



CAN-Repeater
CRep DS-102-PT
CRep DS-102-PI
User Manual

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Documentation for CAN-Repeater CRep DS-102.

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Our products are continuously improved. Due to this fact specifications may be changed at any time and without announcement.

WARNING: CRep DS-102 hardware and software may not be used in applications where damage to life, health or private property may result from failures in or caused by these components.

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1 Overview

1.1 Attributes

- Short propagation delay due to renunciation of galvanic separation
- Small and robust construction, completely enclosed into epoxy resin
- Screw mounting or installation in cable channel

1.2 General Description

The compact CAN repeater CRep DS-102 transmits and amplifies CAN signals in a protocol transparent way. Each of the CAN connections behaves like a single physical CAN node. CRep DS-102 allows the design of flexible wiring topologies, star and tree structures as well as stub lines can be realized. By selection of the most favourable network topology for the application needs the installation costs can be lowered.

The maximum data rate can be increased if CRep DS-102 is used to optimize the network structure. An increase of the number of nodes in a CAN network is possible through separation into sub networks, each of them connected by CRep DS-102. Each sub network can manage a maximum number of CAN nodes only restricted by the transceiver driver capabilities. With transmission over long distances CRep DS-102 allows signal recovering.

1.3 Sample Applications

- Building installation
- Plant automation
- Special machines manufacturing
- Utility vehicles onboard networks
- Measurement technology

1.4 Ordering Information

CRep DS-102 is available in two versions:

| | |
|--------------|---|
| 12-00-0xx-20 | CRep DS-102-PT-... CAN repeater, physical interface complying with ISO11898, supply line connected (.. inhibit time) |
| 12-00-1xx-20 | CRep DS-102-PI-... CAN repeater, physical interface complying with ISO11898, supply line not connected (.. inhibit time) |

2 Electrical Characteristics

2.1 Absolute Limiting Values

Any (also temporary) stress in excess of the limiting values may cause permanent damage on CRep DS-102 and connected devices. Exposure to limiting conditions for extended periods may affect the reliability and shorten the life cycle of the device.

| Parameter | Min | Max | Unit |
|---|------|------|------|
| Storage temperature | -20 | +80 | °C |
| Operating temperature | 0 | +60 | °C |
| Power supply voltage | -100 | +16 | V |
| Voltage on bus connections | -4 | +16 | V |
| Current over ground (pins 3,6) | -2 | +2 | A |
| Current over signal lines (pins 1, 4, 5, 8) | -500 | +500 | mA |
| Maximum power dissipation (at 60°C) | – | 1000 | mW |

2.2 Nominal values

All values, unless otherwise specified, refer to a supply voltage of 12V and an environmental temperature of 20°C.

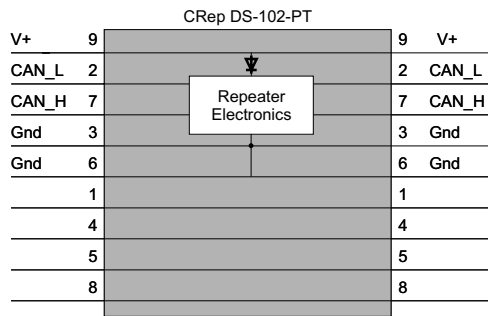
| Parameter | Min | Typ | Max | Unit |
|--|-----|-----|-----|------|
| Current consumption (no load) | – | 68 | – | mA |
| Current consumption (250kBit/s, 100% load) | – | 98 | – | mA |
| Power supply voltage | +7 | – | +14 | V |
| Propagation delay | – | 100 | 175 | ns |

3 Operating Instructions

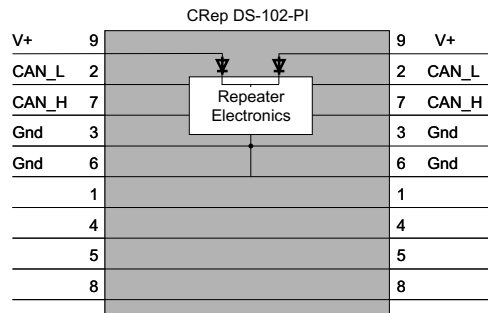
3.1 Layout and Pin Assignment

CRep DS-102 devices include 2 CAN segments, fed to a male and a female plug of type D-Sub 9. The plugs carry the CAN signals and the supply voltage. The following diagrams show internal connections.

CRep DS-102-PT



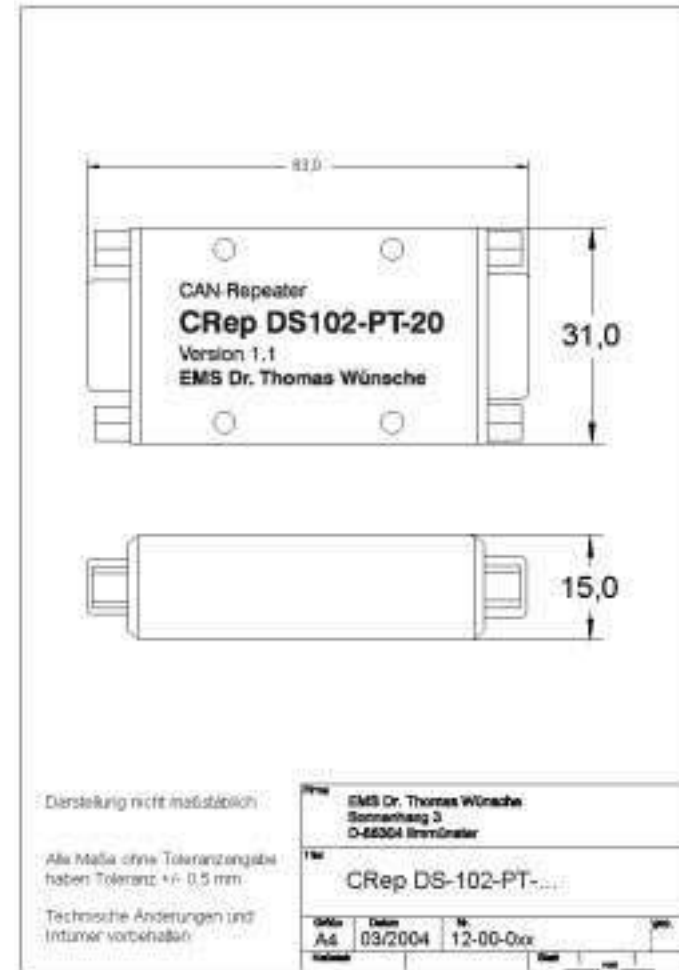
CRep DS-102-PI



The pins 3 and 6 are connected internally.

4 Measurements

All values in [mm].



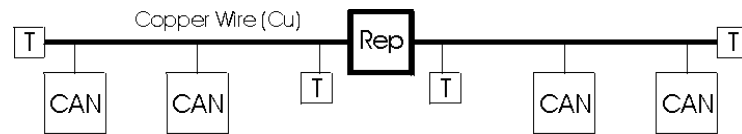
5 Appendix A: Topology examples

CAN busses should always be terminated on both ends, typically using a 120Ohm termination resistor between CAN-High and CAN-Low signal lines.

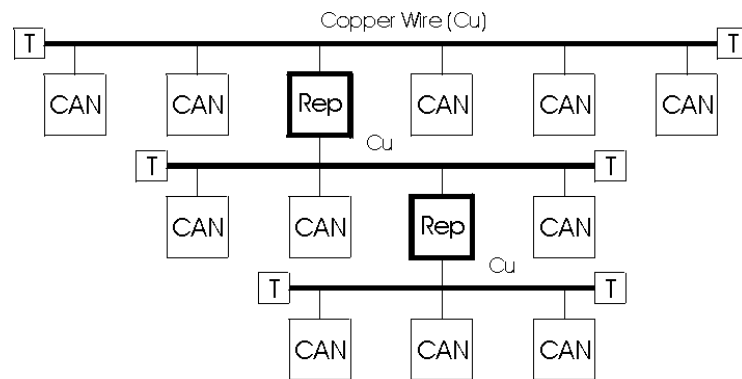
Legend



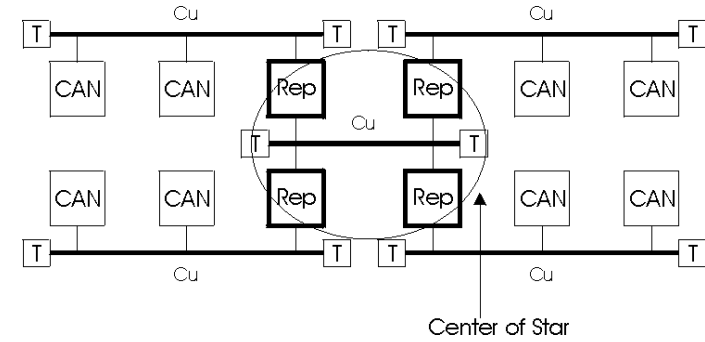
Line topology with repeaters



Tree topology with repeaters



Star topology with repeaters



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