

Eckelmann

Operating Manual

CAN Bus Repeater

Transmits data in the E*LDS system between two CAN bus segments



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The current operating manual and information such as data sheets, more detailed documentation and FAQs are available for you online in E°EDP (Eckelmann ° Electronic Documentation Platform) at www.eckelmann.de/elds.

You reach all relevant documents for this component directly using the QR code:



For information about safety and connection instructions, see the operating manual "Basics and general safety and connection instructions".

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1 Safety information



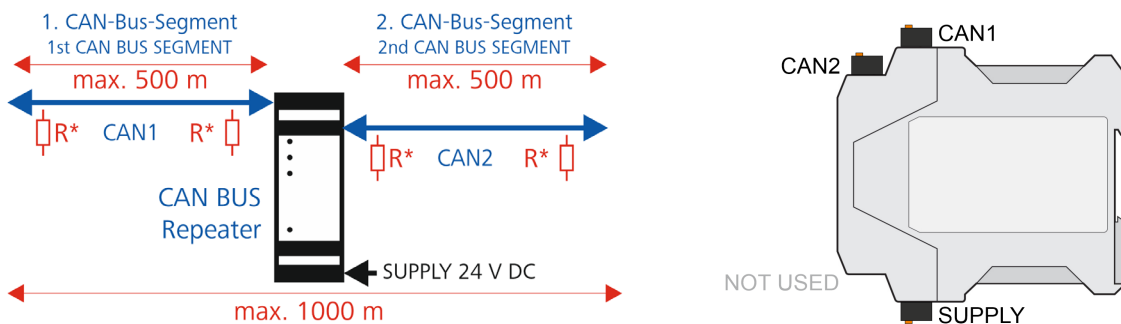
1. Commissioning and operation of the devices may only be performed by **qualified personnel**. "Qualified personnel" as defined by these safety instructions means persons who have the authorisation to commission, ground and label devices, systems and circuits in accordance with safety technology standards.
2. The faultless and safe operation of the device requires proper transport, appropriate storage, placement and installation, as well as careful operation and maintenance.
3. Mounting, positioning and wiring may **only be done when the power supply to the device has been disconnected**.
4. Only supply power using **VDE-tested and CE-marked** power supply units.
5. Ensure **correct wiring** of the power supply and data cables.
6. If the device is brought into the working area from a cold environment, condensation may form. The product must be **completely dry** before being commissioned.
Do not mount or install the product near water or in damp surroundings.
7. Do not dismantle the device and **do not open the housing**.
Opening the housing voids the warranty.

2 Tasks of the CAN bus repeater

A CAN bus repeater is used to interconnect E*LDS components over long distances, as a CAN bus segment is limited to a maximum length of 500 metres. Another, additional benefit of the repeater is that it provides galvanic isolation of the different potentials when connecting two buildings.

The CAN bus repeater connected to the CAN bus of the E*LDS system transmits data from one CAN bus segment (the primary) to a second (secondary). To convert the CAN bus protocols from the first CAN bus segment to the second and vice versa, the CAN bus repeater has its own microcontroller and must be supplied with voltage via an external power supply unit.

Note: The specification "1st CAN bus segment" (CAN1) or "2nd CAN bus segment" (CAN2) is arbitrary and has - with regard to data transmission - no technical relevance and is used for better understanding.



CAN bus repeater as extension, for further variants see chapter Anwendungsbeispiele.

For further information about the CAN bus (e.g. specification of the cable type, permissible cable length, required terminating resistor and correct cable routing, etc.), see the operating manual "E*LDS Basics, Safety Instructions, CAN Bus & Modbus" of the E*LDS Documentation" at https://edp.eckelmann.de/edp/lds/_eB3wqkGRmS.

ATTENTION!

- The CAN bus repeater extends the CAN bus of the E*LDS system by another **500 m**.
- A **maximum of 2 CAN bus repeaters** can be used in the E*LDS system!

Features of the CAN bus repeater

Transmits data via the CAN bus from one CAN bus segment to a second. Often used to extend the CAN bus by a further 500 m and is installed in a plastic housing for DIN rail mounting. Galvanically isolates the two CAN bus segments from each other.

Power supply (8...30 V DC) via external power supply unit

24 V DC power supply unit, part number KGLNT24V1P (required)

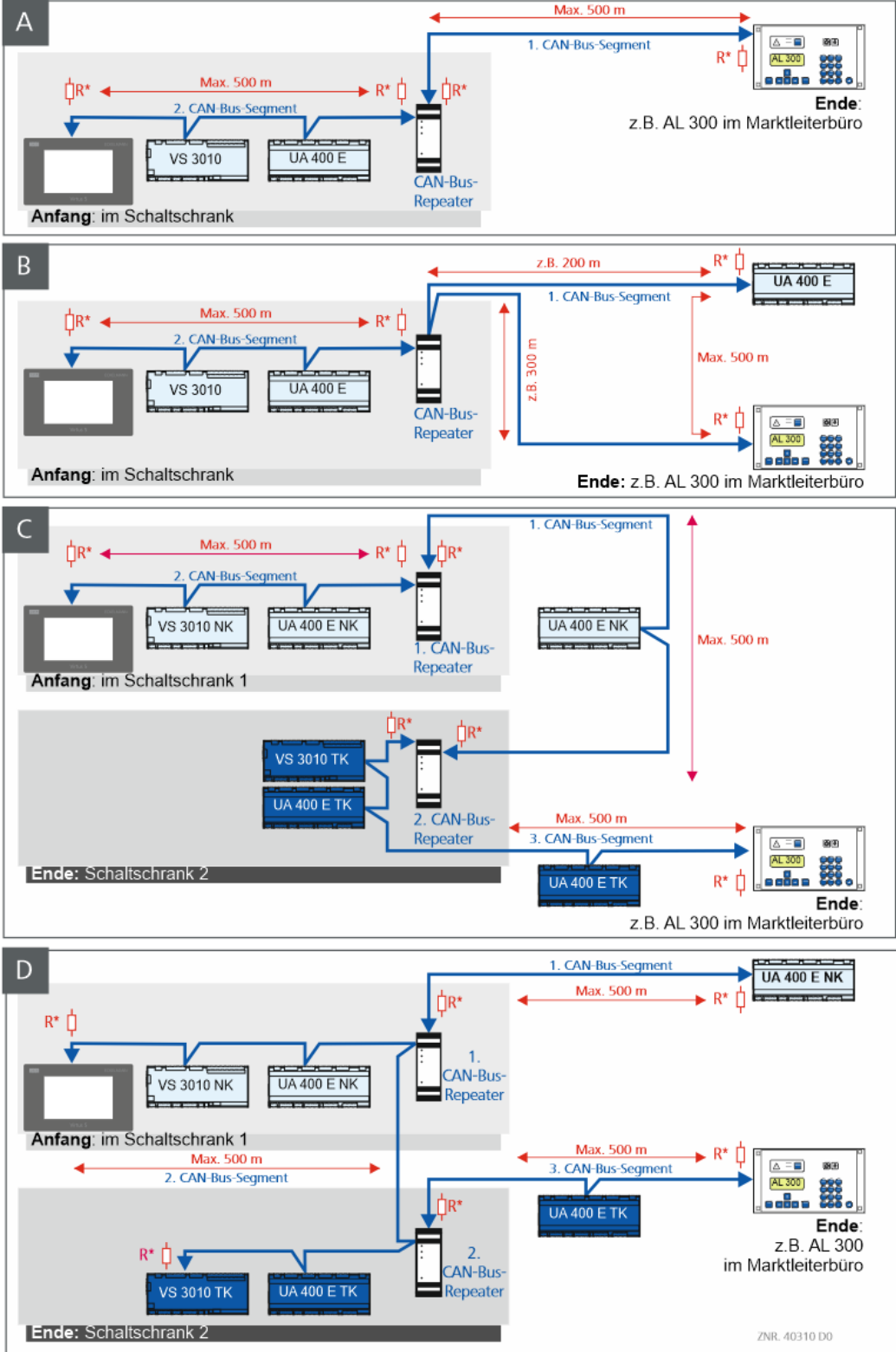
Interfaces

2 x CAN bus according to ISO 11898-2 (High-speed CAN)

Scope of delivery

3 x mating connectors with spring-loaded terminals (Phoenix) for the two CAN bus segments CAN1/CAN2 and the power supply.

2.1 Application examples

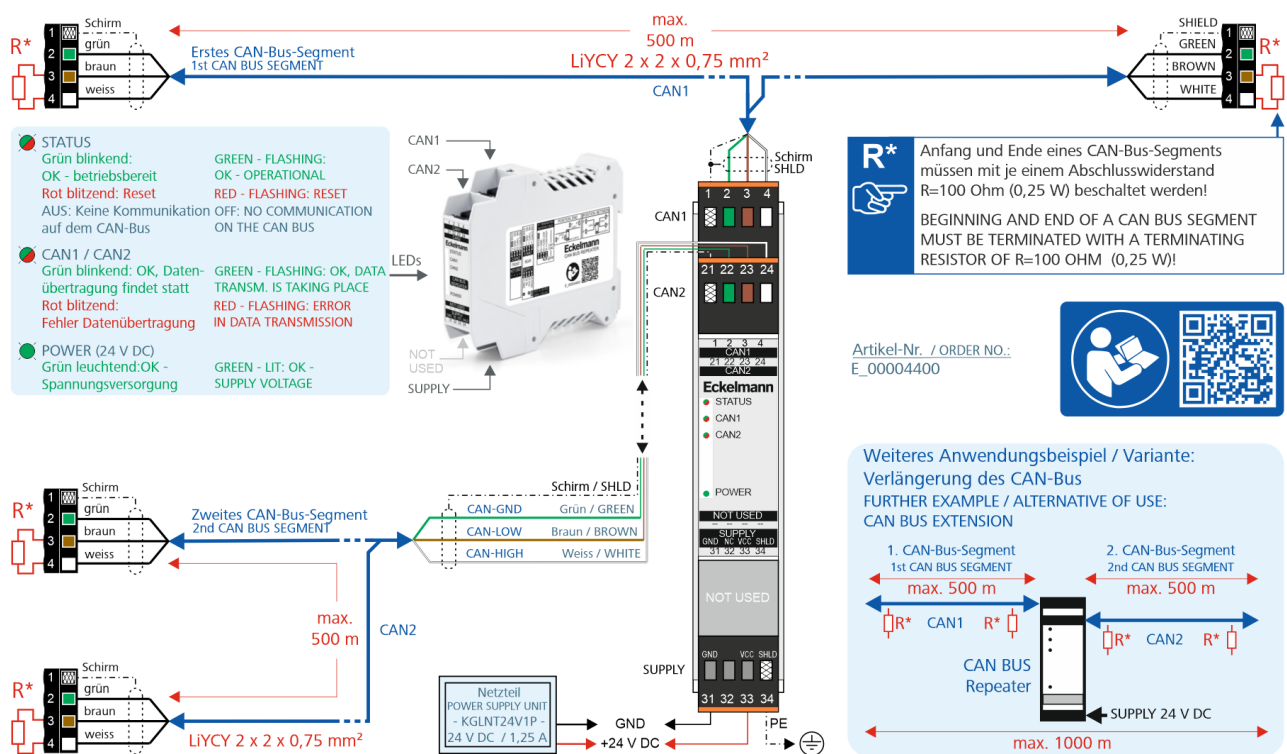


3 Mounting and commissioning of the CAN bus repeater

3.1 Mounting and connection to the CAN bus / CAN bus repeater

Before commissioning the CAN bus repeater, the two upper mating connectors CAN1 (terminals 1/2/3/4) and CAN2 (terminals 21/22/23/24) **must** first be connected to the two CAN bus segments. Then the CAN bus repeater must be connected to the 24 V DC of the power supply unit via the mating connector SUPPLY (terminals 31/32/33/34).

Connection and wiring of the CAN bus repeater



Example: position of the CAN bus repeater in each case in the middle of the two CAN bus segments.

For further information about the CAN bus (e.g. specification of the cable type, permissible cable length, required terminating resistor and correct cable routing, etc.), see the operating manual "E*LDS Basics, Safety Instructions, CAN Bus & Modbus" of the E*LDS Documentation" at https://edp.eckelmann.de/edp/lids/_eB3wqkGRmS.

ATTENTION!

Before the commissioning, all cable connections and the power supply of the coupling module must be checked for correctness and contacting.

Incorrect shielding of the CAN bus results in electromagnetic interference fields.

It must strictly be ensured during the wiring that the cables with shielding are connected properly and correctly.

3.2 Assignment of the mating connectors

	Wire colour	Terminal no. CAN bus	CAN bus repeater	Remarks Cable type: LiYCY 2x2x0.75 mm twisted pair!
CAN1 / CAN2				
SHLD	shield	1 / 21		Connect shield (SHLD) to earth terminals
CAN-GND	green	2 / 22		---
CAN-LOW	brown	3 / 23		The start and end of a CAN Bus segment must each be connected to a terminating resistor R=100 Ohm (0.25 W)!
CAN-HIGH	white	4 / 24		
SUPPLY				
GND	e.g. black	--	31	GND
--	--	--	32	---
VCC	e.g. red	--	33	24 V DC via power supply unit
SHLD	shield	--	34	Connect shield (SHLD) to earth terminals

3.3 Commissioning

The commissioning of the CAN bus repeater requires the following steps:

1. Connect the CAN bus repeater to the first and second CAN bus segments.
2. Connect CAN bus repeater to 24 V DC power supply unit and supply with power.
3. LEDs flash / light green, function OK.

For details, see chapter Montage und Anschluss am CAN-Bus.

3.4 Status LEDs

The CAN bus repeater has various LEDs with the following functions for querying the status or for troubleshooting:

	LED	State	Function
● STATUS ● CAN1 ● CAN2	STATUS	Green - flashing	OK - operational
		Red - flashing	Reset
		OFF	No communication on the CAN bus
● CAN1 ● CAN2	CAN1 / CAN2	Green - flashing	OK - Data transmission is taking place
		Red - flashing	Error in data transmission, communication
● POWER	POWER	Green - lit	OK - supply voltage (8..30 V DC) is applied

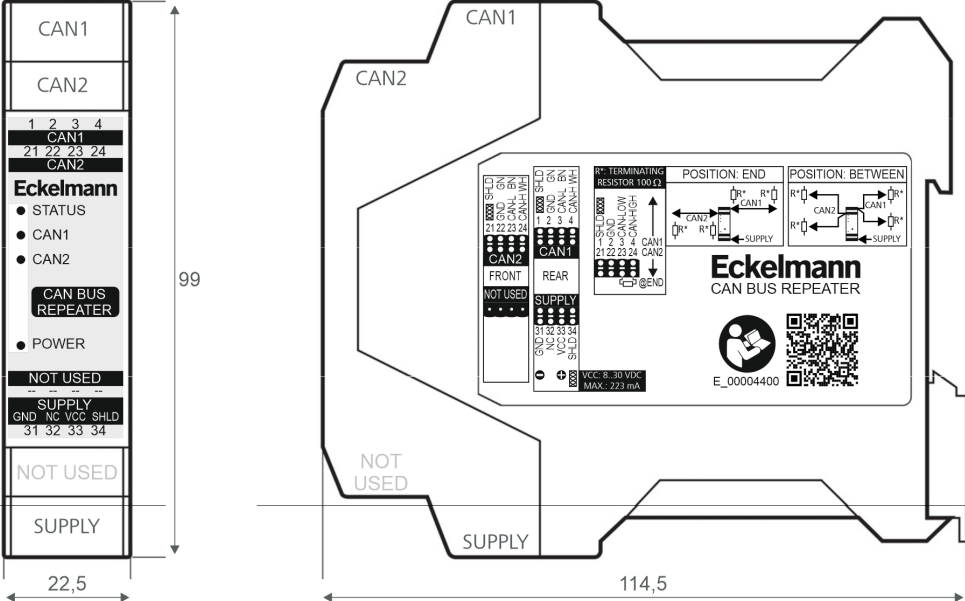
4 CAN Bus Repeater Technical Data

4.1 Electrical data

Technical data	CAN Bus Repeater
Part number	E_00004400
Physical interface	CAN bus according to ISO 11898-2 (High-speed CAN)
Transmission rate	50 kBit/s
Supply voltage	8...30 V DC, max. 223 mA, separate power supply unit (part number KGLNT24V1P) required
Status display	4 x LED
Protection	±1 kV overvoltage protection -60 V reverse polarity protection ±4 kV ESD protection
Galvanic isolation CAN bus	CAN1 is isolated up to 5 kV from CAN2 and the power supply (compliant with IEC 60601-1) CAN2 is isolated from the power supply with 500 V
Temperature range - Operation - Relative humidity - Storage / transport	-40...85 °C 15..90%, non-condensing -55...125 °C
Housing	Plastic, for DIN rail mounting according to DIN EN 60715 TH35
Weight	101 g
Protection rating	IP20
RoHS	EU Directive 2011/65/EU (RoHS 2) and EU Directive 2015/863/EU (revised list of the restricted substances) DIN EN IEC 63000:2019-05; VDE 0042-12:2019-05

4.2 Mechanical Data

For DIN rail mounting according to DIN EN 60715 TH35:



All specifications in mm, device without mating connector