the LION system for use on rail vehicles. The power supply can be used redundant. Output 72 W.
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#### Safety integrity

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Standards	SIL 2 according to EN 50129, EN 50128 and EN 50126
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#### Bus interface

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Bus system	L-Bus <sup>2</sup>
Transmission medium	Flat conductor, 14-pin
Connection type, incoming bus	X30: Female connector IDE, 14-pin
Connection type, continuing bus	X31: Socket connector IDE, 14-pin

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#### Diagnostics

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Diagnosis indications	Internal power supply (UL): Active, LED green Error, LED red
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#### Electrical isolation

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Potential groups	See diagram "Potential groups"
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#### Lütze Transportation GmbH

Postfach 12 24 (PLZ 71366) • Bruckwiesenstraße 17-19 • D-71384 Weinstadt  
Tel. +49 (0)7151 6053-545 • Fax +49 (0)7151 6053-6545  
www.luetze-transportation.com • sales.transportation@luetze.de

07.07.2023 • Subject to technical modification

Part No. [800101](#) • Datasheet version: 08

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### General

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Dimensions (w × h × d)	140.0 mm × 160.0 mm × 63.0 mm
Weight/unit	0.703 kg
Housing material	Aluminum
Installation place	1: closed electrical operating areas 2: driver's cabin and passenger area
Mounting	DIN rail mounting
Installation position	Installation position: any position or angle possible Installation space: top: 5 mm (for assembly) bottom: 5 mm (for assembly) right/left: 0 mm

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Power output	72 W, peak output power: min. 90 W
Output voltage	DC 24 V
Rated voltage $U_N$	min. DC 24 V – max. 110 V
Voltage range	DC 14.4 V – 154 V
Efficiency	min. 75 % at 0.5*nominal output power min. 70 %
Inrush current	max. 12 A for 100 ms (at $U_N$ 24 V)
Protection device	Short-circuit protection Overcurrent protection Overtemperature protection Polarity reversal protection Short-term overvoltage protection (Surge)
Protection device output	Short-circuit protection Overcurrent protection Overtemperature protection Overvoltage protection
Connection type	X1, X2 Push-In each 1 × 5-pin 0.20 mm <sup>2</sup> – 2.5 mm <sup>2</sup> AWG 24 – AWG 12 Stripping length: 10 mm Screwdriver: 3.5 × 0.6 mm
PE Connection	X0: Screw M4
External protection	Fuse B10 for power supply
Storage temperature range	-40 °C ... +85 °C

### Environmental service conditions

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<b>Altitude</b>	2000 m
Operating temperature class	OT4: -40 °C ... +70 °C
Switch-on extended Operating temperature class	ST1: OTx + 15 °C
Temperature variation class	H1:no requirements

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Shock/Vibration	Category 1, class B
Class of supply voltage interruption	S3: 20 ms
Supply change-over class	C2: 30 ms
Useful life class	L4 (Restrictions, see Operating Instructions("MA"))
Degree of pollution	PD2
Over voltage category	OV2
Socket and edge connector	K2: Sockets for ICs and/or edge connectors are not used
Protective coating class	PC2: lacquered on both sides
Degree of protection	IP20

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### Failure Rate Prediction (MTBF)

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Standards	Electronic components – Reliability – Reference conditions for failure rates and stress models for conversion: EN/IEC 61709 Failure Rates of Components – Expected values: SN 29500
Failure rate at +45 °C	1375 fit
Failure rate at +45 °C	727406 h 1 fit equals one failure per 10 <sup>9</sup> component hours The indicated temperature is the mean component ambient temperature.
Comments	The results are valid under following conditions: Automotive environment or industrial areas without extreme dust levels and harmful substances Continuous operation 8760 h per year

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### Standards/Certifications

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Standards	<b>EN 50155:2021:</b> Railway applications – Rolling stock – Electronic equipment <b>EN 50121-3-2:2016+A1:2019:</b> Railway applications – Electromagnetic compatibility – Part 3-2: Rolling stock – Apparatus <b>EN 50124-1:2017:</b> Railway applications – Insulation coordination – Part 1: Basic requirements – Clearances and creepage distances for all electrical and electronic equipment <b>EN 61373:1999:</b> Railway applications – Rolling stock equipment – Shock and vibration tests <b>EN 61373:2010:</b> Railway applications – Rolling stock equipment – Shock and vibration tests <b>EN 61373/AC:2017:</b> Railway applications – Rolling stock equipment – Shock and vibration tests <b>Regulation No. EMC 06:</b> Technical Rules on Electromagnetic Compatibility - Verification of radio compatibility of rail vehicles with railroad radio services <b>EN 45545-2:2020:</b> Railway applications – Fire protection on railway vehicles – Part 2: Requirements for fire behaviour of materials and components
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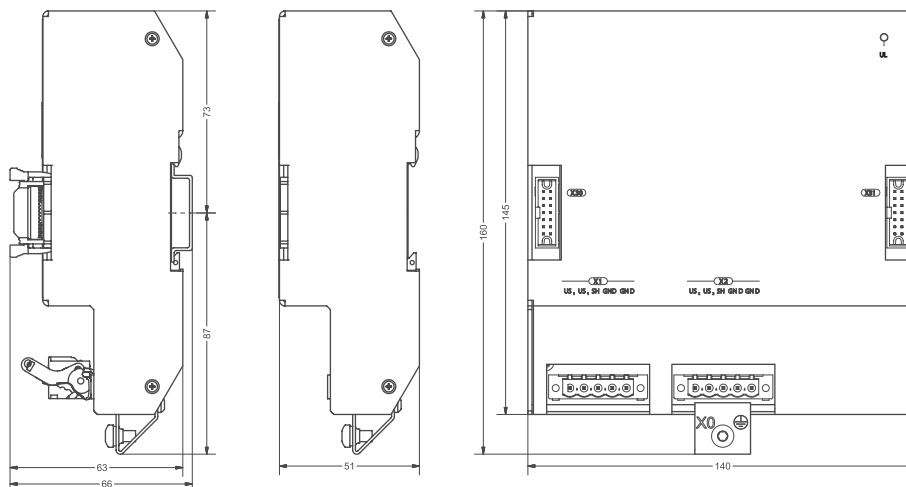
### Equipment/Spare parts

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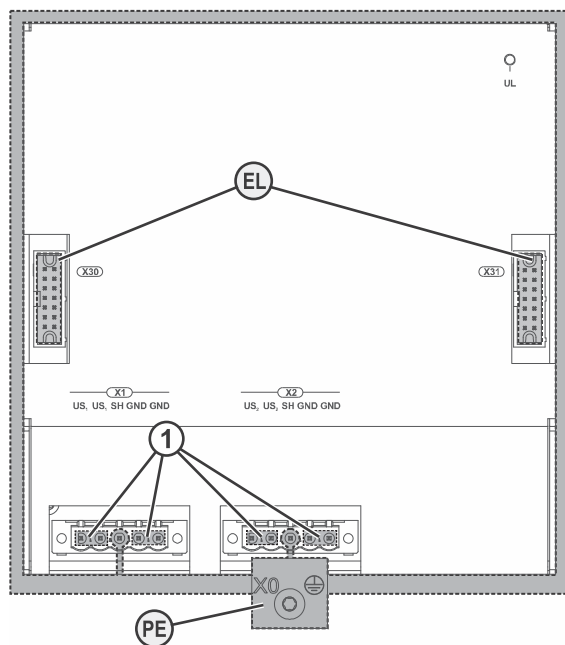
Accessories	Included accessories LION L-Bus <sup>2</sup> protective connector (dummy connector), part number 800202 LION L-Bus <sup>2</sup> 1:1 connection cable, part number 800203 2 × LION set I/O plug-connector 5-pole, part number 800208 Optional accessories LION L-Bus <sup>2</sup> bus termination connector, part number 800201 EMC-Shield clip set, part number 800204
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## Dimensions



## Potential groups



1.
  - DE** Potentialgruppen
  - EN** Potential groups
  - FR** Groupes de potentiel
- (PE): PE (X0), HOUSING,  
SH (X1.3, X2.3)  
Potential PE
- (EL): L-BUS<sup>2</sup> (X30, X31), ELECTRONIC  
Potential EL
- (1): SUPPLY  
(X1.1, X1.2, X1.4, X1.5,  
X2.1, X2.2, X2.4, X2.5)  
Potential A
2.
  - DE** Kapazitive Kopplung
  - EN** Capacitive coupling
  - FR** Couplage capacitif
- ca. 19 nF: (PE) ⇔ (1)
- ca. 4.7 nF: (EL) ⇔ (1)
3.
  - DE** Trennspannung/
  - EN** Isolating voltage/
  - FR** Tension d'isolement
- 3.1
  - Basisisolierung/
  - Basic insulation/
  - Isolation de base
- AC 1500 V: (PE) ⇔ (1)
- 3.2
  - Verstärkte Isolierung/
  - Reinforced insulation/
  - Isolation renforcée
- AC 1500 V: (PE) ⇔ (EL)
- AC 1500 V: (EL) ⇔ (1)