



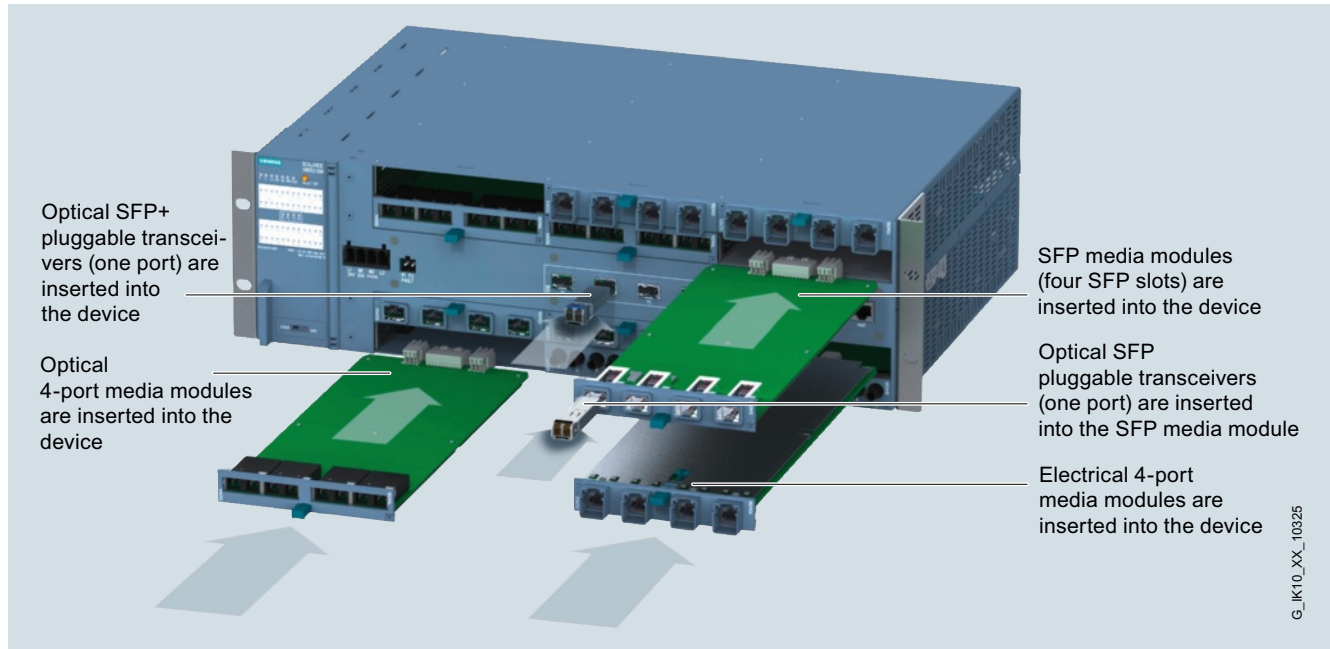
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2/191	SCALANCE X-200 managed	2/512	Controllers / SIMATIC S7-modular Embedded controllers
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Industrial Ethernet Layer 3 Switches / Routers

Media modules for modular SCALANCE XR-500 managed

Design



4-port media modules plugged into media module slot and SFP/SFP+ plug-in transceivers in SFP+ slots

Product versions of media modules

Electrical media modules with 4 x 10/100/1 000 Mbit/s RJ45 ports

- MM992-4CUC with retaining collar
- MM992-4CU without retaining collar

Electrical media modules with 4 x 10/100/1 000 Mbit/s RJ45 ports and PoE

- MM992-4PoEC with retaining collar
- MM992-4PoE without retaining collar

Optical media modules with 4 x 100 Mbit/s BFOC ports

- MM991-4 multimode, glass, up to 5 km
- MM991-4LD singlemode, glass, up to max. 26 km

Optical media modules with 4 x 1 000 Mbit/s SC ports

- MM992-4 multimode, glass, up to 750 m
- MM992-4LD single-mode, glass, up to 10 km

Optical media modules with 4 x 100/1 000 Mbit/s for SFP pluggable transceiver

- MM992-4SFP for SFP plug-in transceivers with 1 x 100 Mbit/s or 1 x 1 000 Mbit/s multimode or singlemode, glass

Product versions of SFP pluggable transceivers

The SFP plug-in transceivers (small form-factor pluggable) can be used together with the SFP media module MM992-4SFP, and in the integral SFP+ slots of the SCALANCE X-500.

Optical SFP pluggable transceivers with 1x 100 Mbit/s LC port

- SFP991-1 multimode, glass, up to 5 km
- SFP991-1LD singlemode, glass, up to 26 km
- SFP991-1LH+ singlemode, glass, up to 70 km
- SFP991-1ELH200 singlemode, glass, up to 200 km

Optical SFP pluggable transceivers with 1 x 1 000 Mbit/s LC port

- SFP992-1 multimode, glass, up to 750 m
- SFP992-1LD singlemode, glass, up to 10 km
- SFP992-1LH singlemode, glass, up to 40 km
- SFP992-1LH+ singlemode, glass, up to 70 km
- SFP992-1ELH singlemode, glass, up to 120 km

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PROFINET/Industrial Ethernet

Industrial Ethernet Layer 3 Switches / Routers

Media modules for modular SCALANCE XR-500 managed

Design (continued)

Product versions of SFP+ pluggable transceivers

The SFP+ pluggable transceivers (small form-factor pluggable) can only be used in the integral SFP+ slots of the SCALANCE X-500.

Optical SFP+ pluggable transceivers with 1 x 10 Gbit/s LC ports

- SFP993-1
multimode, glass, up to max 300 m
- SFP993-1LD
single-mode, glass, up to 10 km
- SFP993-1LH
singlemode, glass, up to max 40 km

Electrically preassembled SFP+/SFP+

Connecting cable with 10 Gbit/s

The IE connecting cable SFP+/SFP+ is preassembled at both ends and suitable for the transmission of 10 Gbit/s Ethernet. The cables have SFP+ connectors for use in the SFP+ slots of the SCALANCE X-500 series and therefore offer the possibility of connecting SCALANCE X-500 switches cost-effectively over short distances with a bandwidth of 10 Gbit/s. The SFP+/SFP+ connecting cables can only be used in the integrated SFP+ slots of the SCALANCE X-500.

- IE connecting cable SFP+/SFP+ 1 m;
Twinax copper cable with a length of 1 m
- IE connecting cable SFP+/SFP+ 2 m;
Twinax copper cable with a length of 2 m
- IE connecting cable SFP+/SFP+ 7 m;
Twinax copper cable with a length of 7 m

Type of module	Type and quantity of ports							
	10 Gigabit Ethernet		Gigabit Ethernet			Fast Ethernet		Max. distance
	10000 Mbit/s		10 / 100 / 1000 Mbit/s	1000 Mbit/s		100 Mbit/s		
	Optical		Electrical	Optical		Optical		
Multimode	Singlemode	Twisted Pair	Multimode	Singlemode	Multimode	Singlemode		
Media modules								
MM992-4CUC			4x RJ45 ¹⁾					100 m
MM992-4CU			4x RJ45					100 m
MM992-4PoEC			4x RJ45 ¹⁾					100 km
MM992-4PoE			4x RJ45					100 km
MM991-4						4x BFOC		5 km
MM991-4LD							4x BFOC	26 km
MM992-4				4x SC				5 km
MM992-4LD					4x SC			10 km
MM992-4SFP				4x LC ²⁾	4x LC ²⁾	4x LC ²⁾	4x LC ²⁾	
SFP-Module								
SFP991-1 ³⁾						1x LC		5 km
SFP991-1LD ³⁾							1x LC	26 km
SFP991-1LH+ ³⁾							1x LC	70 km
SFP991-1ELH200 ³⁾							1x LC	200 km
SFP992-1 ^{3) 4)}				1x LC				750 m
SFP992-1LD ^{3) 4)}					1x LC			10 km
SFP992-1LH ^{3) 4)}					1x LC			40 km
SFP992-1LH+ ^{3) 4)}					1x LC			70 km
SFP992-1ELH ^{3) 4)}					1x LC			120 km
SFPplus-Module ⁴⁾								
SFP993-1	1x LC							300 m
SFP993-1LD		1x LC						10 km
SFP993-1LH		1x LC						40 km

¹⁾ With retaining collars

²⁾ The MM992-4SFP SFP slot module can accommodate up to four 1-port SFP modules

³⁾ Can only be plugged into an MM992-4SFP slot module

⁴⁾ Pluggable in XR-500 SFPplus slots only

Overview of media modules for SCALANCE X-500

PROFINET/Industrial Ethernet

Industrial Ethernet Layer 3 Switches / Routers

Media modules for modular SCALANCE XR-500 managed

Technical specifications (continued)

Article No.	6GK5991-1AD00-8AA0	6GK5991-1AF00-8AA0	6GK5991-1AE00-8AA0	6GK5991-1AE30-8AA0
Product-type designation	SFP991-1	SFP991-1LD	SFP991-1LH+	SFP991-1ELH200
Design, dimensions and weight				
Design	SFP Module	SFP Module	SFP Module	SFP Module
Width	13.7 mm	13.7 mm	13.7 mm	13.7 mm
Height	11.9 mm	11.9 mm	11.9 mm	11.9 mm
Depth	56.5 mm	56.5 mm	56.5 mm	56.5 mm
Net weight	0.01 kg	0.01 kg	0.01 kg	0.01 kg
Mounting type Installation in media module slot	-	-	-	-
Mounting type	Latched	Latched	Latched	Latched
Standards, specifications, approvals				
Standard	-	-	-	-
• for EMC	-	-	-	-
• for EMC from FM	FM3611: Class 1, Division 2, Group A, B, C, D / T4, Class 1, Zone 2, Group IIC, T4	FM3611: Class 1, Division 2, Group A, B, C, D / T4, Class 1, Zone 2, Group IIC, T4	FM3611: Class 1, Division 2, Group A, B, C, D / T4, Class 1, Zone 2, Group IIC, T4	FM3611: Class 1, Division 2, Group A, B, C, D / T4, Class 1, Zone 2, Group IIC, T4
• for hazardous zone	EN 60079-0: 2006, EN 60079-15: 2005, II 3 G Ex nA II T4, KEMA 07 ATEX 0145 X	EN 60079-0: 2006, EN 60079-15: 2005, II 3 G Ex nA II T4, KEMA 07 ATEX 0145 X	EN 60079-0: 2006, EN 60079-15: 2005, II 3 G Ex nA II T4, KEMA 07 ATEX 0145 X	EN 60079-0: 2006, EN 60079-15: 2005, II 3 G Ex nA II T4, KEMA 07 ATEX 0145 X
• for safety of CSA and UL	UL 60950-1, CSA C22.2 No. 60950-1-03	UL 60950-1, CSA C22.2 No. 60950-1-03	UL 60950-1, CSA C22.2 No. 60950-1-03	UL 60950-1, CSA C22.2 No. 60950-1-03
• for hazardous area of CSA and UL	-	-	-	-
• for emitted interference	EN 61000-6-4:2007 (Class A)	EN 61000-6-4:2007 (Class A)	EN 61000-6-4:2007 (Class A)	EN 61000-6-4:2007 (Class A)
• for interference immunity	EN 61000-6-2:2005	EN 61000-6-2:2005	EN 61000-6-2:2005	EN 61000-6-2:2005
Verification of suitability	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-2:2005, EN 61000-6-4:2007
• CE mark	Yes	Yes	Yes	Yes
• C-Tick	Yes	Yes	Yes	Yes
• KC approval	No	No	No	No
• Railway application in accordance with EN 50155	-	-	-	-
• Railway application in accordance with EN 50124-1	-	-	-	-
• IEC 61850-3	-	-	-	-
Marine classification association				
• American Bureau of Shipping Europe Ltd. (ABS)	-	-	-	-
• Bureau Veritas (BV)	-	-	-	-
• Det Norske Veritas (DNV)	-	-	-	-
• Germanische Lloyd (GL)	-	-	-	-
• Lloyds Register of Shipping (LRS)	-	-	-	-
• Nippon Kaiji Kyokai (NK)	-	-	-	-

Article No.	6GK5992-1AL00-8AA0	6GK5992-1AM00-8AA0	6GK5992-1AN00-8AA0
Product-type designation	SFP992-1	SFP992-1LD	SFP992-1LH
Interfaces			
Number of electrical/optical connections for network components or terminal equipment maximum	1	1	1
Number of 10/100/1 000 Mbit/s M12 ports	-	-	-
Number of 10/100/1 000 Mbit/s RJ45 ports	-	-	-
Number of electrical connections			
• for Power-over-Ethernet for network components or terminal equipment	-	-	-
• for SFP+/SFP	-	-	-

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Industrial Ethernet Layer 3 Switches / Routers

Media modules for modular SCALANCE XR-500 managed

Technical specifications (continued)

Article No.	6GK5992-1AL00-8AA0	6GK5992-1AM00-8AA0	6GK5992-1AN00-8AA0
Product-type designation	SFP992-1	SFP992-1LD	SFP992-1LH
Design of electrical connection	-	-	-
• for network components and terminal equipment	-	-	-
• for Power-over-Ethernet for network components or terminal equipment	-	-	-
Number of 100 Mbit/s ST(BFOC) ports	-	-	-
Number of 100 Mbit/s SC ports	-	-	-
Number of 100 Mbit/s LC ports	-	-	-
Number of 1 000 Mbit/s LC ports (LX)	-	1	1
Number of 1 000 Mbit/s LC ports (SX)	1	-	-
Number of 1 000 Mbit/s SC ports (LX)	-	-	-
Number of 1 000 Mbit/s SC ports (SX)	-	-	-
Number of 10 Gbit/s LC ports (LX)	-	-	-
Number of 10 Gbit/s LC ports (SX)	-	-	-
Design of optical connections for network components or terminal devices	LC	LC	LC
Connectable optical power relative to 1 mW	-	-	-
• of the transmitter output	-9.5 ... -4 dB	-9.5 ... -3 dB	-6 ... +0 dB
• of the receiver input maximum	-3 dB	-3 dB	-3 dB
Optical sensitivity relative to 1 mW of the receiver input minimum	-17 dB	-21 dB	-23 dB
Attenuation of fiber-optic cable transmission link minimum necessary	0 dB	0 dB	3 dB
Range at the optical interface depending on the optical fiber used	0 ... 0.75 km	0 ... 10 km	8 ... 40 km
Permitted ambient conditions			
Ambient temperature	-	-	-
• during operating	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Relative humidity at 25 °C without condensation during operating maximum	95 %	95 %	95 %
Ambient condition for (standard) operation mode	-	-	-
Protection class IP	IP20	IP20	IP20
Design, dimensions and weight			
Design	SFP Module	SFP Module	SFP Module
Width	13.7 mm	13.7 mm	13.7 mm
Height	11.9 mm	11.9 mm	11.9 mm
Depth	56.5 mm	56.5 mm	56.5 mm
Net weight	0.01 kg	0.01 kg	0.01 kg
Mounting type Installation in media module slot	-	-	-
Mounting type	Latched	Latched	Latched

PROFINET/Industrial Ethernet

Industrial Ethernet Layer 3 Switches / Routers

Media modules for modular SCALANCE XR-500 managed

Technical specifications (continued)

Article No.	6GK5992-1AL00-8AA0	6GK5992-1AM00-8AA0	6GK5992-1AN00-8AA0
Product-type designation	SFP992-1	SFP992-1LD	SFP992-1LH
Standards, specifications, approvals			
Standard	-	-	-
• for EMC	-	-	-
• for EMC from FM	FM3611: Class 1, Division 2, Group A, B, C, D / T4, Class 1, Zone 2, Group IIC, T4	FM3611: Class 1, Division 2, Group A, B, C, D / T4, Class 1, Zone 2, Group IIC, T4	FM3611: Class 1, Division 2, Group A, B, C, D / T4, Class 1, Zone 2, Group IIC, T4
• for hazardous zone	EN 60079-0: 2006, EN 60079-15: 2005, II 3 G Ex nA II T4, KEMA 07 ATEX 0145 X	EN 60079-0: 2006, EN 60079-15: 2005, II 3 G Ex nA II T4, KEMA 07 ATEX 0145 X	EN 60079-0: 2006, EN 60079-15: 2005, II 3 G Ex nA II T4, KEMA 07 ATEX 0145 X
• for safety of CSA and UL	UL 60950-1, CSA C22.2 No. 60950-1-03	UL 60950-1, CSA C22.2 No. 60950-1-03	UL 60950-1, CSA C22.2 No. 60950-1-03
• for hazardous area of CSA and UL	-	-	-
• for emitted interference	EN 61000-6-4:2007 (Class A)	EN 61000-6-4:2007 (Class A)	EN 61000-6-4:2007 (Class A)
• for interference immunity	EN 61000-6-2:2005	EN 61000-6-2:2005	EN 61000-6-2:2005
Verification of suitability	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-2:2005, EN 61000-6-4:2007
• CE mark	Yes	Yes	Yes
• C-Tick	Yes	Yes	Yes
• KC approval	No	No	No
• Railway application in accordance with EN 50155	-	-	-
• Railway application in accordance with EN 50124-1	-	-	-
• IEC 61850-3	-	-	-
Marine classification association			
• American Bureau of Shipping Europe Ltd. (ABS)	-	-	-
• Bureau Veritas (BV)	-	-	-
• Det Norske Veritas (DNV)	-	-	-
• Germanische Lloyd (GL)	-	-	-
• Lloyds Register of Shipping (LRS)	-	-	-
• Nippon Kaiji Kyokai (NK)	-	-	-

Article No.	6GK5992-1AP00-8AA0	6GK5992-1AQ00-8AA0
Product-type designation	SFP992-1LH+	SFP992-1ELH
Interfaces		
Number of electrical/optical connections for network components or terminal equipment maximum	1	1
Number of 10/100/1 000 Mbit/s M12 ports	-	-
Number of 10/100/1 000 Mbit/s RJ45 ports	-	-
Number of electrical connections		
• for Power-over-Ethernet for network components or terminal equipment	-	-
• for SFP+/SFP	-	-
Design of electrical connection		
• for network components and terminal equipment	-	-
• for Power-over-Ethernet for network components or terminal equipment	-	-

PROFINET/Industrial Ethernet

Industrial Ethernet Layer 3 Switches / Routers

Media modules for modular SCALANCE XR-500 managed

Ordering data	Article No.	Article No.
Electrical media modules		
with 4 x 10/100/1 000 Mbit/s RJ45 ports, electrical		
• MM992-4CuC	6GK5992-4GA00-8AA0	
• MM992-4CU	6GK5992-4SA00-8AA0	
with power over Ethernet		
• MM992-4PoEC	6GK5992-4RA00-8AA0	
• MM992-4PoE	6GK5992-4QA00-8AA0	
Optical media modules		
with 4 x 100 Mbit/s BFOC ports, optical		
• MM991-4	6GK5991-4AB00-8AA0	
multi-mode, glass, up to 5 km		
• MM991-4LD	6GK5991-4AC00-8AA0	
single-mode, glass, up to max. 26 km		
with 4 x 1 000 Mbit/s SC ports, optical		
• MM992-4	6GK5992-4AL00-8AA0	
multi-mode, glass, up to max. 750 m		
• MM992-4LD	6GK5992-4AM00-8AA0	
single-mode, glass, up to max. 10 km		
with 4 x 100/1 000 Mbit/s for SFP pluggable transceiver, optical		
• MM992-4SFP	6GK5992-4AS00-8AA0	
for SFP plug-in transceivers with 1 x 100 or 1 x 1 000 Mbit/s multi-mode or single-mode, glass		
SFP pluggable transceiver, optical		
with 1 x 100 Mbit/s LC port, optical		
• SFP991-1	6GK5991-1AD00-8AA0	
multi-mode, glass, up to max. 5 km		
• SFP991-1LD	6GK5991-1AF00-8AA0	
single-mode, glass, up to max. 26 km		
• SFP991-1LH+	6GK5991-1AE00-8AA0	
single-mode, glass, up to max. 70 km		
• SFP991-1ELH200	6GK5991-1AE30-8AA0	
single-mode, glass, up to max. 200 km		
with 1 x 1 000 Mbit/s LC port, optical		
• SFP992-1	6GK5992-1AL00-8AA0	
multi-mode, glass, up to max. 750 m		
• SFP992-1LD	6GK5992-1AM00-8AA0	
single-mode, glass, up to max. 10 km		
• SFP992-1LH	6GK5992-1AN00-8AA0	
single-mode, glass, up to max. 40 km		
• SFP992-1LH+	6GK5992-1AP00-8AA0	
single-mode, glass, up to max. 70 km		
• SFP992-1ELH	6GK5992-1AQ00-8AA0	
single-mode, glass, up to max. 120 km		
with 1 x 10 Gbit/s LC port, optical		
• SFP993-1	6GK5993-1AT00-8AA0	
multi-mode, glass, up to max. 300 m		
• SFP993-1LD	6GK5993-1AU00-8AA0	
single-mode, glass, up to max. 10 km		
• SFP993-1LH	6GK5993-1AV00-8AA0	
single-mode, glass, up to max. 40 km		
IE connecting cable SFP+/SFP+, electrical, 10 Gbit/s		
Twinax copper cables, length		
• 1 m	6GK5980-3CB00-0AA1	
• 2 m	6GK5980-3CB00-0AA2	
• 7 m	6GK5980-3CB00-0AA7	
Accessories		
IE FC RJ45 Modular Outlet		
FastConnect RJ45 Outlet for Industrial Ethernet with interface for replaceable insert		
• with 2FE insert; replaceable insert for 2 x 100 Mbit/s interfaces		6GK1901-1BE00-0AA1
• with 1GE insert; replaceable insert for 1 x 1 000 Mbit/s interfaces		6GK1901-1BE00-0AA2
IE FC TP Standard Cable GP 2 x 2 (Type A)		
4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/IE FC RJ45 Plug; PROFINET-compliant; with UL approval; sold by the meter; max. length 1 000 m, minimum order 20 m		6XV1840-2AH10
IE FC TP Standard Cable GP 4 x 2		
8-core, shielded TP installation cable for connection to IE FC RJ45 Modular Outlet for universal application; with UL approval; sold by the meter; max quantity 1 000 m, minimum order 20 m		6XV1870-2E
IE TP Cord RJ45/RJ45		
TP cable 4 x 2 with two RJ45 connectors		
• 0.5 m		6XV1870-3QE50
• 1 m		6XV1870-3QH10
• 2 m		6XV1870-3QH20
• 6 m		6XV1870-3QH60
• 10 m		6XV1870-3QN10
IE FC RJ45 plug 180		
RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation/displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPU's with Industrial Ethernet interface		
• 1 pack = 1 unit		6GK1901-1BB10-2AA0
• 1 pack = 10 units		6GK1901-1BB10-2AB0
• 1 pack = 50 units		6GK1901-1BB10-2AE0
IE FC RJ45 Plug 4 x 2		
RJ45 plug connector for Industrial Ethernet (10/100/1 000 Mbit/s) with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPs/CPU's with Industrial Ethernet interface		
• 1 pack = 1 unit		6GK1901-1BB11-2AA0
• 1 pack = 10 units		6GK1901-1BB11-2AB0
• 1 pack = 50 units		6GK1901-1BB11-2AE0