

## Technical data sheet

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### USB charging socket with protective cap



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#### Identification

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Type NG-9017 DC 24V 2x USB-A IP65  
Part No. [819017](#)

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#### Product version

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Hardware revision A  
Datasheet version 02

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#### Use/Application/Properties

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Description DC/DC converter as charger for mobile phones and tablet PCs on rail vehicles. The converter has a DC voltage input with DC 24 V. 2 channels with 5 V/1.5 A each are available at the output. In addition, the charger automatically monitors the voltage on the USB data lines and provides the corresponding charge signatures on the data lines. Due to the blue status display especially suitable for applications in the driver's cab.

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#### Technical data

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Rated voltage $U_N$	DC 24 V
Rated current	max. 700 mA
Voltage range	16.8 V – 30 V
Efficiency	90 %
Output voltage	DC 5 V $\pm$ 0,25 V
Output current	1.5 A per channel
Protection device	Polarity reversal protection / Suppressor diode
Status indication LED	LED blue (Output voltage) per channel
Protection device output	Short-circuit protection Overload protection
Contact durability	5000
Connection type	Spring terminal, pluggable with loop-through function (2-pin) (Not included in the delivery) 0.20 mm <sup>2</sup> – 1.5 mm <sup>2</sup> Stripping length: 10 mm Screwdriver: 2.5 × 0.4 mm

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14.03.2023 • Subject to technical modification

Part No. [819017](#) • Datasheet version: 02

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Operation temperature range -40 °C ... +70 °C

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### General

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Weight/unit 0.029 kg  
Housing material PA 66  
Mounting Single-hole mounting  
Torque 4 Nm  
Installation position As desired

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### Environmental service conditions

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**Altitude** 2000 m  
**Operating temperature class** OT4: -40 °C ... +70 °C  
Due to heat development in the housing, continuous operation at +70 °C ambient temperature is not recommended, as this could have an impact on the product life.  
**Switch-on extended Operating temperature class** ST1: OTx + 15 °C  
**Temperature variation class** H1: no requirements  
**Shock/Vibration** Category 1, class B  
**Class of supply voltage interruption** S1  
**Supply change-over class** C1  
**Useful life class** L4: 20 years  
**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** IP65 (with closed protective cap)

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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** 145 fit  
**Failure rate at +45 °C** 6908854 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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## Technical data sheet

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### Standards/Certifications

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#### Standards

**EN 50155:2017:** Railway applications – Rolling stock – Electronic equipment – only testing according to chapter 13.3

**EN 50155:2021:** Railway applications – Rolling stock – Electronic equipment – only testing according to chapter 13.3

Withstand voltage test: routine test with 1 s test duration

**EN 50121-3-2:2016+A1:2019:** Railway applications – Electromagnetic compatibility – Part 3-2: Rolling stock – Apparatus

**EN 50124-1:2017:** Railway applications – Insulation coordination – Part 1: Basic requirements – Clearances and creepage distances for all electrical and electronic equipment

**EN 61373:1999:** Railway applications – Rolling stock equipment – Shock and vibration tests

**EN 61373:2010:** Railway applications – Rolling stock equipment – Shock and vibration tests

**EN 61373/AC:2017:** Railway applications – Rolling stock equipment – Shock and vibration tests

**Regulation No. EMC 06:** Technical Rules on Electromagnetic Compatibility - Verification of radio compatibility of rail vehicles with railroad radio services

**EN 45545-2:2020:** 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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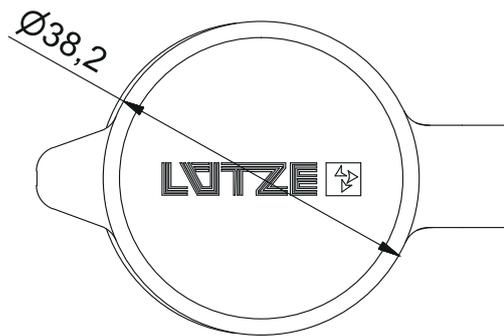
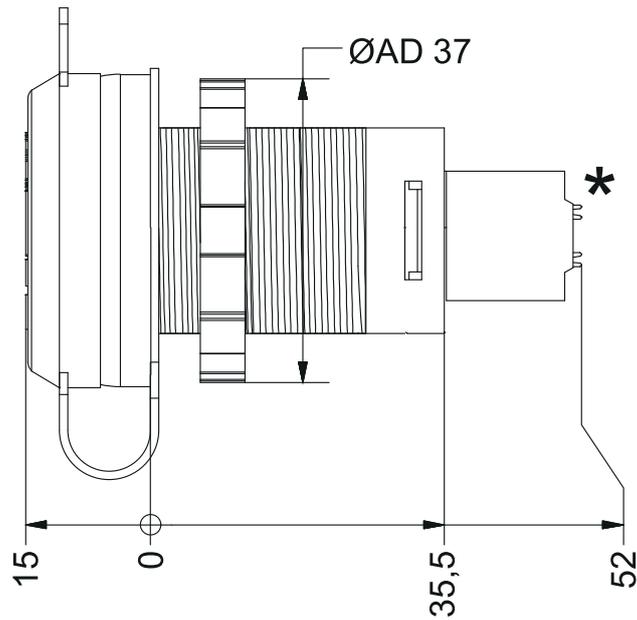
#### Accessories

Not included in the delivery:

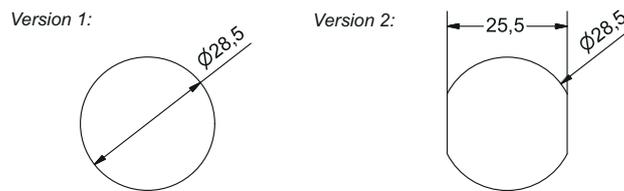
Spring terminal, pluggable with loop-through function (2-pin), part number 819902

Assembly tool, part number 819903

Dimensions



Mounting diagram



Circuit diagram

