

# RS-422 Fiber Converter Industrial Design

# MICROSENS

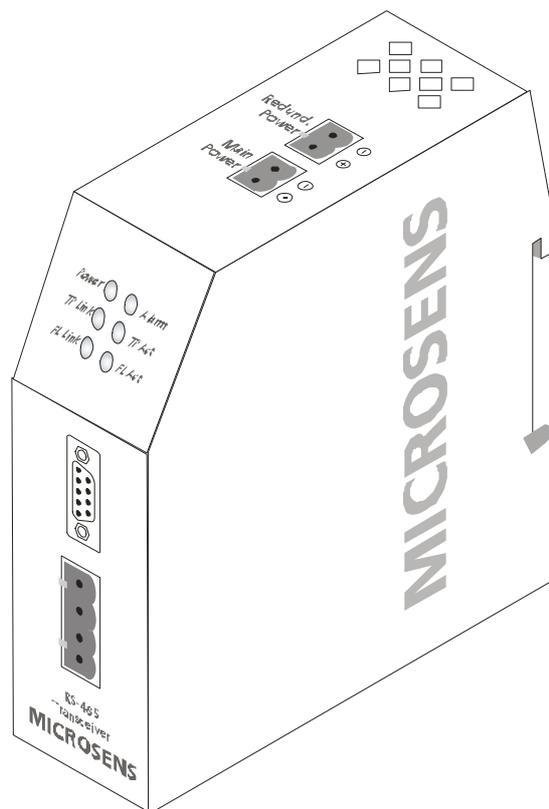
## General

For the connection of devices, control units and machine controls with standard serial interfaces MICROSENS is offering special fiber converters in industrial design.

The RS-422 converter is compatible to the different industrial transmission standards. The conversion is done transparent so an adjustment to the used data rate is not necessary.

The integrated DIN rail holder allows the installation on 35 mm hat rails. The power supply of the components is done by an external power supply with 24 V DC. There are two screw terminal plugs on the device, one for main and one for backup power supply.

For the flexible installation the converter are having beside the SUB-D9 port a parallel screw terminal. Via the potential free contact it is possible to connect external alarm systems.



## Technical Specifications

<b>Type</b>	RS-422 fiber converter for industrial use	
<b>Fiber type</b>	Multimode 62,5/125 or 50/125µm, Single mode 9/125µm, duplex	
<b>Cable type</b>	RS-422 with SUB-D9 connector and 4 pin screw terminal	
<b>Data rate</b>	max. 5 Mbit/s	
<b>LED displays</b>	<i>Power</i>	Ready for operation
	<i>FO-Xmt</i>	Transmit data on fiber port
	<i>FO-Rcv</i>	Receive data on fiber port
	<i>TXD</i>	Transmit data on copper port
	<i>RXD</i>	Receive data on copper port
	<i>Alarm</i>	Receive data on copper port
<b>Mounting</b>	35 mm hat rail, according DIN EN 50 022	
<b>Power Supply</b>	18 - 32 V DC / max. 500 mA by external power supply connection via screw terminal, redundant port	
<b>Dimensions</b>	38 x 108 x 116 mm (w x d x h)	
<b>Operating temp.</b>	-20°C to 60°C	
<b>Storage temp.</b>	-20°C to 80°C	
<b>Rel. humidity</b>	5% to 90% non condensing	

## Optical Parameter

<b>Multimode Version</b>	<i>min. distance:</i>	<b>2 km</b>
	<i>min. power:</i>	-19 dBm
	<i>min. sensitivity:</i>	-31 dBm
	<i>Wavelength:</i>	1300 nm
	<i>Connector:</i>	SC-duplex, optional ST
<b>Single Mode Versions</b>	<i>min. distance:</i>	<b>15 km</b>
	<i>min. power:</i>	-15 dBm
	<i>min. sensitivity:</i>	-31 dBm
	<i>Wavelength:</i>	1300 nm
	<i>Connector:</i>	SC-duplex, optional ST
	<i>min. distance:</i>	<b>40 km</b>
	<i>min. power:</i>	-5 dBm
	<i>min. sensitivity:</i>	-34 dBm
	<i>Wavelength:</i>	1300 nm
	<i>Connector:</i>	SC-duplex

## Function

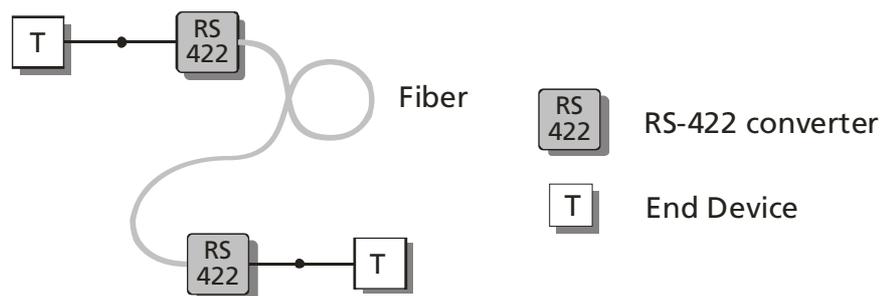
The data is transmitted in full-duplex mode. Due to this a switching between the two directions is not necessary. When the converter receives a signal on the copper port the data is transmitted on the fiber port and vice versa.

This offers the possibility to use this transceiver for a RS-485 connection between two devices (no bus system!). The converter has to be used on the fiber side always in a pair.

For testing it is possible to set the converter into a special operating mode (Loop). For this setting there are special DIP switches beside the fiber port at the bottom of the device.

**Remote-Loop**, is for testing of the fiber connection. If this switch is activated the data received on the fiber port is also transmitted on the fiber port. In this mode the relay contact switches because there is no connection between the fiber and the copper port.

**Local-Loop**, is for testing of the copper port. If this switch is activated the data received on the copper port is also transmitted on the copper port. In this mode the relay contact switches because there is no connection between the fiber and the copper port.



## Configuration

The switches DIP1 to DIP 4 are for the configuration of the test modes.

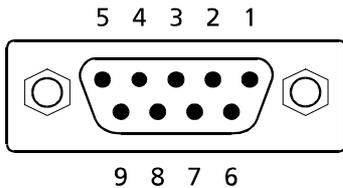
Switch	Function
DIP1	Remote Loop
DIP2	Local Loop
DIP3	Term – no function
DIP4	Term – no function

**Attention!** The Loop-function is only for test purposes. When this function is activated there is no normal operation possible. The communication between the two end devices via RS-232 is not working! The relay contact is in alarm status.

## Pinout

The electrical RS-232 connection can be done either with the standardized SUB-D9 port or the 4-pin screw terminal.

The SUB-D9 port has the following pinout:



Pin	Signal	Description
1		unused
2	Rx+	Receive data positive
3	Tx+	Transmit data positive
4		unused
5	GND	Ground
6	Rx-	Receive data negative
7		unused
8	Tx-	Transmit data negative
9	VCC	+5V (for active termination)

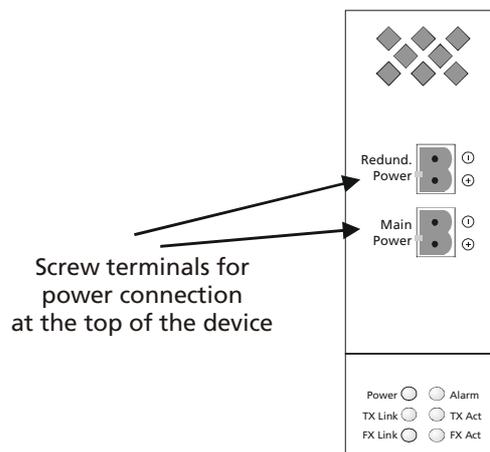
Pinout 4-pin screw terminal:

RS-422	
1	RX+
2	RX-
3	TX+
4	TX-

## Power Supply

The power supply is done by an external power supply with 24 V. The power supply is not included at delivery. The connection is done with the integrated screw terminals at the top of the device.

The connection of a redundant power supply can be done with the second screw terminal. Both power inputs are separated and galvanic isolated from the rest of the device.



## Alarm Relay Contacts

The converter has potential free switching contacts for external alarm systems.

The connection is done by a 3-pin screw terminal at the bottom of the device. By selecting the pins it is possible to choose between normally open or normally closed (NO/NC).

The alarm relay contact is switched in case of fiber link loss, loss of power supply or setting the converter into test mode. The alarm status is also indicated by a LED on the front side of the device.

**Important:** The status of the fiber link can be checked with the Alarm LED. For link tests it is possible to connect the transmit port with the receive port of the same device (loop with fiber).

## Installation

The converter has a solid metal chassis with an integrated holder for hat rails. It is possible to use standardised 35 mm hat rail according DIN EN 50 022.

The fixation of the MICROSENS switch on the rail is done with a locking pin that can be opened from the bottom side. Due to the optimized heat dissipation design it is possible to mount several devices close together.

## Safety Notes

**WARNING:** Infrared radiation as used for data transmission within the fiber optic, although invisible to the human eye, can nevertheless cause damage.

To avoid damage to the eyes:

- never look straight into the output of fiber optic components – danger of blinding!
- cover all unused optical connections with caps.
- commission the transmission link only after completing all connections.

The active laser components used with this product comply with the provisions of **Laser Class 1**.

**DANGER:** Conductive components of power and telecommunications networks can carry dangerously high voltage.

To avoid electric shock:

- Do not carry out installation or maintenance work during lightning storms.
- All electric installations must be carried out in accordance with local regulations.

**Order Information**

<b>Art.-No.</b>	<b>Description</b>	<b>Connectors</b>
MS650242	RS-422 fiber converter, Multimode 1300 nm, ST	2x ST, 1x Sub-D9, 2x power supply, 1x Relay Contact
MS650243	RS-422 fiber converter, Multimode 1300 nm, SC	2x SC, 1x Sub-D9, 2x power supply, 1x Relay Contacts
MS650245	RS-422 fiber converter, Single Mode 1300 nm, ST Laser 15 km	2x ST, 1x Sub-D9, 2x power supply, 1x Relay Contact
MS650247	RS-422 fiber converter, Single Mode 1300 nm, SC Laser 15 km	2x SC, 1x Sub-D9, 2x power supply, 1x Relay Contact
MS650246	RS-422 fiber converter, Single Mode 1300 nm, SC Laser 40 km	2x SC, 1x Sub-D9, 2x power supply, 1x Relay Contact

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