

CAN Repeaters

IXXAT repeaters enable the physical coupling of CAN network segments. They can be used to easily extend the common line structure of CAN systems to set-up tree or star topologies. Furthermore, the integrated galvanic isolation provides a build-in protection against over voltage.

In terms of robustness, temperature range and safety, IXXAT repeaters are specially designed for use in an industrial environment.



Typical Industries



Increased system reliability and protection

CAN lines coupled with IXXAT repeaters are independent electric segments that can be optimally terminated in terms of signals, which substantially increases the system reliability.

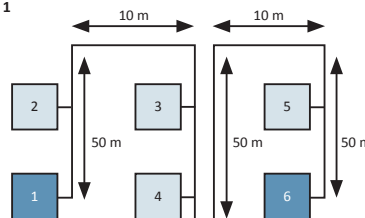
The implemented monitoring function detects lines disturbed by permanent dominant levels. These lines are disconnected automatically, thus allowing the remaining network to continue functioning normally. After the fault has been eliminated, the disconnected segment is automatically reconnected to the network.

Depending on the type of repeater, the CAN lines are protected among each other and against the power supply up to 4 kV. In addition the build-in CAN bus choke provides protection against signal peaks.

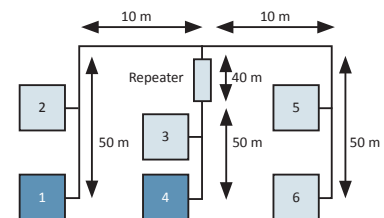
Highlights

- ✓ Cost saving due to simple wiring
- ✓ Increased system reliability
- ✓ Line protection up to 4 kV
- ✓ Almost no influence on real-time behavior
- ✓ Signal conversion between High- and Low-Speed CAN
- ✓ DIN-Rail backbone bus to line up and connect the devices easily
- ✓ Fiber optic enables large distance transmission in areas with high electromagnetic disturbances
- ✓ OEM versions and design in solutions available

Picture 1



Conventional bus structure
The distance between the two nodes furthest apart (1/6) is 220 meters



Extended structure with drop line
The distance between the two nodes furthest apart (1/4 or 4/6) is 150 meters

System extension and increased number of nodes

The freedom of using drop-lines and star topologies simplifies the wiring and allows system layouts which could not be realized using the common line structure (Picture 1).

Furthermore, according to the transceiver output capacities, the division of a CAN system into several subsystems, connected via CAN repeaters, increases the maximum number of bus nodes.

Fast and transparent

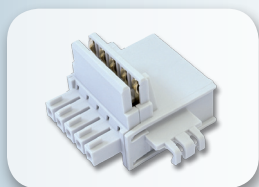
Using repeaters does not influence the real-time behavior of a system because in terms of transmission behavior it corresponds to a network that consists only of lines.

The typical signal delay is between 200-300 ns, which is equal to a 40-60 m line length. Data transmission is transparent, so it can be used with any higher layer protocol (CANopen, DeviceNet) or customer specific protocols.

| TECHNICAL SPECIFICATIONS | | | | | |
|--------------------------------|-------------------------------------------------------|---------------------------------------------------------------|------------------------------------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------|
| Product | CAN-CR200 | CAN-CR210/FO | CAN-CR220 | CAN-Repeater | FO-Repeater |
| Description | Stackable ISO 11898-2 CAN repeater | Stackable ISO 11898-2 to fiber optic converter | ISO 11898-2 CAN repeater with 4 kV galvanic isolation | ISO 11898-2 CAN repeater with low-speed option | ISO 11898-2 to fiber optic converter |
| CAN bus interface | 2 x ISO 11898-2; 1 x ISO 11898-2 DIN rail bus | 1 x ISO 11898-2; 1 x ISO 11898-2 DIN rail bus | 2 x ISO 11898-2 | 2 x ISO 11898-2; optional ISO 11898-2 to ISO 11898-3 | 1 x ISO 11898-2 |
| Integrated CAN bus termination | Switchable | | | Switchable via soldering jumpers | |
| Galvanic isolation | CAN 1 / CAN 2 1 kV, 1 sec. | CAN 1 1 kV, 1 sec. | CAN 1 / CAN 2 / PWR 4 kV, 1 sec. | CAN 1 / CAN 2 1 kV, 1 sec. | CAN 1 1 kV, 1 sec. |
| LED indicators | Transmission, Defect segment | | | | |
| LWL connection | - | F-SMA or ST (fiber optic 50/125 µm duplex) | - | - | ST (fiber optic 50/125 µm duplex) |
| Baudrate | up to 888 kbps | | | | |
| Transmission delay | approx. 200 ns (equal to 40 meter bus length) | approx. 300 ns (equal to 60 meter bus length) | approx. 200 ns (equal to 40 meter bus length) | approx. 200 ns (equal to 40 meter bus length) | approx. 300 ns (equal to 60 meter bus length) |
| Operating temperature | -20 °C ... +70 °C | | | | -20 °C bis +60 °C |
| Power supply | 9-32 V DC, 1.5 W typ., via screw terminals | 9-32 V DC, 3 W typ., via screw terminals | 9-32 V DC, 1.5 W typ., via screw terminals | 9-35 V DC, 1.5 W typ., via screw terminals | 9-35 V DC, 3 W typ., via screw terminals |
| Certifications | CE, FCC | | | CE | |
| Housing, dimensions | Plastic DIN rail housing, approx. 22.5 x 100 x 115 mm | Plastic DIN rail housing, approx. 22.5 x 100 x 115 mm | Plastic DIN rail housing, approx. 22.5 x 100 x 115 mm | Plastic DIN rail housing, approx. 110 x 75 x 22 mm | Plastic DIN rail housing, approx. 110 x 75 x 22 mm |
| Order number | 1.01.0067.44010 | F-SMA plug: 1.01.0068.45010 ST plug: 1.01.0068.46010 | Standard: 1.01.0067.44400 Option 3 kV, 3 min. 1.01.0067.44300 | Standard: 1.01.0064.44000 With Low-Speed: 1.01.0064.46000 | ST plug 1.01.0063.01020 |
| Accessories | T bus connector, Order no. 1.04.0073.00000 | | | | |

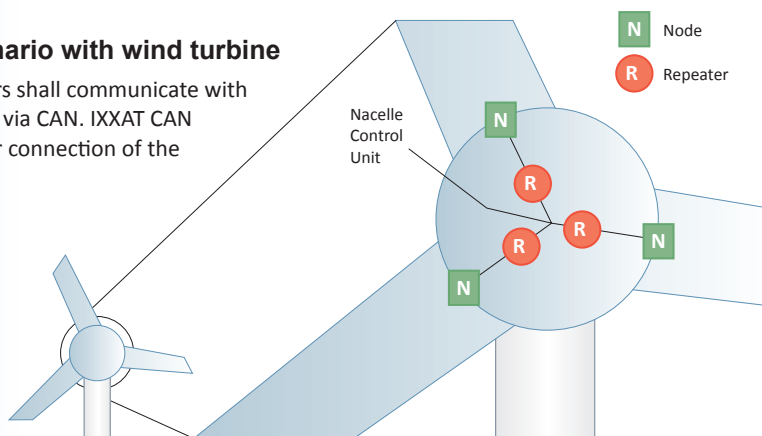
Accessories

The T bus connector enables the backbone bus connection of the stackable repeaters.



Application scenario with wind turbine

Three pitch controllers shall communicate with the master controller via CAN. IXXAT CAN Repeaters enable star connection of the individual blades.



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