

# PC Media Converter Card

## 100Base-FX/100Base-TX

# MICROSENS

### General

The internal MICROSENS Fast Ethernet media converter allows the direct connection of twisted pair (100Base-TX) to fiber (100Base-FX) segments in a Fast Ethernet network (IEEE802.3). Due to the direct coupling it is possible to extend existing twisted pair cables over the limit of 100 m.

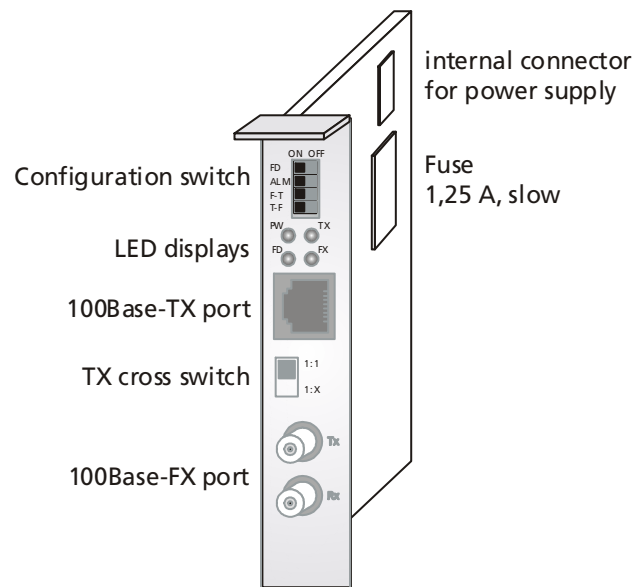
With this solution an existing copper network adapter card (10/100Base-TX) can be used further. It is not necessary to reconfigure or to reinstall the network driver. The converter receives the power through the internal PC power supply, over the enclosed connection cable.

The converter has the „Link Through“ functionality included. Due to this, the connection status of the fiber segment is forwarded to the twisted pair segment. The converter is not falsifying the connection information. Through the configuration switch it is possible to activate the autonegotiation protocol, which allows to set up full duplex connections on the copper side.

### Technical Specifications

<b>Type</b>	PC Media Converter Card for connection of twisted pair (100Base-TX) and fiber (100Base-FX) segments in a Fast Ethernet Network	
<b>Fiber type</b>	Multimode 62, 5/125 or 50/125 µm, Single Mode 9/125 µm, duplex	
<b>Cable type</b>	Shielded Twisted Pair cable, 100 Ohm, Category 5, pinout of RJ-45 with switch crossable	
<b>max. cable length</b>	100 m	
<b>Datarate</b>	100 Mbit/s	
<b>LED displays</b>	<i>Power</i>	Ready for operation
	<i>FX-Link</i>	Fiber link
	<i>TX-Link</i>	Twisted pair link
	<i>FD</i>	Fiber connection in full duplex mode
<b>Power supply</b>	5 V DC / max. 900 mA from internal PC power supply	
<b>Operating temperature</b>	0 °C to 55 °C	
<b>Storage temperature</b>	-20 °C to 80 °C	
<b>Rel. humidity</b>	5 % to 80 % non condensing	
<b>Opt. Parameter MM</b>	<i>min. distance:</i>	2 km (full duplex)
	<i>min. power:</i>	-18 dBm
	<i>min. sensitivity:</i>	-31 dBm
	<i>wavelength:</i>	1300 nm
<b>Opt. Paramter SM</b>	<i>min. distance:</i>	15 km (full duplex)
	<i>min. power:</i>	-15 dBm
	<i>min. sensitivity:</i>	-31 dBm
	<i>wavelength:</i>	1300 nm

## Diagram of the converter



## Autonegotiation

This protocol is used during the connection set up to detect the best transmission protocol (full or half duplex). This guarantees to reach the highest data rate for the connection. Because the autonegotiation protocol is not defined for the fiber side, this manual configuration feature is very useful.

To allow the automatic configuration of these modes, MICROSENS offers the autonegotiation protocol on this converter card. The autonegotiation protocol can be activated by the integrated DIP switch (FD: on). When this feature is activated the converter interferes into the connection set up and reacts on the autonegotiation protocol of the connected twisted pair device.

If the function is deactivated the converter has no influence on the connection mode. The mode full or half duplex is signed by LED.

## Length reduction

### Half duplex transmission

The converter has a signal delay of max. 25 bittimes. Due to this the max. segment length of 412 m is reduced about 25 m for fiber and 30 m for twisted pair cables. These values have to be taken into consideration also at single mode cablings.

### Full duplex transmission

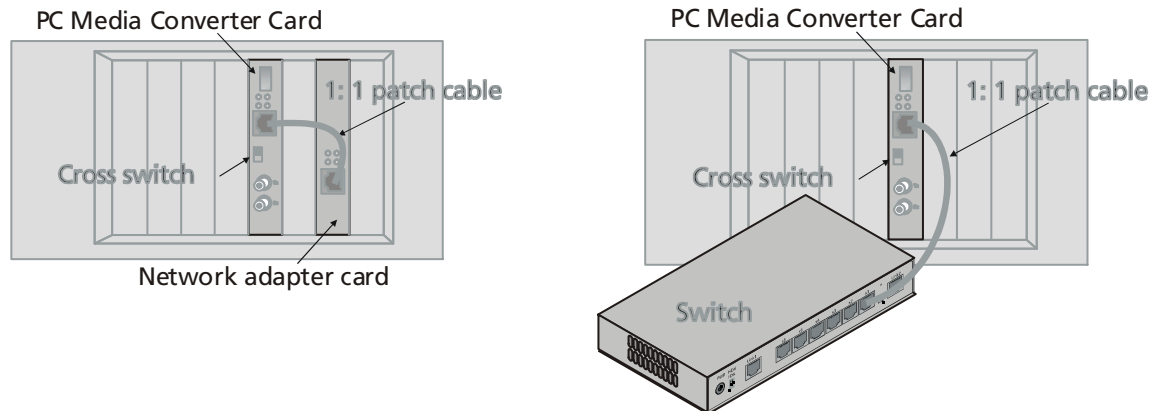
In full duplex segments the signal delay of the converter has no influence on the segment length. Only the optical parameters given in this datasheet determinate the maximum length.

## Power supply

The power is received through the PC internal power supply at 5 V DC / max. 900 mA. The standard disk drive connectors are used for the connection of the connector card. The required Y-cable is included.

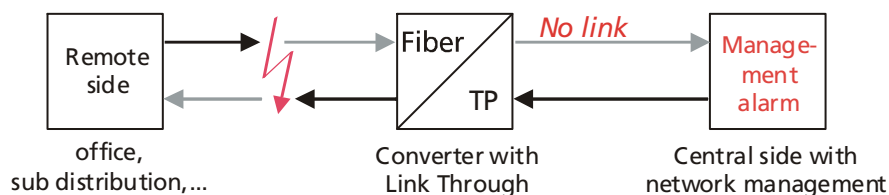
## Connections

The connection of the converter to the RJ45 connector of the PC adapter card is done with an uncrossed patch cable. For cascading it is also possible to use an uncrossed cable. To do this the pinout of the RJ45 connector of the converter can be crossed with the integrated switch (see figure).

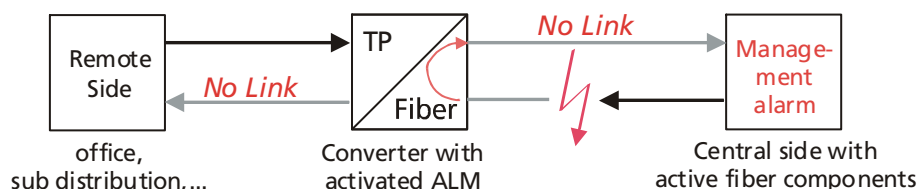


## Link Transparency

The internal media converter of MICROSENS is equipped with the link-through functionality. Due to this the connection status of the fiber segment is forwarded to the twisted pair segment. Because of this option, the SNMP management can recognize a connection loss and reacts.



An expanded function to link through is ALM. This additional function can detect the failure of the fiber in the transmit line or of the optical component. Only with this feature the failure can be recognized as an inactive line (See Fig.2). The failure can be exactly located by the management. In the past it was only possible to check the connection from the opposite component. If the converter with ALM can not receive the optical power, it switches the link on both sides off. That means, not only the link on the copper side is switched off, what is also done by simple Link Through, also the fiber link of its transmit port. Due to this, the components at higher levels can exactly detect this failure.



The functions Link Through and ALM can be activated and deactivated with the DIP switch of the converter.

**Attention:** If two of these converters are connected with fiber, ALM can only be activated on one side of the connection. If ALM is activated on both sides there is no set up of the fiber link.

**Order Information**

<b>Part-no.</b>	<b>Description</b>	<b>Connectors</b>
MS484105	PC Media Converter Card 100Base-FX/100Base-TX, 1300 nm Multimode, 2 km	1 x MTRJ, 1 xRJ45
MS484106	PC Media Converter Card 100Base-FX/100Base-TX, 1300 nm Multimode, 2 km	1 x VF45, 1 xRJ45
MS484107	PC Media Converter Card 100Base-FX/100Base-TX, 1300 nm Multimode, 2 km	2 x SC, 1 xRJ45
MS484108	PC Media Converter Card 100Base-FX/100Base-TX, 1300 nm Multimode, 2 km	2 x ST, 1 x RJ45
MS484130	PC Media Converter Card 100Base-FX/100Base-TX, 1300 nm Multimode, 2 km	1 x LC, 1 x RJ45
MS484131	PC Media Converter Card 100Base-FX/100Base-TX, 1300 nm Single Mode, 15 km	1 x LC, 1 x RJ45

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