

# 12 port media converter 100Base-FX/100Base-TX for 19" mounting, 1HU

# MICROSENS

## Description

Fast Ethernet media converter for the direct, repeaterless connection of twisted pair and fiber segments in a Fast Ethernet network.

## Compact design

The converter is designed for mounting in a 19" rack and has a height of 1 HU. Due to this compact design it is possible to provide very high port densities in the distribution racks.

## Management

An integrated network management module shows actual information about the connection status, power supply, fan status and temperature. These information can be accessed via SNMP or web based management.

## Redundant power supply

With an external power supply unit it is possible to supply up to six converter systems with redundant power.

## Full duplex

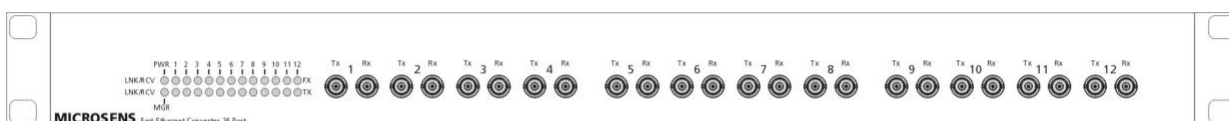
The converter supports half as well as full duplex transmission. In full duplex mode the transmit and receive channels can transfer data at the same time, which increases the effective data rate up to 200 Mbit/s.

## Link Transparency / Far-End-Fault Indication

The Link status of the segment will be forwarded by the converter ("Link-Through"), that means, that a failed link on the fiber side will not generate a link on the TP side. With the so called "Far-End-Fault" function a fault on the TP side can forwarded to the fiber port. With support of the "Far-End-Fault" indication on the opposite fiber side this fault can be realized.

## Max. distance

Using multimode fiber in full duplex mode it is possible to cover distances up to 2 km. Using single mode fiber in full duplex mode it is possible to cover distances up to 15 km (standard version) and up to 40 km (extended version).



## Technical specifications

<b>Type</b>	Fast Ethernet media converter for the repeaterless connection of twisted pair (100Base-TX) and fiber (100Base-FX) segments
<b>Fiber type, connectors</b>	Multimode 50 or 62,5/125µm, single mode 9/125µm duplex with ST-/SC-, MT-RJ-, LC-connectors
<b>Copper connectors</b>	TELCO or RJ-45
<b>Data rate</b>	100 Mbit/s
<b>Opt. power</b>	-19 dBm min. (1300 nm multimode) -15 dBm min. (1300 nm single mode)
<b>Sensitivity</b>	-30 dBm min. (1300 nm multimode) -31 dBm min. (1300 nm single mode)
<b>Max. distance</b>	Full duplex: 2 km (Multimode) min. 15 km (Single mode) Half duplex: 362 m
<b>LED displays</b>	<i>PWR</i> Module active <i>LNK/RCV FX</i> FX connection established (steady) Data received on FX port (blinking) <i>LNK/RCV TX</i> TX connection established (steady) Data received on TX port (blinking) <i>MGR</i> Management active
<b>Power supply</b>	wide range 100..240 V AC, max. 100 VA, optional RPSU redundant (MS416031)
<b>Operating-/storage-temperature</b>	-0°C to 50°C / -10°C to 80°C
<b>Rel. humidity</b>	5% to 80% non condensing
<b>Dimensions</b>	1 HU x 84 DU x 245 mm
<b>Management</b>	integrated; accessible via RJ-45 port, management stacking of multiple converters via RJ-45 cascading connectors at the rear side

## Optical Parameters

<b>Multimode version</b>	<i>min. transmission:</i>	2 km (full duplex)
	<i>min. optical output power:</i>	-19 dBm
	<i>min. sensitivity:</i>	-31 dBm
	<i>Wavelength:</i>	1310 nm

<b>Single Mode version</b>	<i>min. transmission:</i>	15 km (full duplex)
	<i>min. optical output power:</i>	-15 dBm
	<i>min. sensitivity:</i>	-31 dBm
	<i>Wavelength:</i>	1310 nm

<i>min. transmission:</i>	40 km (full duplex)
<i>min. optical output power:</i>	-5 dBm
<i>min. sensitivity:</i>	-34 dBm
<i>Wavelength:</i>	1310 nm

**Attention:** The Single Mode versions may not operate in mixed application (15 km version does not run against the 40 km version!).

## Length reduction

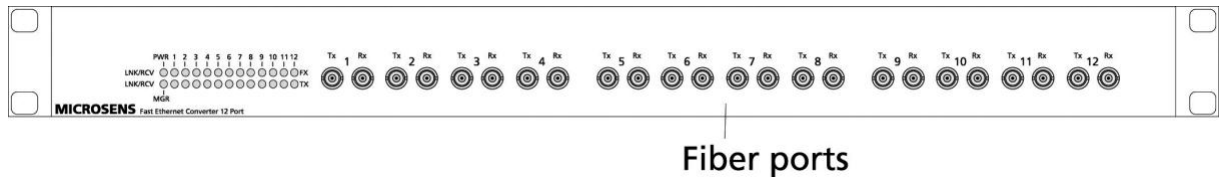
### Half duplex segment

The converter has a signal delay of max. 50 bittimes. The maximum segment length of 412 m is reduced by max. 50 m on the fiber side.

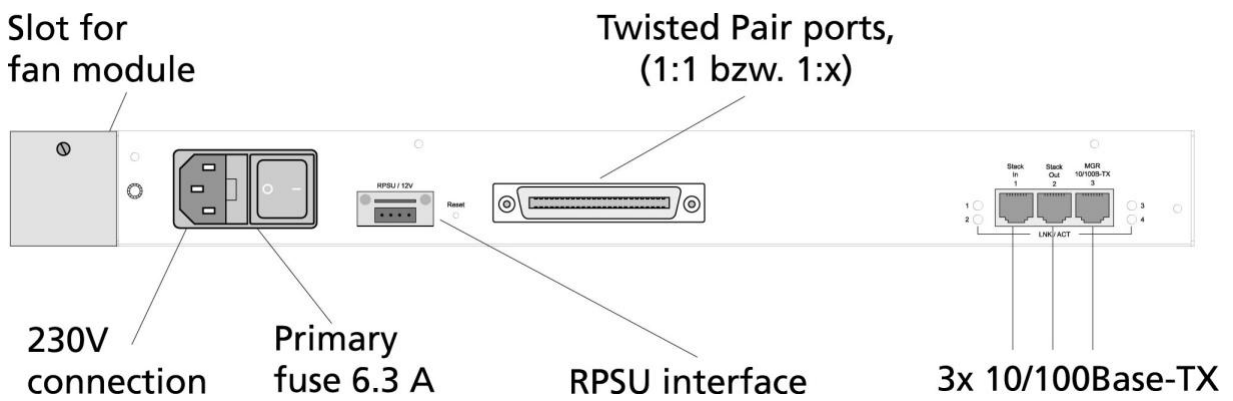
### Full duplex segment

In full duplex segments the signal delay of the converter has no influence on the maximum segment length.

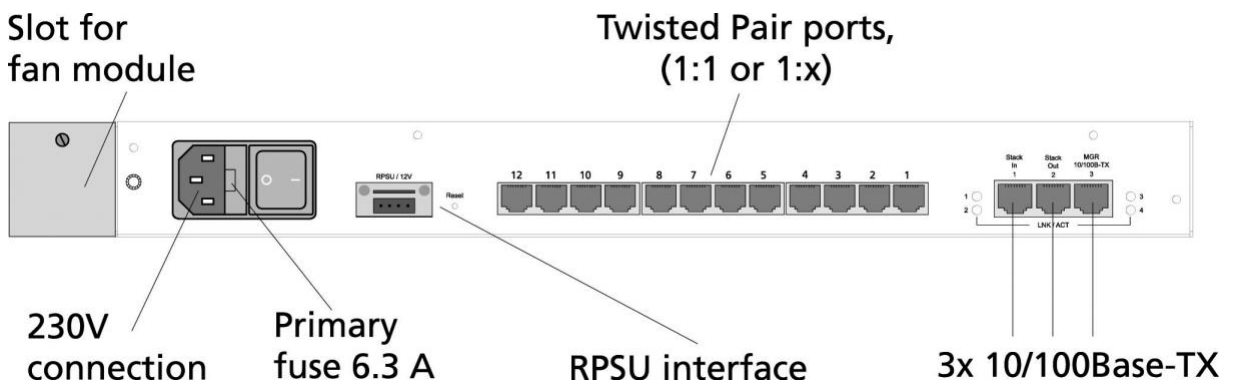
**Front side**



**Rear side / TELCO version**

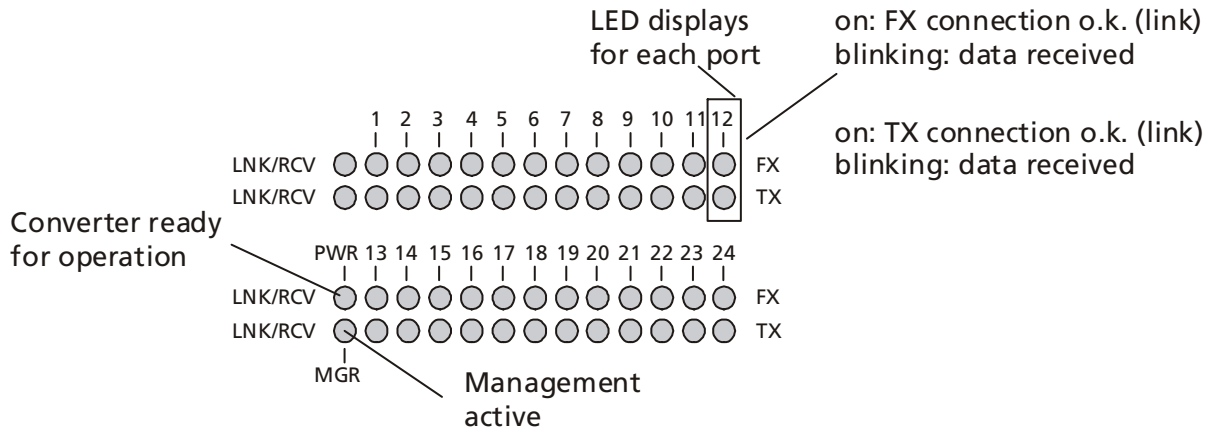


**Rear side / RJ-45 version**



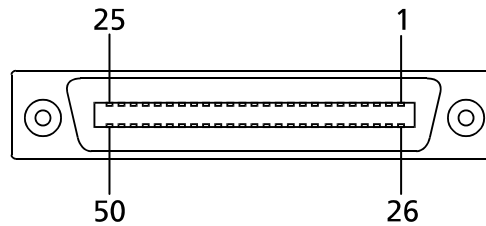
## LED displays

There are multiple LEDs showing status information of the converter. For each port there is information about the links status and port activity shown.



## Pinout

The TELCO connector (50 pin, female) has the following pinout:



Pin	Direction	Signal
1,26	out	TD1+, TD1-
2,27	in	RD1+, RD1-
3,28	out	TD2+, TD2-
4,29	in	RD2+, RD2-
5,30	out	TD3+, TD3-
6,31	in	RD3+, RD3-
7,32	out	TD4+, TD4-
8,33	in	RD4+, RD4-
9,34	out	TD5+, TD5-
10,35	in	RD5+, RD5-
11,36	out	TD6+, TD6-
12,37	in	RD6+, RD6-
13,38	out	TD7+, TD7-
14,39	in	RD7+, RD7-
15,40	out	TD8+, TD8-
16,41	in	RD8+, RD8-
17,42	out	TD9+, TD9-
18,43	in	RD9+, RD9-
19,44	out	TD10+, TD10-
20,45	in	RD10+, RD10-
21,46	out	TD11+, TD11-
22,47	in	RD11+, RD11-
23,48	out	TD12+, TD12-
24,49	in	RD12+, RD12-

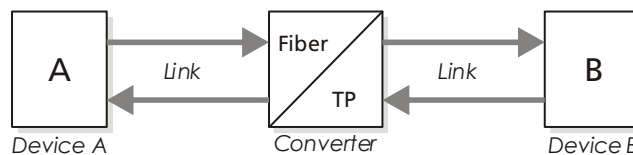
Since the converter has an autocrossing function it is not necessary to select between 1:1 and 1:X connections. If necessary the converter crosses RD and TD automatically.

## Link Transparency

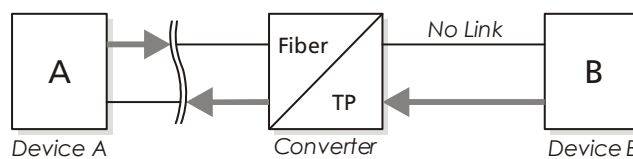
The converter has the integrated "Link Through" functionality in order to support the connection monitoring. The connection status of the fiber segment is forwarded to the twisted pair segment. In due to this the twisted pair connection is switched off in a case of failure at the fiber segment.

Therefore all devices connected via this converter can 'see' the status of the opposite side. Status information of the network management will not be distorted by the converter.

a) Normal status: link signal in both directions



b) Case of failure: Interruption of connection



## Connection / Starting operation

The device is delivered ready for installation. The converter is connected with the attached power cable to a 110-240 VAC / 50-60 Hz power supply. The power switch must be switched off. The maximum power consumption is 60 VA.

After switching on, all LEDs of the device are lighting up for a short moment (only if there are no active network components connected to the converter).

## Fiber connection

The fiber segments are connected with ST/SC fiber patch cords to the front side of the converter. The fiber coming from the transmitter at the opposite site is connected to the receive port of the converter (printed RX), the fiber coming from the receiver must be connected to the transmitter (printed TX). If the connection is correct the link LED of this port must be lighting up.

## TP connection (TELCO)

With one 1:1 TELCO cable it is possible to connect 12 ports to a hub or switch. If the connection is correct the "link" LED of all connected ports must be lighting up.

## Attention

*If there is no fiber connection or the connected link is not active, the device connected over the TELCO cable does not show a "link" (link transparency) via the relevant LED.*

## Order information

Part no.	Description	Connectors
MS416950M	12 Port Fast Ethernet media converter 1310nm multimode ST, 19" 1HU, RJ-45, manageable	12xRJ-45 100Base-TX 12x ST-duplex 100Base-FX RPSU, management stack
MS416951M	12 Port Fast Ethernet media converter 1310nm multimode SC, 19" 1HU, RJ-45, manageable	12xRJ-45 100Base-TX 12x SC-duplex 100Base-FX RPSU, management stack
MS416955M	12 Port Fast Ethernet media converter 1310nm single mode ST, 15km, 19" 1HU, RJ-45, manageable	12xRJ-45 100Base-TX 12x ST-duplex 100Base-FX RPSU, management stack
MS416956M	12 Port Fast Ethernet media converter 1310nm single mode SC, 15km, 19" 1HU, RJ-45, manageable	12xRJ-45 100Base-TX 12x SC-duplex 100Base-FX RPSU, management stack
MS416930M	12 Port Fast Ethernet media converter 1310nm multimode ST, 19" 1HU, TELCO, manageable	1x TELCO 100Base-TX 12x ST-duplex 100Base-FX RPSU, management stack
MS416931M	12 Port Fast Ethernet media converter 1310 nm multimode SC, 19" 1HU, TELCO, manageable	1x TELCO 100Base-TX 12x SC-duplex 100Base-FX RPSU, management stack
MS416936M	12 Port Fast Ethernet media converter 1310 nm single mode SC, 15km, 19" 1HU, TELCO, manageable	1x TELCO 100Base-TX 12x SC-duplex 100Base-FX RPSU, management stack
MS416939M	12 Port Fast Ethernet media converter 1310 nm multimode MT-RJ, 19" 1HU, TELCO, manageable	1x TELCO 100Base-TX 12x MT-RJ 100Base-FX RPSU, management stack
MS190500-x*	TELCO / RJ-45 Hydra connection cable 1x TELCO plug (50pol.,m), 12x RJ-45	1x TELCO (135°) 12x RJ-45
MS190501-x*	TELCO connection cable 2x TELCO plug (50pol.,m)	1x TELCO (135°) 1x TELCO (180°)
MS416031	Redundant power supply unit	6x RPSU connector
MS190450-1	Connection cable for power supply unit, 1m	2x RPSU plug

\*x = length in meters (e. g.: TELCO cable with 3 meters: MS190501-3), typical lengths: 1, 2, 3 and 5m, up to 20m possible.

Per 12 Port Converter is 1 TELCO cable required.

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