1.1.5 OSM TP62

Possible Attachments

The OSM TP62 allows attachment of up to 6 DTEs or network segments with TP connectors. By coupling an OSM via ports 7 and 8 it is possible to create optical bus and ring structures. The OSM TP62 can be linked with other OSM TP62, OSM TP22, OSM ITP53, OSM ITP62, and OSM BC08 modules via the optical ports.

The OSM TP62 also has eight digital inputs. The states of the inputs are available in a management information base (MIB) and can be read using an SNMP get request. Depending on the configuration of the device, changes at these inputs can also trigger the sending of E-mails, SNMP traps and/or entries in the log of the OSM. The use of this function is described in the OSM/ESM Network Management User Manual /1/.



Figure 5: OSM TP62

Properties of the OSM TP62	
Electrical ports	6 x 10/100 Mbps autonegotiation/autocrossover ports TP connectors (RJ-45 jacks)
Optical ports	2 x 100 Mbps FO ports (full duplex) BFOC sockets
Maximum distance between two ESMs	3000 m (multimode graded-index fiber)
Maximum ring span with 50 OSMs	150 km
Digital Inputs	8 x 24 V dc

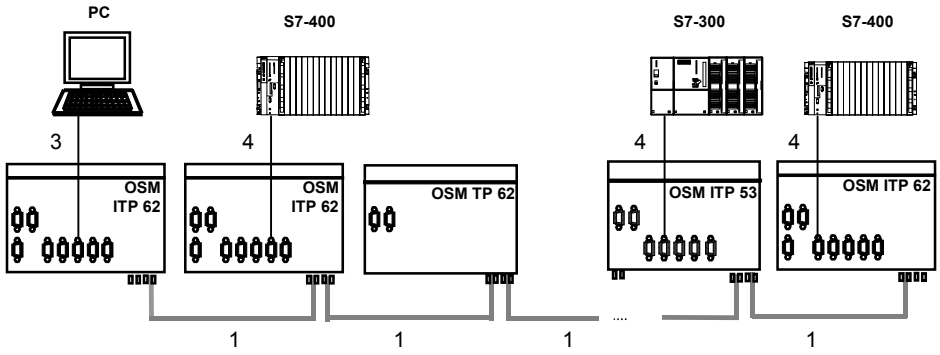
Note

Industrial Ethernet OSM TP62 is available in two versions:

- OSM TP62 with eight digital inputs:
  The eight digital inputs are connected over two plug-in 6-pin terminal blocks on the top of the device. To display the status of these inputs using the 8 device LEDs, there is an additional display mode known as the "Input Status" that is selected using a third mode LED.
- OSM TP62 without digital inputs:
  There are no digital inputs and the "Input Status" display mode is not available. The operating states are displayed by 2 mode LEDs.

3.1 Bus Structure

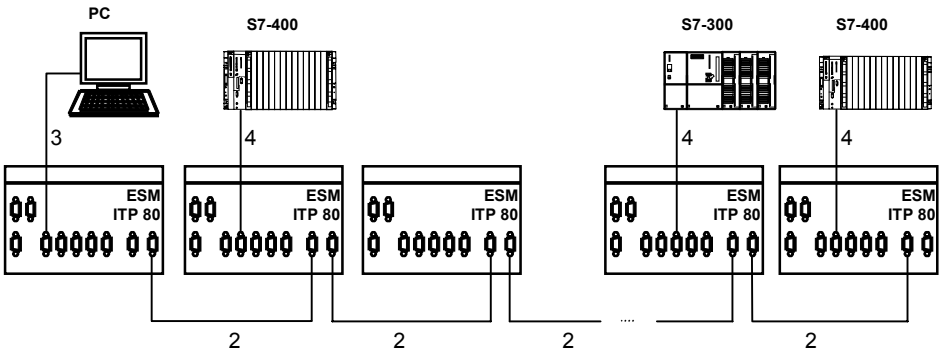
With OSMs or ESMs, bus structures can be implemented . The cascading depth and total span of a network are limited only by the monitoring times of the communication connections. These times must always be set higher than the signal delay of the transmission path.



1 Fiber-optic cable (FOC)
3 TP cord 9/RJ-45
4 ITP standard cable 9/15

Figure 10: Bus with OSM

Apart from OSM ITP62-LD modules, all listed OSM variants can be used in any combination in a bus consisting of OSMs. OSM ITP62-LD modules can only be coupled with other OSM ITP62-LD modules via the optical ports (monomode fiber).



2 ITP XP standard cable 9/9
3 TP cord 9/RJ-45
4 ITP standard cable 9/15

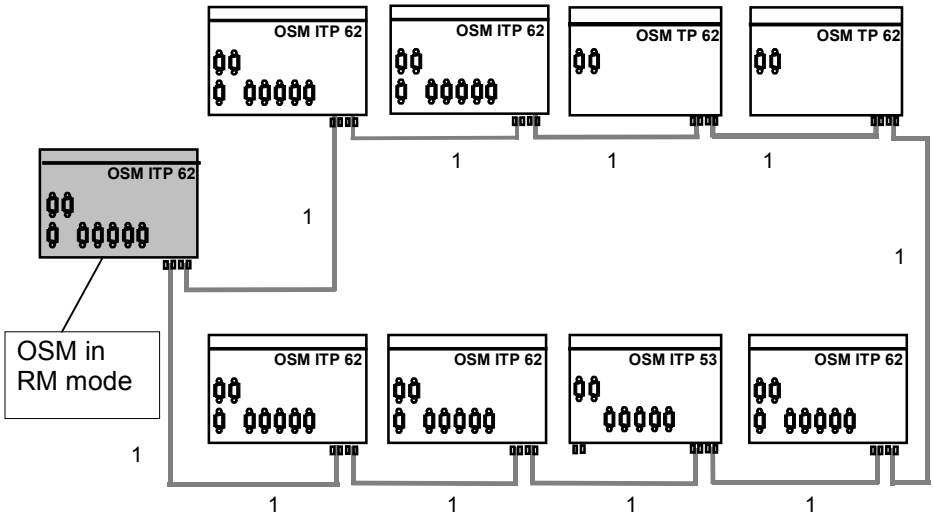
Figure 11: Bus with ESMs

In a bus consisting of ESMs, both ESM ITP80 modules and ESM TP80 modules can be used. TP and ITP variants can be connected together using the Industrial Ethernet FastConnect cabling system.

3.2 Redundant Ring Structure

With the aid of an OSM functioning as the redundancy manager (RM), both ends of an optical bus made up of OSMs can be closed to form a redundant optical ring. The OSMs are connected together using ports 7 and 8.

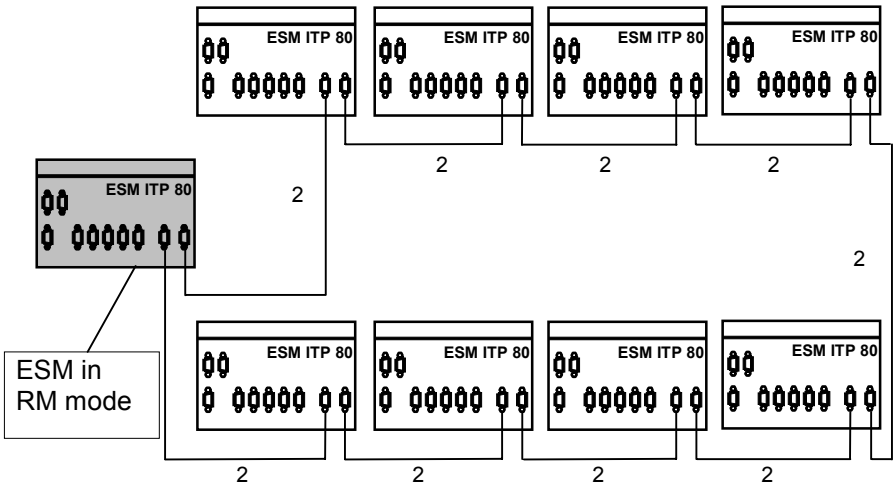
The RM monitors the OSM bus connected to it, closes the bus if it detects and interruption and therefore reestablishes a functioning bus configuration. A maximum of 50 OSMs are permitted in an optical ring. This allows reconfiguration time of less than 0.3 s to be achieved. The RM mode is activated on the OSM using a DIP switch (Section 4.2.4.1).



1 Fiber-optic cable (FOC)

Figure 12: Redundant Ring Structure with OSMs

A redundant electrical ring can be established using ESMs in the same way. To achieve this the ESMs must be connected together using ports 7 and 8. One device must be switched to the redundancy manager mode. With ESMs and a maximum of 50 devices in the ring, a reconfiguration time of less than 0.3 s can also be achieved.



2 ITP XP standard cable 9/9

Figure 13: Redundant Ring Structure with ESMs

Notes

- The reconfiguration time of less than 0.3 s can only be achieved when no components other than OSMs and ESMs (for example switches) are used in the redundant ring.
- In a ring, one device and one device only must operate in the redundancy manager mode.
- DTEs or complete network segments can be connected to ports 1 – 6 (OSM/ESM with 8 ports) or ports 1 and 2 (OSM/ESM with 4 ports) of an OSM/ESM operating in the RM mode.

Technical Specifications 7

Ports	
Attachment of DTEs or network segments twisted pair/Industrial Twisted Pair	6 x 9-pin sub-D female connectors for OSM ITP62, OSM ITP62-LD 5 x 9-pin sub-D female connectors for OSM ITP53 8 x 9-pin sub-D female connectors for ESM ITP80 2 x RJ-45 jacks for OSM TP22 4 x RJ-45 jacks for ESM TP40 6 x RJ-45 jacks for OSM TP62 8 x RJ-45 jacks for ESM TP80 All electrical ports support 10/100 Mbps autonegotiation OSMs/ESMs with digital inputs: The electrical ports support autocrossover.
Standby-sync port for redundant coupling of rings	1 x 9-pin sub-D female connector (not OSM TP22, ESM TP40)
Attachment of further OSMs and DTEs via FO	2 x 2 BFOC sockets for OSM ITP 62, OSM ITP62-LD, OSM TP62, OSM TP22 3 x 2 BFOC sockets for OSM ITP 53 8 x 2 BFOC sockets for OSM BC08 (100 Mbps, 100BaseFX, full duplex)
Connector for power supply and signaling contact	1 x 6-pin plug-in terminal block
Power supply (redundant inputs decoupled)	2 sources of DC 24V (DC 18 to 32V) safety extra-low voltage (SELV) Power supply connected over high resistance to casing (not electrically isolated). Tested in compliance with IEC 6100-4-5, 1995 "Surge Immunity Test" using the DEHN Blitzductor VT AD 24V, Type No. 918 402 lightning protection device

Ports	
Power loss at 24 V DC	20 W
Load on the signaling contact	DC 24 V / max. 100 mA safety extra-low voltage (SELV)
Current consumption at rated voltage	1000 mA
Overcurrent protection at input	Non-replaceable fuse (1.6 A / 250 V / slow)
Digital Inputs	Input voltage: • Rated voltage DC 24 V safety extra-low voltage (SELV) • For state "1": +13 ...+30V • For state "0": –30 ... +3V Max. input current: 8 mA Max. cable length: 30 m Inputs electrically isolated from electronics.

Permitted Cable Lengths	
FO cable length between two OSMs	For OSM ITP62, OSM ITP53, OSM TP62, OSM TP22: 0-3000 m (62.5/125 µm glass fiber; 1 dB/km at 1300 nm; 600 MHz*km; 6 dB max. permitted FO cable attenuation at 3 dB link power margin) 0-3000 m (50/125 µm glass fiber; 1 dB/km at 1300 nm; 600 MHz*km; 6 dB max. permitted FO cable attenuation at 3 dB link power margin) For OSM ITP62-LD: 0-26000 m (10/125 µm single mode fiber; 0,5 dB/km at 1300 nm; 13 dB max. permitted FO cable attenuation at 2 dB link power margin)
ITP cable length	0-100 m
TP cable length	0-10 m with TP cord up to 100 m total length when using the FastConnect cabling system
Length of the ITP XP Standard Cable 9/9 at standby-sync port	0-40 m

Cascading Depth	
Bus/star structure	Any (only depending on signal propagation time)
Redundant ring	50 (for reconfiguration time < 0.3 s)

Switching Properties of OSM/ESM	
Number of learnable addresses	Up to 7000
Aging time	40s (default)
Latency	4 µs (measured at 75% load between two ports operating at 100 Mbps)
Switching procedure	Store and forward

Consignment / Order Numbers	
Consignment	- SIMATIC NET Industrial Ethernet OSM/ESM - Fittings for 19" cubicle installation/wall mounting - 6-pin plug-in terminal block for power supply and signaling contact - One to two 6-pin plug-in terminal blocks for OSMs/ESMs with digital inputs - Documentation on the CD - Product information bulletin
Order number:	
Industrial Ethernet OSM ITP62 with digital inputs	6GK1105-2AA10
Industrial Ethernet OSM ITP62 without digital inputs	6GK1105-2AA00
Industrial Ethernet OSM ITP62-LD with digital inputs	6GK1105-2AC10
Industrial Ethernet OSM ITP62-LD without digital inputs	6GK1105-2AC00
Industrial Ethernet OSM ITP53 with digital inputs	6GK1105-2AD10
Industrial Ethernet OSM ITP53 without digital inputs	6GK1105-2AD00
Industrial Ethernet OSM ITP80 with digital inputs	6GK1105-3AA10
Industrial Ethernet OSM ITP80 without digital inputs	6GK1105-3AA00
Industrial Ethernet OSM TP62 with digital inputs	6GK1105-2AB10
Industrial Ethernet OSM TP62 without digital inputs	6GK1105-2AB00
Industrial Ethernet OSM TP80 with digital inputs	6GK1105-3AB10
Industrial Ethernet OSM TP80 without digital inputs	6GK1105-3AB00
Industrial Ethernet OSM TP22 with digital inputs	6GK1105-2AE00
Industrial Ethernet OSM TP40 with digital inputs	6GK1105-3AC00
Industrial Ethernet OSM BC08 with digital inputs	6GK1105-4AA00