RS-232 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.

With multimode fiber it is possible to cover distances up to 2 km, independent from the data rate. Special single mode versions enable the transmission up to 125 km.

The conversion of the interface is done transparent, including the hardware handshake signals. It is possible to convert signal from DC up to the maximum data rate.

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. There are two screw terminal plugs on the device, one for main and one for backup power supply. Beside the standard version with 24 V DC input there is a 12 V DC version available.

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.
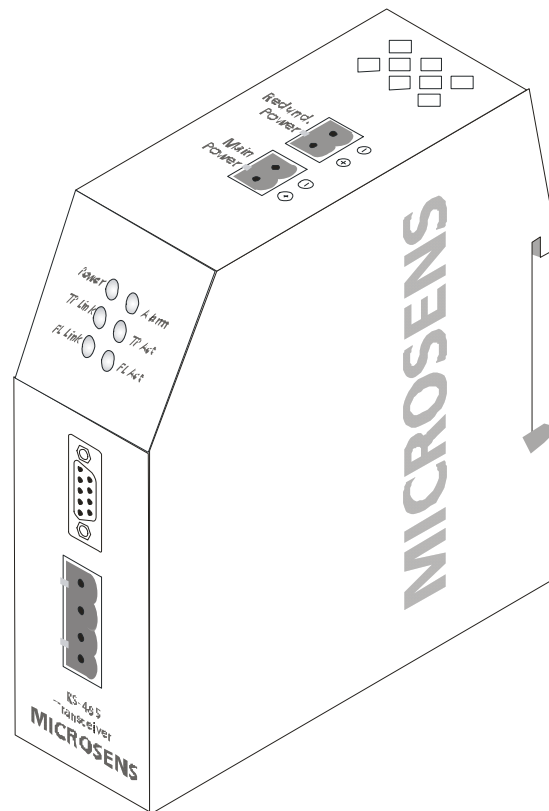
Technical Specifications

Type	RS-232 fiber converter for industrial use
Fiber type	Multimode 62.5/125 or 50/125μm, Single mode 9/125μm, duplex
Cable type	RS-232 with SUB-D9 connector and 4 pin screw terminal
Data rate	DC ... 120 kbit/s

LED displays

Power	Ready for operation
FO-Xmt	Transmit data on fiber port
FO-Rcv	Receive data on fiber port
TXD	Transmit data on copper port
RXD	Receive data on copper port
Alarm	Receive data on copper port

Mounting	35 mm hat rail, according DIN EN 50 022
Power supply	18 - 32 V DC / max. 500 mA optional: 9 - 18 V DC / max. 700 mA connection via screw terminal, redundant port
Dimensions	38 x 108 x 116 mm (w x d x h)
Operating temp.	-20°C to 60°C
Storage temp.	-20°C to 80°C
Rel. humidity	5% to 90% non condensing

Optical Parameter

Multimode version

min. distance:	**2 km**
min. power:	-19 dBm
min. sensitivity:	-31 dBm
Wavelength:	1310 nm
Connector:	SC-duplex (optional ST)

Single Mode versions (1310 nm)

min. distance:	**15 km**	**40 km**
min. power:	-15 dBm	-5 dBm
min. sensitivity:	-31 dBm	-34 dBm
Wavelength:	1310 nm	1310 nm
Connector:	SC-duplex (optional ST)	SC-duplex

Single Mode versions (1550 nm)

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min. distance:	**80 km**	**125 km**
min. power:	-5 dBm	0 dBm
min. sensitivity:	-34 dBm	-37 dBm
Wavelength:	1550 nm	1550 nm
Connector:	SC-duplex	SC-duplex

Function

This RS-232 converter transmits beside the data signals TXD and RXD also the handshake signals CTS and RTS.

The pinout of the SUB-D9 connector is designed that the connection to a PC or a modem can be done with an uncrossed cable. The connection of two converter is done similar to a null modem cable (crossed).

Furthermore there are some DIP switches beside the fiber port at the bottom of the device to configure the different test modes.

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.
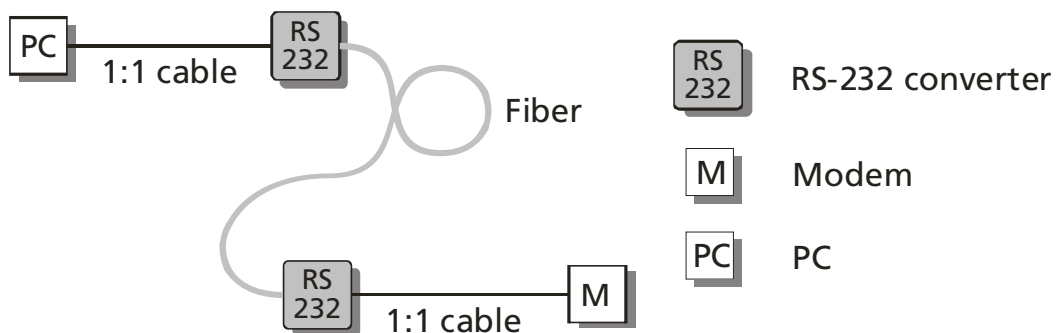
Configuration

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:
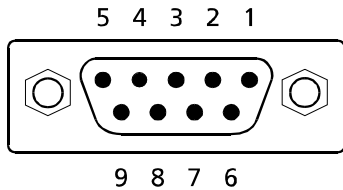
Pin	Signal	Description
1		unused
2	TXD	Transmit data
3	RXD	Receive data
4		unused
5	GND	Ground
6		unused
7	CTS	Handshake
8	RTS	Handshake
9		unused

Pinout 4-pin screw terminal:

RS-232	
1	RXD
2	GND
3	TXD
4	GND

Power Supply

The power supply is done by an external power supply with 24 V DC (optional 12 V DC). 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.

Screw terminals for power connection at the top of the device
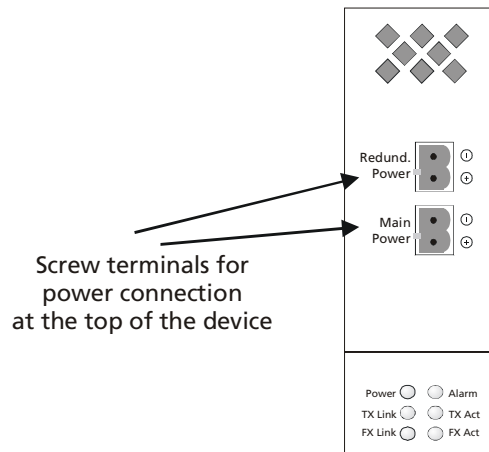
Alarm Relay Contacts

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 do 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

Art.-No.	Description	Connectors
MS650142*	RS-232 fiber converter, Multimode 1300 nm, ST	2x ST, 1x Sub-D9, 2x power supply, 1x Relay Contact
MS650143*	RS-232 fiber converter, Multimode 1300 nm, SC	2x SC, 1x Sub-D9, 2x power supply, 1x Relay Contact
MS650145*	RS-232 fiber converter, Single Mode 1300 nm, ST Laser 15 km	2x ST, 1x Sub-D9, 2x power supply 1x Relay Contact
MS650147*	RS-232 fiber converter, Single Mode 1300 nm, SC Laser 15 km	2x SC, 1x Sub-D9, 2x power supply, 1x Relay Contact
MS650146*	RS-232 fiber converter, Single Mode 1300 nm, SC Laser 40 km	2x SC, 1x Sub-D9, 2x power supply, 1x Relay Contact
MS650148*	RS-232 fiber converter, Single Mode 1550 nm, SC Laser 80 km	2x SC, 1x Sub-D9, 2x power supply, 1x Relay Contact
MS650149*	RS-232 fiber converter, Single Mode 1550 nm, SC Laser 125 km	2x SC, 1x Sub-D9, 2x power supply, 1x Relay Contact

*)   Option "–12" for version with 12 V DC power supply

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