▶ **Read and follow these recommendations for the cabling of the RS485 BUS.**

Safety instructions

- **The installation, initial operation and maintenance may be done by a qualified expert with electrical know-how only.**
- **Take notice of the local and statutory rules and regulations and/or the VDE 0100.**

- Please use shielded cables with a cross section of at least 0.5 mm² per wire.
- Please use twisted-pair cable in order to avoid unwanted capacity between the wires.
- Required are two conductors and a shield wire, in total three wires, as well as a recommended outer shield with 20 AWG and an overall shield e.g., made of Aluminum Foil-Polyester Tape.
- We recommend RS485 cable type BELDEN 8762 or similar from different producer.

  20 AWG stranded (7x28) TC conductors, polyethylene insulation, twisted pair, overall Beldfoil® shield (100% coverage), 20 AWG stranded TC drain wire, PVC jacket, three wire in total, cross section 0.5 mm² per wire, outer diameter 5.2 mm², operating voltage 300 V, 79 pF between the wires and 144 pF between wire and shield.

Tips for the correct network cabling

1. Please take care, that although shielded conductors are installed with a distance of at least 20 cm to energized wires in order to avoid disturbed signals.
2. The network cable that meets the VDE requirements for safety extra-low voltage may not be laid in cable channels together with conductors for dangerous voltage (e.g., 230 V AC) or high currents (especially surge currents).
3. Further on, lines running parallel to these network cable should be avoided.
4. The cable should be straight and show no narrow curves or windings.
5. Do not wrap the network cable round energized wires and cross them, if needed, in an angle of 90°.
6. A sufficient distance to sources of electromagnetic fields should be kept, especially to large motors, switch boards, ballasts and antennas of any kind.
7. It is not necessary to lay the network cable in a cable channel but any potential cause for mechanical wear or damage should be avoided. This includes especially dangerous heat sources, wet areas or areas with the risk of spillage of solvents. MOLOScode devices are designed for the use in areas with normal pollution.
8. The network cable should be kept away from sources of electrostatic charge, e.g. conveyor system for plastics. In the case of using MOLOScode in hose couplings of conveyor systems for plastics or other bulk solids that cause static electricity, the hoses have to be equipped with a metallic spiral in order to discharge the electrostatic. It has to be earthed with a connection to the metallic conveying pipe and the metallic hose couplings. The metallic conveying pipe has to be earthed as well.
9. The tension of the cable may not exceed 110 N (11,3 kg) in order to protect against deformation.
10. Make a pre-analysis in order to define the shortest cable course and note the address of any reading device in the network according to the sequence of the arrangement. This constitutes a major benefit in terms of maintenance.
11. Do not interchange the polarity + and – at the connection terminals.
12. Avoid short cable parts in the final connection to the readings-devices in order to enable easy access in the case of maintenance.
13. Mark the start- and end-connections and avoid „opened" parts.
14. The two 120 Ohm terminating resistors (included in the scope of delivery) must be wired as follows:
    - 1 x at the end of the network (after the last reading device in the RS485 bus)
    - 1 x at the start of the RS485 bus at the PC interface on both terminals + / -.
15. Cable braid must be connected to all function earths of the devices and grounded at only one point that should be located near to the control cabinet.
16. Check the distance between the two most distant reading devices before connection all of them.
17. Ensure the proper supply at any interface. An incorrect supply causes malfunction of the interface or damage of the reading devices.
18. Check the correct network integration of all reading devices.
19. If one or more interfaces are unlinked e.g., due to the disconnection of a reading device, the bus will be open. In this case a bridge must be insert in order to closed the bus again and to guarantee the continuity of it.
20. Switch off all interfaces before work at the electrical terminals.
21. Each reading device has a LG-ID (network address) as factory setting. Make certain that no LG-ID is used double in the network.
22. The multiple connection of reading devices with the same LG-ID (network address) could disturb the software operation and block some reading devices. (in this case the normal function can be reconditioned by disconnecting the reading devices with the double LG-ID and switching off-on the power supply of the devices)