

SIMATIC NET

A5E03275846-03

10/2012

Compact operating instructions

MM900 media modules for SCALANCE XR-500M

English

SIEMENS

SIMATIC NET

Industrial Ethernet switches

MM900 media modules for SCALANCE

XR-500M

Compact Operating Instructions

Legal information

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

 WARNING
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

DANGER

indicates that death or severe personal injury **will** result if proper precautions are not taken.

WARNING

indicates that death or severe personal injury **may** result if proper precautions are not taken.

CAUTION

indicates that minor personal injury can result if proper precautions are not taken.

NOTICE

indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

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1 Introduction

Purpose of the compact operating instructions

Based on the compact operating instructions, you will be able to install and connect up the MM900 media module correctly.

Validity of these compact operating instructions

These compact operating instructions apply to the MM900 product group of the SCALANCE X-500 product line as of product version 1.

Note

Additional literature

When working with media modules, you should also read the compact operating instructions of the SCALANCE XR-500M product group.

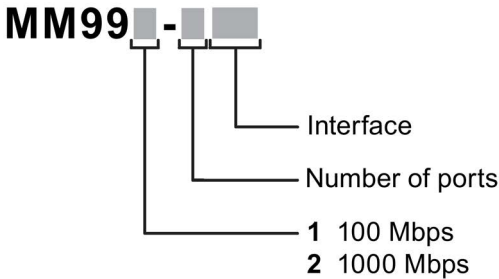
You will find the compact operating instructions of the SCALANCE XR-500M product group on the supplied CD.

2 Description

2.1 Type designation

Structure of the type designation

The type designation an MM900 media module for SCALANCE X-500 consists of several parts with the following meaning:



Interface	Property
CU	10/100/1000 Mbps RJ-45 port electrical.
CUC	10/100/1000 Mbps RJ-45 port electrical with securing collar.
SFP	100/1000 Mbps SFP media module.
[-]	100 Mbps ST port optical, multimode fiber-optic cables, up to max. 3 km.
	1000 Mbps SC port optical, multimode fiber-optic cables, up to max. 750 m.
LD	100 Mbps ST port optical, single mode fiber-optic cables, up to max. 26 km.
	1000 Mbps SC port optical, single mode fiber-optic cable, up to max. 10 km.
PoE	10/100/1000 Mbps PoE port electrical, max. 60 W.
PoEC	10/100/1000 Mbps PoE port electrical, with securing collar, max. 60 W.

2.2 Product characteristics

Media modules

Type	Properties	Article number
MM991-4	4 x 100 Mbps, ST ports optical, multi-mode fiber-optic cable, up to max. 5 km.	6GK5 991-4AB00-8AA0
MM991-4LD	4 x 100 Mbps, ST ports optical, single mode fiber-optic cable, up to max. 26 km.	6GK5 991-4AC00-8AA0
MM992-4	4 x 1000 Mbps, SC ports optical, multi-mode FO cable, up to max. 750 m.	6GK5 992-4AL00-8AA0
MM992-4LD	4 x 1000 Mbps, SC ports optical, single mode FO cable, up to max. 10 km.	6GK5 992-4AM00-8AA0
MM992-4SFP	4 x 100 / 1000 Mbps, SFP media module	6GK5 992-4AS00-8AA0
MM992-4CU	4 x 10/100/1000 Mbps, RJ-45 ports electrical	6GK5 992-4SA00-8AA0
MM992-4CUC	4 x 10/100/1000 Mbps, RJ-45 ports electrical with securing collars	6GK5 992-4GA00-8AA0
MM992-4PoE	4 x 10/100/1000 Mbps, PoE ports electrical, max 60 W	6GK5 992-4QA00-8AA0
MM992-4PoEC	4 x 10/100/1000 Mbps, PoE ports electrical with securing collars, max 60 W	6GK5 992-4RA00-8AA0

Components of the product

The following components are supplied with an MM900 media module:

- MM900 media module
- Compact operating instructions

2.3 Unpacking and checking

WARNING

Do not use any parts that show evidence of damage

If you use damaged parts, there is no guarantee that the device will function according to the specification.

If you use damaged parts, this can lead to the following problems:

- Injury to persons
- Loss of the approvals
- Violation of the EMC regulations

Use only undamaged parts.

1. Make sure that the package is complete.
2. Check all the parts for transport damage.

If the consignment is incomplete or if there is damage to the exterior, contact your supplier or your local Siemens office.

3 Installation

NOTICE

Failure of the data traffic due to contamination of optical plug-in connections

Optical sockets and plugs are sensitive to contamination of the end face. Contamination can lead to the failure of the optical transmission network.

Close unused optical sockets and plugs as well as pluggable transceivers and slots with the supplied protective caps.

Remove the protective caps only immediately before you use the plug-in connection.

NOTICE

Use only approved media modules

In the module slots of SCALANCE XR500, use only approved media modules "MM900" of the X-500 IE switch product line.

Note

Slots for PoE modules

PoE modules can only be used in slots 1, 2 and 3.

Note

The names and labeling of the media modules differ

Example: The device is called, for example MM992-4SFP [6GK5 992-4AS00-8AA0], the labeling on the device is 9924AS.

Note

Factory settings of the media modules

When inserting a media module, the parameters of the ports are set to the factory defaults. First plug a media module into the device, and then assign the parameters for the ports.

Identification of the media module slots and ports

The following table shows the arrangement of the slots and ports of a SCALANCE XR552-12M:

Slot	1				2				3			
Port	P1	P2	P3	P4	P1	P2	P3	P4	P1	P2	P3	P4
Slot	4				5				6			
Port	P1	P2	P3	P4	P1	P2	P3	P4	P1	P2	P3	P4
Slot 0, port (SFP+)					P1	P2	P3	P4				
Slot	7				8				9			
Port	P1	P2	P3	P4	P1	P2	P3	P4	P1	P2	P3	P4
Slot	10				11				12			
Port	P1	P2	P3	P4	P1	P2	P3	P4	P1	P2	P3	P4

With a SCALANCE XR528-6M, there are total of six slots and four SFP+ ports.

Note

Slot number

In modular devices, the MM900 media modules can be assigned a slot number to aid orientation. The slot number labels ship with the modular devices.

Plugging in media module

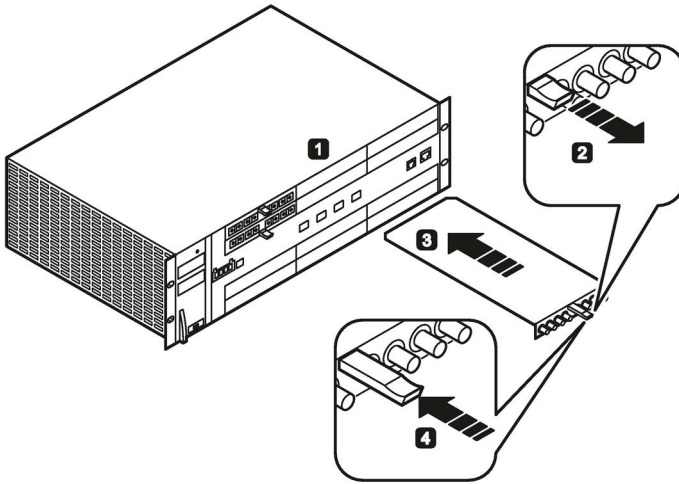


Figure 3-1 Plugging a media module into a SCALANCE XR552-12M. SCALANCE XR528-6M is used analogously.

Follow the steps below to plug an MM900 media module into a SCALANCE XR500:

1. Remove the dummy covers of the device slot into which you want to insert a media module.
2. Pull the handle out of the media module. The media module cannot be installed unless the handle is pulled out.
3. Place the media module in the guide rails of the device slot. The media module is correctly installed when it locks easily into the device and the front panel of the module is flush with the front of the device.
4. Push the handle back into the module. The media module is then locked in place.

Pulling a media module

To pull a media module, follow the same steps as when plugging, but in the reverse order:

1. Pull out the handle of the media module.
2. Pull the media module out of the device slot.
3. Close the device slot with a dummy cover if you are not plugging in another module.

NOTICE
Operating the device only with closed module slots
The device meets degree of protection IP20, if all the module slots have either media modules inserted or are closed by dummy covers. Do not start up the device with open module slots since the ingress of objects can lead to damage.

4 Technical data

4.1 Mechanical and electrical data

Device variants

The following technical specifications apply to the following device:

- MM900 media module for SCALANCE XR-500M

Note

Degree of protection of the media modules

Note that the media modules do not have a degree of protection. The degree of protection is only relevant for the basic devices.

Interfaces

Media module	Interfaces
MM992-4CU	4 x 10/100/1000 Mbps, RJ-45 ports electrical.
MM992-4CUC	4 x 10/100/1000 Mbps, RJ-45 ports electrical with securing collar.
MM992-4SFP	4 x 100/1000 Mbps, SFP media module.
MM992-4PoE	4 x 10/100/1000 Mbps, PoE ports electrical, max 60 W.
MM992-4PoEC	4 x 10/100/1000 Mbps, PoE ports electrical, with securing collar, max 60 W.
MM991-4	4 x 100 Mbps, ST ports optical, multimode fiber-optic cable, up to max. 5 km.
MM991-4LD	4 x 100 Mbps, ST ports optical, single mode fiber-optic cable, up to max. 26 km.
MM992-4	4 x 1000 Mbps, SC ports optical, multimode FO cable, up to max. 750 m.
MM992-4LD	4 x 1000 Mbps, SC ports optical, single mode FO cable, up to max. 10 km.

Construction

Media module	Dimensions and weight	Value
MM992-4CU	Dimensions (W x H x D)	120 x 22 x 305 mm
MM992-4CUC		
MM992-4SFP	Weight	300 g
MM991-4		
MM991-4LD		
MM992-4		
MM992-4LD		
MM992-4PoE		
MM992-4PoEC		
	Weight	387 g

Permitted ambient conditions

Environmental conditions	
Transportation/storage temperature	-40 to +70 °C
Operating temperature	0 to +60 °C
Maximum relative humidity in operation at 25 °C	< 95 % no condensation
Operating altitude above sea level depending on ambient temperature	<ul style="list-style-type: none"> • 2000 m at max. 56 °C • 3000 m at max. 50 °C

Electrical data

Media module	Current consumption*	Maximum power consumption*
MM992-4CU MM992-4CUC	0.14 A	3.36 W
MM992-4SFP	0.02 A	0.48 W
MM992-4PoE MM992-4PoEC	2.89 A (at 60 W PoE load)	69.36 W (at 60 W PoE load)
MM991-4	0.20 A	4.8 W
MM991-4LD	0.16 A	3.84 W
MM992-4	0.13 A	3.12 W
MM992-4LD	0.15 A	3.6 W

* At 24 VDC rated voltage of the basic device

Note

Fusing and signal contacts with media modules

The MM900 media modules do not have their own fuses and have no signaling contacts. The fuses and the signaling contacts exist in the SCALANCE device.

Electrical data: Transmitter output (optical) and receiver input

Media module	Transmitter output (optical)		Receiver input	
	min. [dBm]	max. [dBm]	Sensitivity min. [dBm]	Input power max. [dBm]
MM992-4CU	-	-	-	-
MM992-4CUC	-	-	-	-
MM992-4SFP	-	-	-	-
MM992-4PoE	-	-	-	-
MM992-4PoEC	-	-	-	-
MM991-4	-19	-14	-32	-3
MM991-4LD	-15	-8	-34	-3
MM992-4	-9.5	-4	-17	-3
MM992-4LD	-9.5	-3	-21	-3

Electrical data: Galvanic isolation with PoE modules

Media module	Electrical isolation	
MM992-4PoE	Between ports P1 to P4	No
MM992-4PoEC	Between ports and ground	Yes
	Between ports and power input	Yes

4.2 Cable lengths of the MM900 media modules for SCALANCE XR-500M

Permitted cable lengths (copper cable)

Media module	Property	Lead	Permitted cable length
MM992-4CU	4 x 10/100/1000	IE TP torsion cable	0 ... 45 m
MM992-4CUC	Mbps,	with	+ 10 m TP cord
MM992-4PoE	RJ-45 ports electrical with and without	IE FC Outlet RJ-45	+ 10 m TP cord
MM992-4PoEC	securing collar	IE TP torsion cable with IE FC RJ-45 Plug 180	0 ... 55 m
		IE FC TP marine/trailing/flexible cable with IE FC Outlet RJ-45 + 10 m TP cord	0 ... 75 m + 10 m TP cord
		IE FC TP marine/trailing/flexible cable with IE FC RJ-45 Plug 180	0 ... 85 m
		IE FC TP standard cable with IE FC Outlet RJ-45 + 10 m TP cord	0 ... 90 m + 10 m TP cord
		IE FC TP standard cable with IE FC RJ-45 plug 180	0 ... 100 m

Permitted cable lengths (fiber-optic cable) for the SFP media module

Media module	Property	Max. permitted cable length
MM992-4SFP	4 x 100/1000 Mbps, SFP media module	Depending on the SFP transceiver used

Permitted cable lengths (fiber-optic cable - Fast Ethernet)

Media module	Property	Fiber	FO cable lengths
MM991-4	4 x 100 Mbps, BFOC ports optical, multimode glass, up to max. 5 km	50/125 µm multimode fiber	0-5 km (1 dB/km at 1310 nm; 1200 MHz*km)
MM991-4LD	4 x 100 Mbps, BFOC ports optical, single mode glass, up to max. 26 km	9/125 µm single mode fiber	0-26 km (0.5 dB/km at 1310 nm)

Permitted cable lengths (fiber-optic cable - gigabit Ethernet)

Media module	Property	Fiber	FO cable lengths
MM992-4	4 x 1000 Mbps, SC ports optical, multimode glass, up to max. 750 m	62.5/125 µm multimode fiber	0-350 m (3.1 dB/km at 850 nm; 1200 MHz*km)
		50/125 µm multimode fiber	0-750 m (2.5 dB/km at 850 nm; 1200 MHz*km)
MM992-4LD	4 x 1000 Mbps, SC ports optical, single mode glass, up to max. 10 km	9/125 µm single mode fiber	0-10 km (0.5 dB/km at 1310 nm)

4.3 Other properties

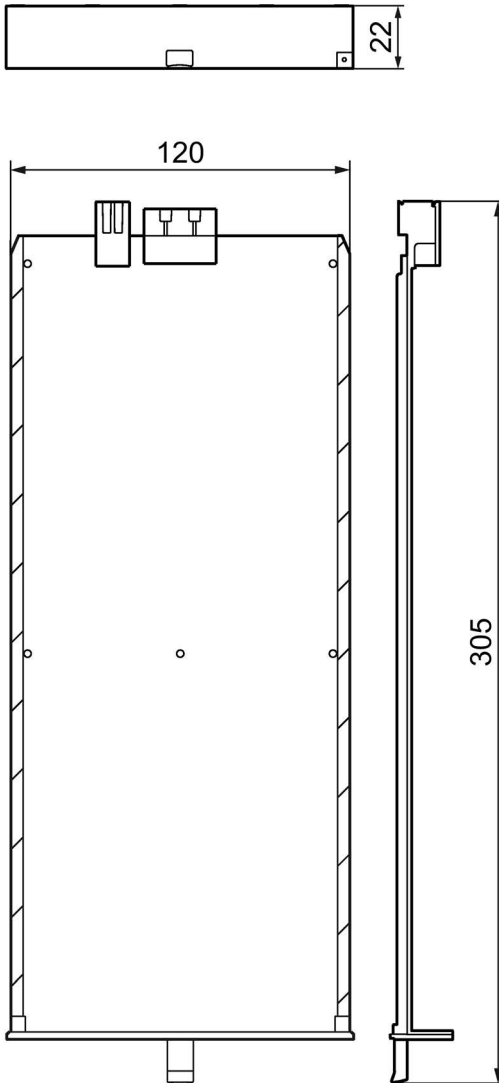
Table 4-1 Mean time between failure (MTBF)

Device version (power supply)	MTBF
MM992-4CU MM992-4CUC	> 200 years
MM991-4,	> 90 years
MM991-4LD	> 70 years
MM992-4LD	> 75 years
MM992-4	> 85 years
MM992-4SFP	> 170 years ¹⁾
MM992-4PoE MM992-4PoEC	> 75 years

¹⁾ empty

5 Dimension drawings

View from the front, top, and side (right)



Dimensions are specified in mm.

6 Approvals

The SIMATIC NET products described in these Operating Instructions have the approvals listed below.

Note

Note that the media modules meet the requirements of the approvals only in combination with the devices.

Note

The specified approvals apply only when the corresponding mark is printed on the product.

EC directives

SIMATIC NET products meet the requirements and aims of the following EC directives.


EMC directive (electromagnetic compatibility)

The SIMATIC NET products described in these operating instructions meet the requirements of EC directive 2004/108/EC "Electromagnetic Compatibility" for the following areas of application:

Field of application	Requirements	
	Emission	Immunity to interference
Industry	EN 61000-6-4 : 2007	EN 61000-6-2 : 2005

C-TICK

The product meets the requirements of the AS/NZS 2064 standard (Class A).

 WARNING
Personal injury and property damage can occur The installation of expansions that are not approved for SIMATIC NET products or their target systems may violate the requirements and regulations for safety and electromagnetic compatibility. Only use expansions that are approved for the system.

- **Keep to the installation guidelines**

The product meets the requirements if you adhere to the installation and safety instructions contained in this documentation and in the following documentation when installing and operating the product.

- **You can always find the latest documentation on the Internet**

The current descriptions of the currently available products can always be found on the Internet under the specified entry IDs/Internet pages:

- SIMATIC NET Industrial Ethernet Network manual

ID = 27069465

(<http://support.automation.siemens.com/WW/view/en/27069465>)

- EMC Installation Guideline, Planning Guide

ID = 28518276

(<http://support.automation.siemens.com/WW/view/en/28518276>)

- **Working on the product**

To protect the product from electrostatic discharge, personnel must first discharge any electrostatic charge from their body before touching the product.

Note

The product was tested with a device that also complies with the standards listed above.

If the product is operated with a device that does not meet these standards, there is no guarantee that the corresponding values will be adhered to.

ATEX (explosion protection directive)** WARNING**

When using SIMATIC NET products in hazardous area zone 2, make absolutely sure that the associated conditions in the following document are adhered to: "SIMATIC NET Product Information Use of subassemblies/modules in a Zone 2 Hazardous Area".

You will find this document

- on the data medium that ships with some devices.
- on the Internet pages of Siemens Industry Online Support.

Enter the document identification number C234 as the search term.

SIMATIC NET products meet the requirements of the EC directive:94/9/EC "Equipment and Protective Devices for Use in Potentially Explosive Atmospheres".

ATEX classification:

II 3 G Ex nA IIC T4 Gc

KEMA 07ATEX0145 X

The products meet the requirements of the following standards:

- EN 60079-15 (electrical apparatus for potentially explosive atmospheres; Type of protection "n")
- EN 60079-0 (Explosive atmospheres - Part 0: Equipment - General requirements)

You will find the current versions of the standards in the currently valid ATEX certificates.

FM

The product meets the requirements of the standards:

- Factory Mutual Approval Standard Class Number 3611
- FM Hazardous (Classified) Location Electrical Equipment:
Non Incendive / Class I / Division 2 / Groups A,B,C,D / T4 and
Non Incendive / Class I / Zone 2 / Group IIC / T4

cULus Approval for Information Technology Equipment

cULus Listed I. T. E.

Underwriters Laboratories Inc. complying with

- UL 60950-1 (Information Technology Equipment)
- CSA C22.2 No. 60950-1-03

cULus Approval Hazardous Location

cULus Listed I. T. E. FOR HAZ. LOC.

Underwriters Laboratories Inc. complying with

- UL 60950-1 (Information Technology Equipment)
- ANSI/ISA 12.12.01-2007
- CSA C22.2 No. 213-M1987

Approved for use in

Cl. 1, Div. 2, GP A, B, C, D T4

Cl. 1, Zone 2, GP IIC T4

Report no. E240480

EU declaration of conformity

You will find EC declaration of conformity for these products on the Internet pages of Siemens Industry Online Support.

See also

ID = 57026840 (<http://support.automation.siemens.com/WW/view/en/57026840>)

<http://support.automation.siemens.com/WW/view/en/67218133>

(<http://support.automation.siemens.com/WW/view/en/67218133>)

The following MM900 media modules meet the FDA and IEC requirements listed below:

Media module	Fulfills FDA and IEC requirements
MM992-4CUC	-
MM992-4CU	-
MM992-4SFP	-
MM992-4PoE	-
MM992-4PoEC	-
MM991-4	CLASS 1 LED PRODUCT
MM991-4LD	CLASS 1 LASER
MM992-4	CLASS 1 LASER
MM992-4LD	CLASS 1 LASER



Figure 6-1 FDA and IEC approvals

Trademarks

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Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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MM900 media modules for SCALANCE XR-500M
 A5E03275846-04, 11/2015