



Technical Information

Technic Note | Connection of RS485 interfaces

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1 Preface

Technic Notes describe additional information of devices and accessories. They are helping constructors and developers to use KEB products in their applications. However, they are considered for information only without responsibility. The selection with regard to their suitability for the intended use can only be made by the user. If you have any questions, please contact KEB Automation KG or your area representative.

The use of our units in the target products is beyond of our control and therefore exclusively the responsibility of the machine manufacturer, system integrator or customer.

This document is not legally part of the certified device documentation. The functions described in the current KEB documentation must always be given priority. The enclosed documents correspond to conditions valid at printing. Misprint, mistakes and technical changes reserved.

This information describes the prevention/ elimination of possible interference sources when connecting serial interfaces in RS485 duplex or half duplex operation.

2 Problem, reason

Disturbances on the communication lines can be caused by different reasons. This can be:

- Induced interferences on the data lines
- Disturbances on the ground potential.
- Potential differences between the ground potentials (for not isolated interfaces).

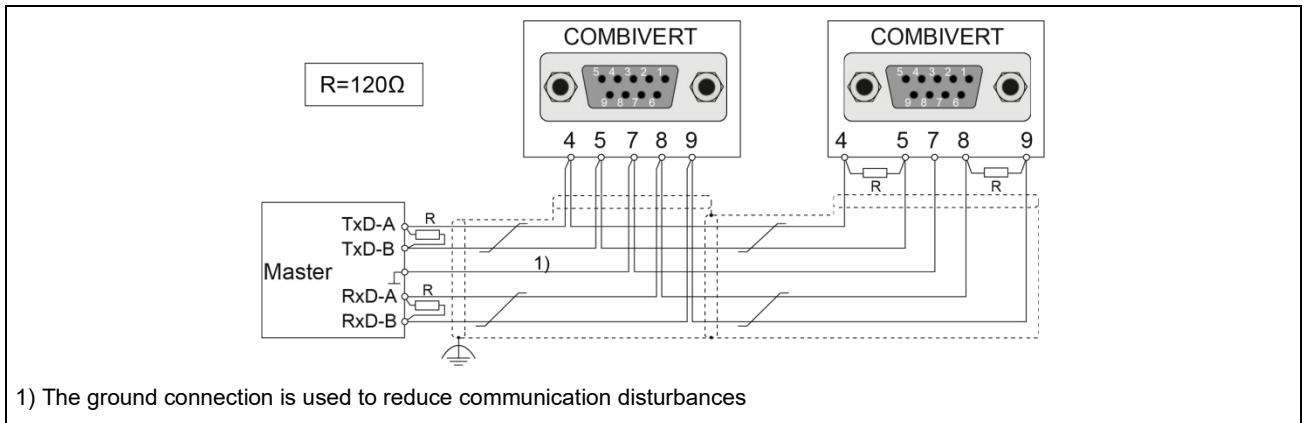
Preventive measures against induced interferences on the data lines

- Use in pairs, twisted and shielded cable.
- Ground outer shield at one side (prior at interference-free side).
- Connect terminating resistors (120 Ω) at both ends on pair of wires of the communication bus
- If available, the internal shielding must be laid at the transmitter to ground.

Preventive measures against induced interferences via the ground potential

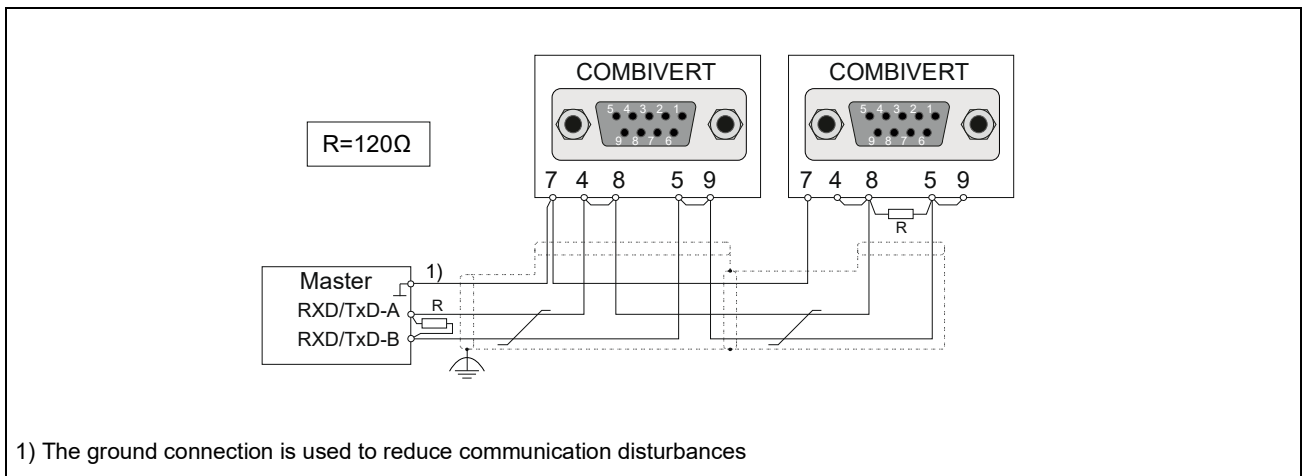
- Connect earth cable between the bus nodes.
- Observe potential differences between the unit grounds (see next page).

2.1 Wiring RS485 full duplex



Picture 1: Wiring RS-485 full duplex

2.2 Wiring RS485 half duplex



Picture 2: Wiring RS-485 half duplex

Potential differences in the ground potential

- Observe potential differences between the unit grounds and max. common mode voltage, in order that the interfaces are not destroyed.
- Lay additional ground cable between the terminals outside of the bus line.



- A biasing can be used if there are still interferences. However, this should be done only once at the communication bus (preferably at the master).





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