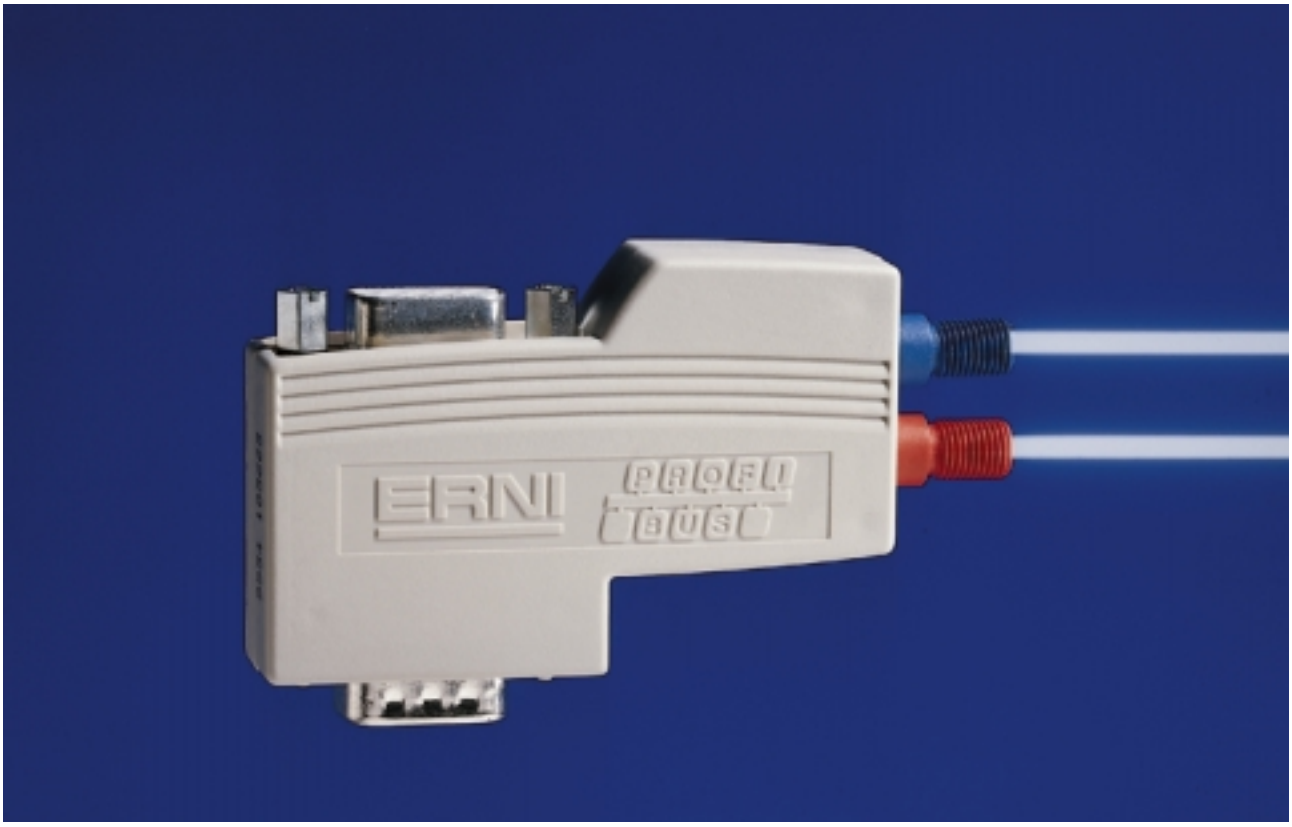
ERbic Profibus Fiber-Optic Transceiver

850-nm- und 660-nm-versions available



General

The ERbic Profibus Fiber-Optic Transceiver converts the electrical signals of the Profibus interface into optical signals. Data transmission is effected bidirectionally, with data transparency in half-duplex mode. The optical parameters follow the Optical Transmission Technology Directive for the Profibus. Profibus systems with transmission speeds up to 1.5 MBit/s are supported. The following design features are worthy of particular note: the Sub-D pin connector for fast connection to the 9 pin Profibus interface as well as the angled design which provides for a load-free routing of the optical fibers. The ERbic system allows the copper and optical fiber transmission technologies to be combined in that, using the D-Sub female connector of the Fiber-Optic Transceiver to connect the copper transmission path by means of an ERbic Profibus version. The ERbic Profibus Fiber-Optic Transceiver is available as a 850nm version for multimode glass fibres (50/125µ or 62,5/125µ) and as a 660nm version for polymer fibres (1000µ-PMMA) or HCS fibres (200/230µ). The multimode version is offered in ST connection technology, the polymer /HCS version in FSMA connection technology.

Part Number:

POF / HCS version: 124686
Glass fiber version: 124685

Customized fiber optic cables are available on request.

Technical Data

Version	POF	HCS	Glass
Fiber	1000µ PMMA	200/230µ	50/125µ ;62,5/125µ GI glass fibre
Transmission Distance	50 m (+reserve)	300 m (+reserve)	1500 m (+reserve)
Wavelength	660 nm		850nm
Optical Connector	FSMA		ST
Data Rate	DC - 1,5 MBit/s		
Power Supply	5 V DC (± 5%) (Sub-D)		
Current Consumption	max. 100 mA		
Electrical Connector	Sub-D connector, 9-way, pin		
Pin Assignment	1: Shield, 8: Data A, 3: Data B, 6: +5V, 5: Gnd		
Housing	Plastic		
Operation Temperature	0 to +65 °C		
Storage Temperature	-25 to +85 °C		
Humidity	10 to 90 % (non condensing)		
EMV	CE according to EMV 89/336/EWG		

http://connect.erni.com/contact/

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ERNI

ERbic PROFIBUS FO Transceiver

Order Numbers:

POF Version: **124686**
Glass Version: **124685**

1. Product Description:

The ERbic PROFIBUS FO transceiver converts electrical PROFIBUS signals into optical signals. The data transmission is semi-duplex and bi-directional. PROFIBUS systems with data rates up to 1.5 MBit/s are supported.
To ensure the compatibility with other PROFIBUS units the optical parameters of the ERbic FO transceivers are leaned against the guideline 'Optical Data Transmission for PROFIBUS'.

The ERbic PROFIBUS transceiver is available in two different versions:

- **POF Version**: for short transmission distances with a 1000µ PMMA fiber (POF) or a 200/230µ HCS fiber, wavelength 660 nm, FSMA connector.
- **Glass Version**: for longer transmission distances with a 50/125µ or 62.5/125µ GI glass fiber, wavelength 850 nm, ST Connector.

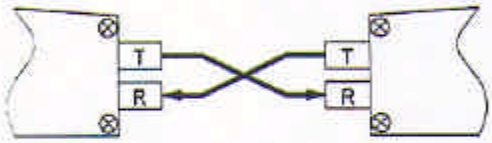
2. Installation:

Connect the ERbic FO transceiver to the PROFIBUS interface via the 9-way SUB-D connector. Tighten the fixing screws by hand. Data lines and power supply are supplied over the PROFIBUS interface.

The fiber optic cables are connected with the appropriate FO connectors (FSMA or ST):

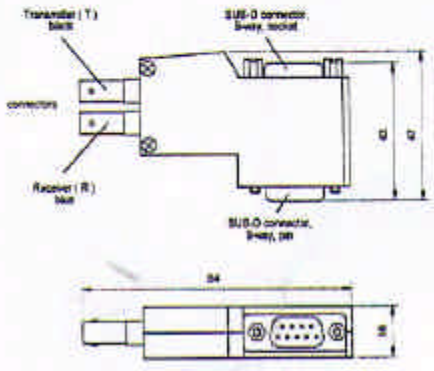
- **FSMA Adapter**: Attach the fiber optic cable to the FSMA plug connector and secure the connector by tightening the fixing screw by hand.
- **ST Adapter**: Attach the fiber optic cable to the ST plug connector and secure the connector with a quarter turn of the bayonet catch.

!Caution! Take care that both fibers are crossed. Transmitter (T) is connected to the receiver (R) and vice versa. One of the fibers is marked.:

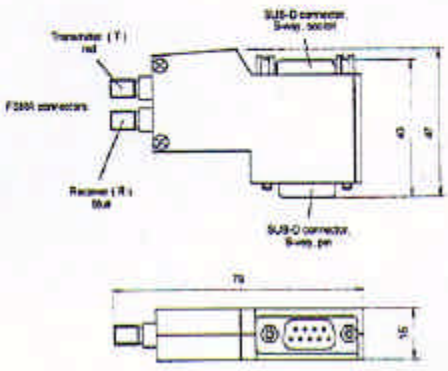


Note: If a ERbic FO transceiver is linked with a unit which possesses an echo-function, this echo-function must be deactivated (transparent data transmission)!

3. Building Up and Measurements:



Glass Version



POF Version

4. Electrical Cable:

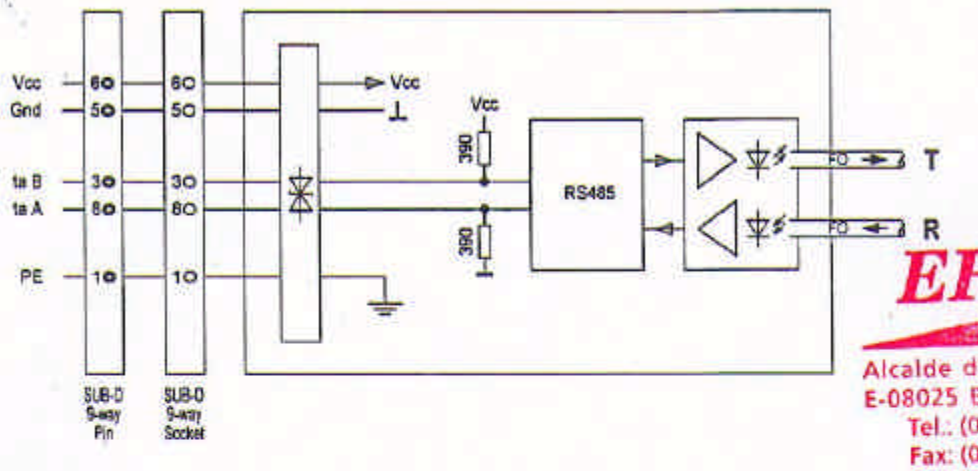
The 9-way SUB-D socket can be equipped alternatively with an additional FO transceiver or with an electric cable. The type of the cable should be according to the PROFIBUS guideline. Following tables shows the parameters of cable 'Type A' according EN 50 170 as well as the permitted cable lengths vs. the data rate:

characteristic impedance	135 ... 165	[Ω]
capacitance per unit length	< 30	[pF/m]
loop resistance	110	[Ω/km]
diameter of wire	0,64	[mm]
cross section of wire	> 0,34	[mm²]

data rate	cable length
[kBit/s]	[m]
9,6	1200
19,2	1200
93,75	1200
187,5	1000
500	400
1500	200

The length of the cable means also the maximum expansion of the (electrical) PROFIBUS segment. **To avoid signal reflections at the ends of the bus the conductor must be terminated at both ends with a resistor of 220 Ω!** The spur lines must be kept very short (< 2 m). The number of electrical users within one segment is limited to 32.

5. Block Diagram:



6. Technical Data:

Model	POF / HCS	Glass
Wavelength	660 nm	850 nm
Fiber	1000µ PMMA 200/230µ HCS	62.5/125µ GI 50/125µ GI
Optical Connector	FSMA	ST (B-FOC)
Transmission Distance	**40 m** (60 m)* (POF) **300 m** (600 m)* (HCS)	**1700 m** (2500 m)* (62.5/125µ) (2000 m)* (50/125µ)
Data Rate	DC - 1,5 Mbit/s	
Power Supply	5 V DC (±5%), via D-Sub	
Current Consumption	100 mA max.	
Idle State	Light OFF	
Pin Assignment	1 Shield, 8 Data-A, 3 Data-B, 6 Vcc, 5 Gnd	
PullUp, PullDown	390 Ω each	
Measurements	79 x 47 x 16	84 x 47 x 16
Operating Temperature	0 to +65 °C	
Storage Temperature	-25 to +85 °C	
Humidity	10 - 90 % (non condensing)	
EMV	CE according EMV-Richtlinie 89/336/EWG	

* The values in brackets are meant for point-to-point-links between two ERbic FO transceivers, the fat printed values are the transmission distances for links between an ERbic transceiver and any other optical PROFIBUS interface.