

### 1. Installation in 19" rack

The modular 19" system is designed for the mounting in industrial racks with standard 19" measurement. MICROSENS offers the system with 1 HU and 3 HU (see Fig.1). The special nuts for fixing the chassis into the rack are not included at delivery. They are accessories of the 19" rack.

### 2. Mounting the 1 HU chassis in a 19" rack

The 19" grid struts have special openings (3 per HU) for mounting the nuts. 1 HU is marked specially with small spaces between the openings (see Fig.2). For each 1 HU chassis 4 nuts must be used. After mounting the nuts the chassis can be fixed with the screws.

### 3. Mounting the 3 HU chassis in a 19" rack

For the installation 3 HU (9 openings) are necessary. The mounting of the nuts is done in the 3rd and 7th opening (See Fig. 3). Now insert the nuts and fix the chassis with the screws.

### 4. Power supply

The 19" rack receives power over the backplane by a central power supply. At a high demand for security a second power supply can be installed for redundancy. The installation of the power supply is done on the front side (see Fig 4). A two coloured LED shows the status of the power supply (Green: ready for operation, red: failure).

The 1 HU chassis has an internal power supply. Optional it is available also with redundant power supply.

### 5. Blind covers

For better air circulation and EMC shielding all unused slots must be covered with blind covers (see Fig. 5). These blind covers are not included and must be ordered separately.

### 6. Management

Beside the power supply bus the 3 HU chassis MS416001M has an additional management bus. Due to this it is possible to use the converter modules with management option. The management functionality itself is offered by the management module MS416020. Also the converter modules must support the management. The management option at the converter is marked with an "M" extension in the article number (e.g. MS416xxxM).

Figure 1:

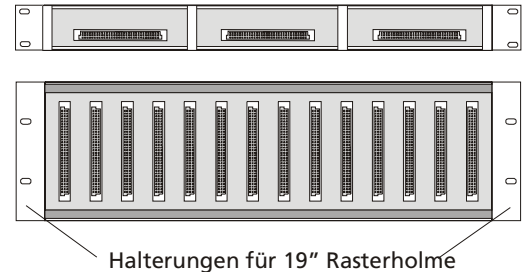


Figure 2:

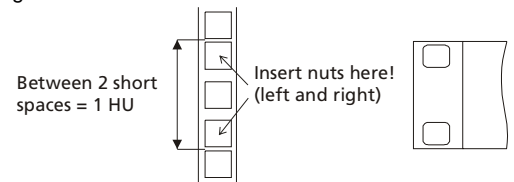


Figure 3:

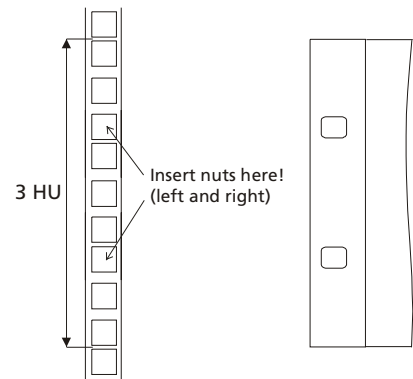


Figure 4:

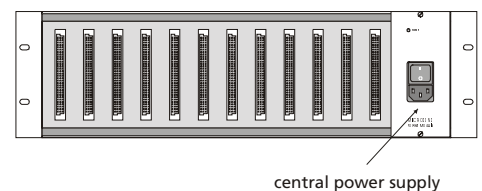
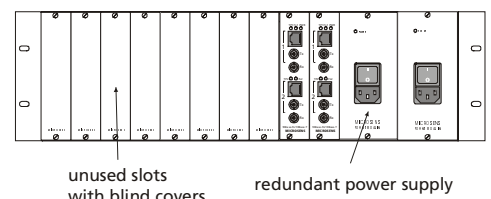
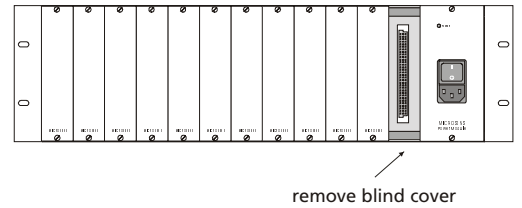


Figure 5:



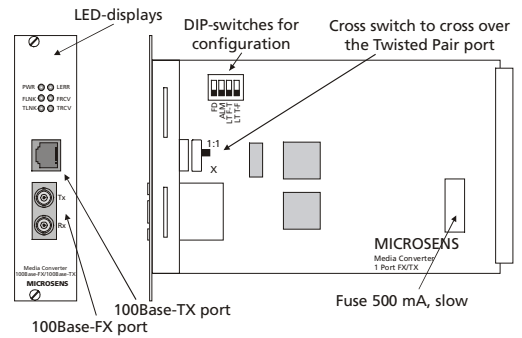
**7. Installing the Insertion Module 100Base-FX/100Base-TX**  
 A free slot is necessary for this insertion module. Remove the blind cover (see Fig. 6). Before inserting the module it must be configured (see Fig. 7 and 8). After configuring the module is inserted left flushed and fixed with the screws.  
 Please keep the blind cover for later deinstallation.

Figure 6: Installation



**8. Configuration**  
 This converter has additional to the Link Through feature the ALM function. Before operation this must be configured. Default status at the delivery is ALM deactivated. To activate ALM there are special DIP switches on the module (see Fig. 7).

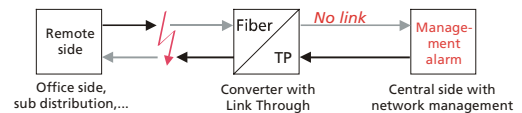
Figure 7: Construction



**Auto-Negotiation:** This protocol is used during setup of the connection to get the maximum speed and the duplex settings. This guarantees to have always the best transmission performance. Because this protocol is only defined in IEEE802.3 for the copper side and not for the fiber, there are often problems to get the full duplex mode. To avoid these problems MICROSENS converter offers this configuration feature. The FD switch enables the autonegotiation at the copper port (FD: on). Only with this autonegotiation it is possible to reach the full duplex mode. In the other position of the switch (FD: off) the converter has no effect on the configuration of the connection.

Figure 8: Link Through

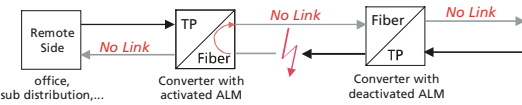
**Link Through:** The connection status of the fiber segment is forwarded to the copper segment (switch LT T-F: on). In case of a broken fiber connection the copper connection is switched off too (link transparency see Fig. 8). The same functionality can be configured for the other direction, that means in case of lost copper connection the fiber connection is switched off. (switch LT T-F: on).



**ALM:** Additional to Link Through the loss of the transmitting optic fiber can be recognized by Advanced Link Monitor (switch ALM FX: on). In case of loss of the fiber port, the copper and the fiber port is switched off (see Fig. 9). This ensures that the central network components can terminate this failure exactly.

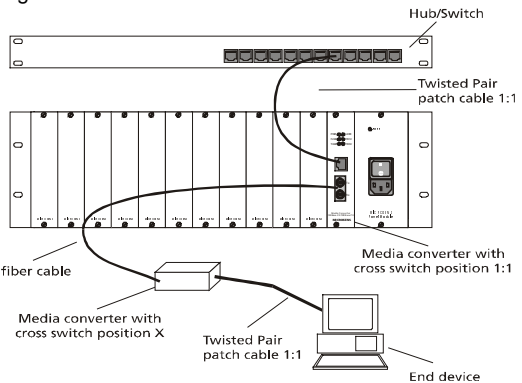
Figure 9: ALM

**Attention:** To ensure the correct setup of the connection, only one side of the connection should have activated ALM (see Fig. 9).



**9. Pin-Out of the Twisted Pair Port**  
 The connection of the media converter to a hub/switch is done with an uncrossed patch cable (see Fig. 10). The connection of an end device can be done with the same uncrossed cable. To do this the port must be crossed with the integrated cross switch (Position "X"). At delivery this switch has the position "1:1" (see Fig. 7).

Figure 10: Connections



**10. Power Supply of the Module**  
 The power supply of the module is done by the central power supply over the backplane. The module has a secondary fuse see Fig. 7). The value of this fuse is 500 mA, slow.

Figure 11: LEDs

**11. LED displays**  
 To check the operation and connection status of the converters there are five LEDs (see Fig. 7). The functions of these LEDs are described in Fig. 11.

**12. Monitoring functions (optional)**  
 Optional there are different manageable models available (extension "M" in the article number). With the management module it is possible to access information about connection status of each port, temperature, article and serial number.

LED	Description
PWR	Power supply O.K., ready for operation
TLNK	Twisted Pair connection correct
FLNK	Fiber connection correct
TRCV	Data received on copper port
FRCV	Data received on fiber port
LERR	Link Error, no fiber connection