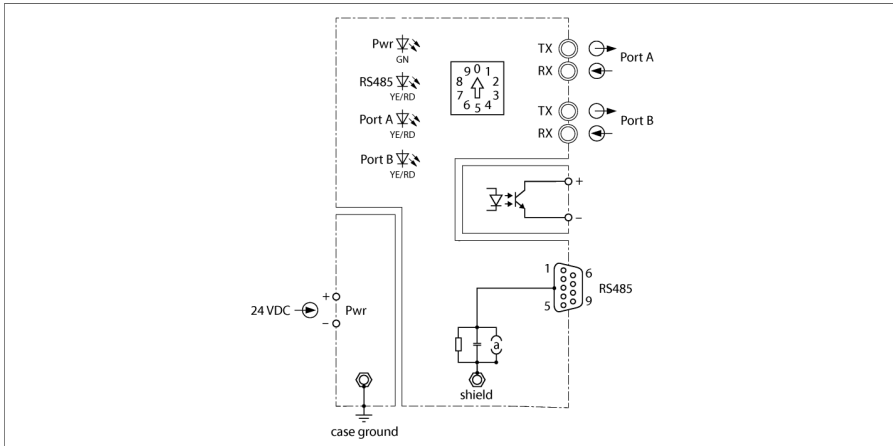


# excom I/O System

## RS485 — Fiber Optic Media Converter for Zone 2

### FOC12-3G



The FOC12... fiber optic media converter converts RS485 signals, e.g. from PROFIBUS-DP or Modbus RTU, on copper cables into optical signals and vice versa. The bus signals can therefore be transmitted from the safe area up to Zone 1 over long distances in a way that is intrinsically safe without potential or interference.

The 2-channel FOC12... has a Sub-D male connector and two fiber optic ports with ST connectors. Two physical segments can be set up as a point-to-point connection in combination with further FOC... using the two fiber optic ports. By connecting several FOC12.... (max. ten) an optical ring can be created. The optical ring increases the availability of the network, since communication in the ring is diverted if a media converter fails or a fiber optic line is interrupted.

The functionality of the media converter is set via a 10-pin rotary coding switch:

- Pos. 0 Profibus-DP segment coupler
- Pos. 3...9 Modbus RTU segment coupler

Transmission rates of 9.6 kbps up to 1.5 Mbps are possible and will be automatically detected in Profibus-DP mode. When using the Modbus RTU protocol, the transmission rate is selected via positions 3...9 of the rotary coding switch.

When using an OM1 fiber optic cable (62.5/125 µm), the minimum transmission range is 2500 m, and for OM2 (50/125 µm), the minimum transmission range is 1500 m.

The signal amplitude, edge steepness and bit width (byte refresh) are processed during the transmission of Profibus-DP, Modbus RTU and byte-oriented serial data telegrams. In addition, the validity of the Profibus-DP telegrams is checked against the start delimiter when the telegrams are received. In this way, faulty Profibus telegrams are not transferred to the next segment.

For diagnostic purposes, four status LEDs (power supply, fiber optic segments, RS485 segment and detection of the transmission rate in the RS485 segment) as well as an alarm output are available.

The family of fiber optic media converters consists of a total of four converters, which differ in the number of fiber optic ports, the RS485 signals and the installation location.

- FOC11-3G, 1-channel
- FOC11EX-2G, 1-channel
- FOC12-3G, 2-channel
- FOC12EX-2G, 2-channel

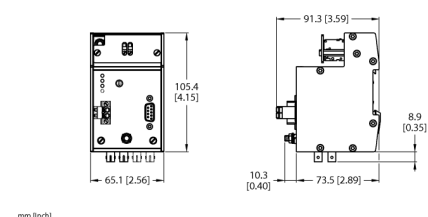
The 3G versions can be installed in Zone 2 and have a standard RS485 interface. The 2G versions with intrinsically safe RS485 interfaces may be installed in Zone 1. In all versions, the fiber optic interface is intrinsically safe, so that all converters can interconnect.

Equipotential bonding is implemented with a threaded bolt that is only connected to the housing. The shielding of the Fieldbus cable is implemented via a separate connection with the option of choosing between capacitive or direct grounding. The housing potential is not connected with the shielding potential.



- Media converter for Profibus-DP, Modbus RTU and byte-oriented serial data telegrams
- Automatic detection of the transmission rate
- Transmission length up to 2.5 km
- Fiber optic ring-capable
- Wire break monitoring
- Intrinsically safe fiber optic interface
- RS485 interface
- Mounting in zone 2 allowed

## Dimensions



Type	FOC12-3G
ID	100000553
Nominal voltage	24 VDC
Operating voltage $U_o$	18...32 VDC
Current consumption	100 mA
Power consumption	≤ 2.4 W
Power dissipation	≤ 3.2 W
Galvanic isolation	Complete galvanic isolation acc. to EN 60079-11, rated voltage 250 V
Test voltage	600 V
Number of channels	2

Transmission rate	9.6 kbps up to 1.5 Mbps
Type of optical fiber	Multimode fiber 62.5/125 μm Multimode fiber 50/125 μm

Ex approval acc. to conformity certificate	IECEX EPS 21.0017X
Ex approval acc. to conformity certificate	EPX 21 ATEX 1058X
Device designation	Ex II 3(1) G Ex ec mc ic [op is Ga] IIC T4 Gc
Device marking	Ex II (1) D [Ex op is Da] IIIC

Diagnostics	Alarm output < 30 V acc. to Type 3 as per IEC 61131-2
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Displays/Operating elements	
Operational readiness	1 × green
State/ Fault	3 × yellow/red

Electrical connection	1 × Ex e terminal, 2-pin, screw connection 1 × 2-pin removable terminal block, spring-type connection 4 × BFOC/2.5 (St) male connector
Bus connection	1 × SUB-D male connector, 9-pin

Housing material	Anodized aluminium
Connection mode	snap-fit on DIN rail (DIN 60715)
Protection class	IP20
Ambient temperature	-40...+70 °C
Relative humidity	≤ 93 % at 40 °C acc. to IEC 60068-2-78
Vibration test	Acc. to IEC 60068-2-6
Shock test	Acc. to IEC 60068-2-27
EMC	Acc. to EN 61326-1 Acc. to Namur NE21
MTTF	63 years acc. to SN 29500 (Ed. 99) 40 °C
Dimensions	65 x 105 x 73.5 mm

Approvals	ATEX cFMus cFM IECEX KOSHA UKCA CE
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