

Manual

POF Interface Converter for DIN rail mounting



Model **11201, 41201**
 61201, 81201

Release 2.3

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Subject to error and alteration:

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Carry out your work on or with W&T products only to the extent that they are described here and after you have completely read and understood the manual or guide. We are not liable for unauthorized repairs or tampering. When in doubt, check first with us or with your dealer.

Wiesemann & Theis offers with their Industry Interfaces for plastic optical fibers a complete family of interface converters suitable for top hat rail mounting and powered by the 24V supply commonly used in industrial environments.

Trouble-free, noise-immune operation of the associated components is ensured by integrated galvanic isolation between the serial interface and the power supply.

The W&T POF interface family is described on the following pages along with the corresponding technical data and including connection examples.

For up-to-date information on new developments, see our Internet site at <http://www.wut.de> or check the e-mail short notices at the W&T Interface Club, which you can also subscribe to from the W&T Homepage.

Index

General Characteristics and Important Notes	29
RS232 <> POF Converter, Model 81201	31
RS422/RS485 <> POF Converter, Model 61201	35
20mA <> POF Converter, Model 41201	41
POF Repeater, Model 11201	45

General Characteristics and Important Notes

Housing and setting the DIL switches

All W&T Industry Interface converters for plastic optical fibers are integrated into a plastic housing for mounting on DIN rails.

Some Interface models have DIL switches inside the housing. To set these switches, you must open up the housing. We recommend screwing a SUB-D plug with body onto the Interface and using the plug to help pull the housing cover out of the housing body.

Display elements

The interface converters feature two LED's, with the *Power* LED indicating correct supply voltage and the *Data* LED data communication in both directions.

Power Supply

The W&T POF Industry Interfaces in DIN rail housing have a wide-range supply voltage input and can be powered by an external voltage of between 12 and 24 V AC or DC.

The power supply must in any case ensure reliable isolation of the low-voltage side from the mains in accordance with EN60950.



The supply voltage feed is reverse polarity protected and is accomplished using the included plug-in screw terminal.

Galvanic isolation and ESD protection

The serial ports of all W&T Industry Interface Converters for plastic optical fibers are isolated from the power supply with a dielectric strength of 1000 volts DC.

All signal lines of the interface converters are protected against electrostatic discharge of up to 15kV according to IEC 801-2, level 4.

Electromagnetic compatibility and electrical safety

All W&T Interface converters meet the limits for noise immunity in industrial environments as well as emissions in commercial and residential areas, so that use of these converters is not subject to any EMC based restrictions.

With a maximum permissible supply voltage of 24V AC/DC (SELV), the described devices do not fall under the Low-Voltage Directive. The power supply must in any case ensure reliable isolation of the low-voltage side from the mains in accordance with EN60950.

The current Declarations of Conformity for the W&T Interface converters can be downloaded in the Internet.

RS232 ↔ POF Converter, Model 81201

The W&T Interface Converter Model 81201 permits bi-directional connection of RS232 devices with components, which are equipped with plastic fiber optics interface.

Function

The Interface Converter supports one data line in each direction and transmits data over a distance of max. 100 meters. The transmission medium is standard duplex plastic fiber optic cable, which is inexpensive and extremely easy to work with and install. The use of fiber optics as a transmission medium ensures perfect galvanic isolation between the connected devices and clean transmission even in noise-prone environments.

Connections

The fiber optic connection for the interface is configured as a self-locking coupling for duplex plastic fiber optics, with the RS232 interface formatted as DB9 male connector. Refer to the following table for connector pin assignments:

Pin#	RS232 signal
2	data in
3	data out
4	active level
5	signal GND
7	active level

Assembly of the fiber optic cable

Connecting the plastic fiber optic cable to the interface requires no special tools:

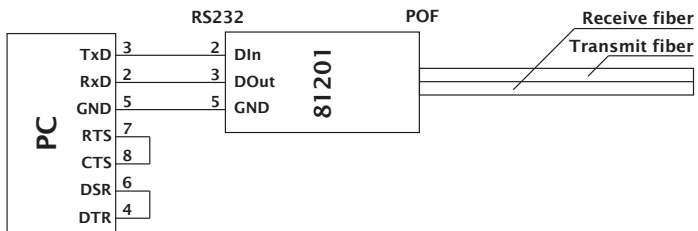
- Trim the fiber optic cable to the desired length using a sharp knife. Make your cut as close to a right angle to the longitudinal axis of the cable as possible. A simple cut is generally sufficient, with no reworking required.
- Separate the individual duplex conductors back from the cut point to a distance of around 2cm.
- Pull the locking levers on the fiber optic female connector back towards the module along the upper side of the coupling.
- At the same time insert the separated end of the fiber optic duplex line into the fiber optic coupling female.
- Releasing the locking levers locks the fiber optics into the coupling.
- To release, pull the two locking levers on the top of the coupling towards the module, and pull the fiber optic cable out of the female.

The arrows on the top side of the coupling clearly show the location of the emitter and receiver lines.

Please note that when connecting two fiber optic components, the emitter of the first must always be connected to the receiver channel of the second component. A visible red light beam is always sent along with data, so that the sending line can always be easily identified.

Applications

RS232 <> POF application without hardware handshake



Technical Data

Baud rate:	0..115,200 baud
Data format:	any format
Supported signals:	RxD, TxD
POF adapter:	Integrated socket with automatic interlocking of the fiber-optic cable
POF medium:	Duplex plastic optical fiber cable 2.2 x 4.4 mm, fiber diameter of 980µm
Max. distance:	100m
RS232 adapter:	9-pin male SUB-D adapter
Power supply:	12..24V DC/AC
Current consumption:	approx. 130mA @12V DC
Power connection:	Plug-in screw terminal, 5.08mm spacing, labeled „L+“ and „M“
Electrical Isolation:	Serial port from power supply with a dielectric strength of 1000 volts DC
Ambient temperature:	storage: -40..+70°C operation: 0..+50°C
Relative humidity:	5..95% rH (non-condensing)
Housing:	small plastic housing for top hat rail mounting
Dimensions:	105x75x22mm
Device weight:	approx. 120g
Delivery:	RS232 <-> POF Converter

RS422/RS485 <> POF Converter, Model 61201

The W&T Interface Converter Model 61201 permits bi-directional connection of RS422 and RS485 devices with components, which are equipped with a plastic fiber optics interface.

Function

The Interface supports one data line in each direction and transmits data over a distance of max. 100 meters. The transmission medium is standard duplex plastic fiber optic cable, which is inexpensive and extremely easy to work with and install. The use of fiber optics as a transmission medium ensures perfect galvanic isolation between the connected devices and clean transmission even in noise-prone environments.

Connections

The fiber optic connection for the interface is configured as a self-locking coupling for duplex plastic fiber optics, with the RS422/RS485 interface formatted as DB9 male connector. Refer to the following table for connector pin assignments:

Pin#	RS422/485 signal
1	data out A (-)
2	data in A (-)
5	signal GND
6	data out B (+)
7	data in B (+)

Assembly of the fiber optic cable

Connecting the plastic fiber optic cable to the interface requires no special tools:

- Trim the fiber optic cable to the desired length using a sharp knife. Make your cut as close to a right angle to the longitudinal axis of the cable as possible. A simple cut is generally sufficient, with no reworking required.
- Separate the individual duplex conductors back from the cut point to a distance of around 2cm.
- Pull the locking levers on the fiber optic female connector back towards the module along the upper side of the coupling.
- At the same time insert the separated end of the fiber optic duplex line into the fiber optic coupling female.
- Releasing the locking levers locks the fiber optics into the coupling.
- To release, pull the two locking levers on the top of the coupling towards the module, and pull the fiber optic cable out of the female.

The arrows on the top side of the coupling clearly show the location of the emitter and receiver lines.

Please note that when connecting two fiber optic components, the emitter of the first must always be connected to the receiver channel of the second component. A visible red light beam is always sent along with data, so that the sending line can always be easily identified.

Operating Mode

The interface can be set for three operating modes by DIP switch setting on the RS422/RS485 interface module. The selectable operating modes are briefly described here:

RS422, RS485 4-wire bus master application

One data channel and one handshake channel in each direction are available. The RS422/RS485 receivers and transmitters are always active in this operating mode.

RS485, 4 wire / 2-wire application with echo, automatic control

One data channel in each direction is available. The RS485 output driver is activated automatically with each transmission of data, and goes to the high impedance state again after the end of transmission. The RS485 receiving channel is always active in this operating mode.

RS485, 2 wire application without echo, automatic control

One data channel in each direction is available. The RS485 output driver is activated automatically with each transmission of data, and goes to the high impedance state again after the end of transmission. The RS485 receiving channel is deactivated when the driver is on, but is switched on when the driver is in the high impedance state.

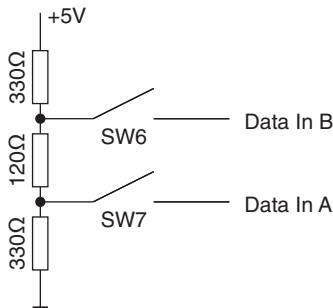
Setting the operating modes

Please see the following table for an explanation of the operating mode DIP switch:

Operating mode	SW1	SW2	SW3	SW4	SW5	SW8
RS422, RS485, 4-wire bus master	OFF	OFF	OFF	ON	OFF	OFF
RS485, 4-wire bus system	OFF	ON	OFF	ON	OFF	OFF
RS485, 2-wire bus system	ON	ON	OFF	ON	OFF	OFF

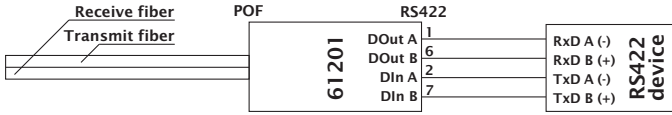
Termination

For all RS485 operating modes it is essential that the bus system be terminated with a termination network which assures a defined rest state in the high-impedance phases of bus operation. The bus system can be connected to a termination network by closing switches #6 and #7 on the interface module:

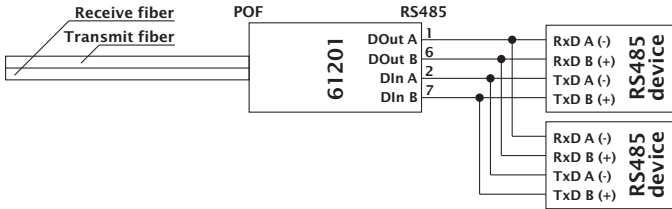


Applications

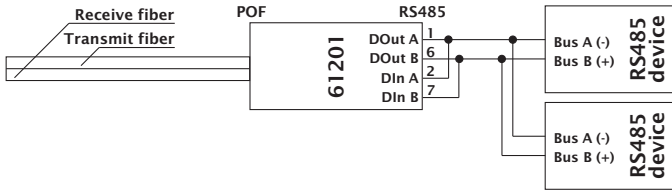
RS422 <> POF application



RS485 4-wire bus master <-> POF application



RS485 2-wire <-> POF application



Technical Data

Operating modes:	RS422 RS485 2/4 wire mode with automatic control
Switchover delay:	approx. 10 μ s from send to receive for RS485 automatic control (can be factory changed on request)
Baud rate:	0..115,200 baud
Data format:	any format
Supported signals:	RxD, TxD
Termination:	Switchable termination network for RS485 operation
POF adapter:	Integrated socket with automatic interlocking of the fiber-optical cable
POF medium:	Duplex plastic optical fiber cable 2.2 x 4.4 mm, fiber diameter of 980 μ m
Max. distance:	100m
RS232 adapter:	9-pin male SUB-D adapter
Power supply:	12..24V DC/AC
Current consumption:	approx. 160mA @12V DC
Power connection:	Plug-in screw terminal, 5.08mm spacing, labeled „L+“ and „M“
Electrical Isolation:	Serial port from power supply with a dielectric strength of 1000 volts DC
Ambient temperature:	storage: -40..+70°C operation: 0..+50°C
Relative humidity:	5..95% rH (non-condensing)
Housing:	small plastic housing for top hat rail mounting
Dimensions:	105x75x22mm
Device weight:	approx. 120g
Delivery:	RS422/RS485 <> POF Converter

20mA <> POF Converter, Model 41201

The W&T Interface Converter Model 41201 permits bi-directional connection of 20mA devices with components, which are equipped with a plastic fiber optics interface.

Function

The Interface supports one data line in each direction and transmits data over a distance of max. 100 meters. The transmission medium is standard duplex plastic fiber optic cable, which is inexpensive and extremely easy to work with and install. The use of fiber optics as a transmission medium ensures perfect galvanic isolation between the connected devices and clean transmission even in noise-prone environments.

Connections

The fiber optic connection for the interface is configured as a self-locking coupling for duplex plastic fiber optics, with the 20mA interface formatted as DB9 male connector. Refer to the following table for connector pin assignments:

Pin#	20mA signal
1	data out 20mA
2	data out +
3	data out -
4	data out GND
5	halfduplex control
6	data in 20mA
7	data in +
8	data in -
9	data in GND

Assembly of the fiber optic cable

Connecting the plastic fiber optic cable to the interface requires no special tools:

- Trim the fiber optic cable to the desired length using a sharp knife. Make your cut as close to a right angle to the longitudinal axis of the cable as possible. A simple cut is generally sufficient, with no reworking required.
- Separate the individual duplex conductors back from the cut point to a distance of around 2cm.
- Pull the locking levers on the fiber optic female connector back towards the module along the upper side of the coupling.
- At the same time insert the separated end of the fiber optic duplex line into the fiber optic coupling female.
- Releasing the locking levers locks the fiber optics into the coupling.
- To release, pull the two locking levers on the top of the coupling towards the module, and pull the fiber optic cable out of the female.

The arrows on the top side of the coupling clearly show the location of the emitter and receiver lines.

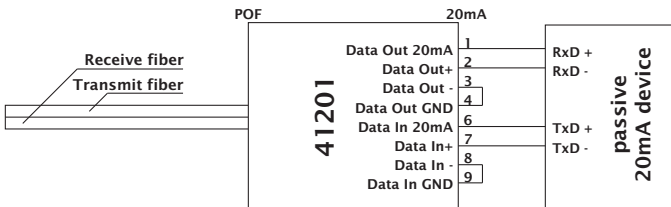
Please note that when connecting two fiber optic components, the emitter of the first must always be connected to the receiver channel of the second component. A visible red light beam is always sent along with data, so that the sending line can always be easily identified.

Applications

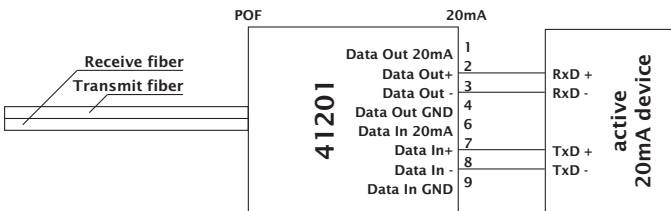
A GND level signal on Pin 5 of the TTY connector will place the 20mA interface of the converter in half-duplex mode whereby an echo of the sent signals is suppressed.

The converter can be used as an active or passive 20mA component. In the active mode the interface supplies the current required by the respective 20mA loop, while in the passive mode the loop current must be supplied by the connected device. The operating mode can be selected for both loops separately. Examples of interface switching into active/ passive mode are shown on the following drawings:

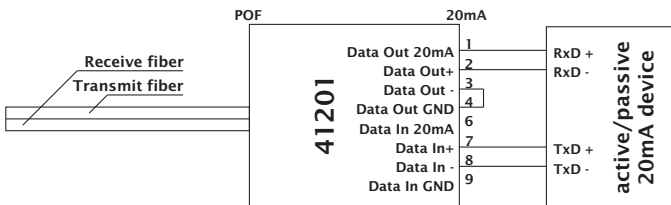
Interface Tx and Rx loop active



Interface Tx and Rx loop passive



Interface Tx loop active, Rx loop passive



Technical Data

Operating modes:	active or passive mode
Baud rate:	0..19,200 baud
Data format:	any format
Supported signals:	RxD, TxD
POF adapter:	Integrated socket with automatic interlocking of the fiber-optic cable
POF medium:	Duplex plastic optical fiber cable 2.2 x 4.4 mm, fiber diameter of 980µm
Max. distance:	100m
RS232 adapter:	9-pin male SUB-D adapter
Power supply:	12..24V DC/AC
Current consumption:	approx. 120mA @12V DC
Power connection:	Plug-in screw terminal, 5.08mm spacing, labeled „L+“ and „M“
Electrical Isolation:	Serial port from power supply with a dielectric strength of 1000 volts DC
Ambient temperature:	storage: -40..+70°C operation: 0..+50°C
Relative humidity:	5..95% rH (non-condensing)
Housing:	small plastic housing for top hat rail mounting
Dimensions:	105x75x22mm
Device weight:	approx. 120g
Delivery:	20mA <> POF Converter

POF Repeater, Model 11201

The W&T Fiber Optic Repeater Model 11201 allows two components with plastic fiber optic interfaces to be connected over a distance of more than 100 meters.

Function

As a rule, the transmission distance between two devices with plastic fiber optic interfaces is limited by the high attenuation factor of the fiber optic cable to a maximum of 100 meters. The Repeater is inserted in the center of a long transmission line and amplifies the received light signals, restoring them to their original intensity. By dividing the transmission line into several 100-meter fiber optic segments, reliable data transmission even over very long distances can be achieved. The transmission medium is standard duplex plastic fiber optic cable, which is inexpensive and extremely easy to work with and install. The use of fiber optics as a transmission medium ensures perfect galvanic isolation between the connected devices and clean transmission even in noise-prone environments.

Connections

The fiber optic connection for the repeater is configured as a self-locking coupling for duplex plastic fiber optics.

Assembly of the fiber optic cable

Connecting the plastic fiber optic cable to the interface requires no special tools:

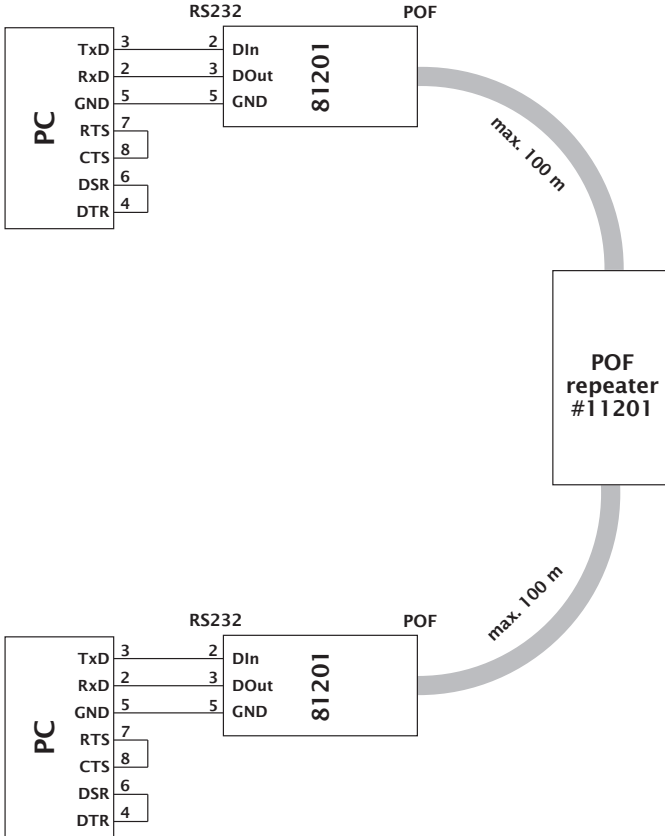
- Trim the fiber optic cable to the desired length using a sharp knife. Make your cut as close to a right angle to the longitudinal axis of the cable as possible. A simple cut is generally sufficient, with no reworking required.
- Separate the individual duplex conductors back from the cut point to a distance of around 2cm.
- Pull the locking levers on the fiber optic female connector back towards the module along the upper side of the coupling.
- At the same time insert the separated end of the fiber optic duplex line into the fiber optic coupling female.
- Releasing the locking levers locks the fiber optics into the coupling.
- To release, pull the two locking levers on the top of the coupling towards the module, and pull the fiber optic cable out of the female.

The arrows on the top side of the coupling clearly show the location of the emitter and receiver lines.

Please note that when connecting two fiber optic components, the emitter of the first must always be connected to the receiver channel of the second component. A visible red light beam is always sent along with data, so that the sending line can always be easily identified.

Applications

RS232 data transmission via plastic fiber optic cable over a distance of more than 100 meters



Technical Data

Baud rate:	0..115,200 baud
Data format:	any format
Supported signals:	RxD, TxD
POF adapter:	Integrated sockets with automatic interlocking of the fiber-optic cable
POF medium:	Duplex plastic optical fiber cable 2.2 x 4.4 mm, fiber diameter of 980µm
Max. distance:	100m per POF segment
RS232 adapter:	9-pin male SUB-D adapter
Power supply:	12..24V DC/AC
Current consumption:	approx. 140mA @12V DC
Power connection:	Plug-in screw terminal, 5.08mm spacing, labeled „L+“ and „M“
Ambient temperature:	storage: -40..+70°C operation: 0..+50°C
Relative humidity:	5..95% rH (non-condensing)
Housing:	small plastic housing for top hat rail mounting
Dimensions:	105x75x22mm
Device weight:	approx. 120g
Delivery:	POF Repeater