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Overview

	Twisted pair network	Fiber optic network	Wireless network
Flexibility of the network topology	● ● ● ●	● ● ● ●	● ● ● ●
Suitability for high transmission rates	● ● ● ○ 1)	● ● ● ● 1)	● ● ○ ○
Inter-building networking	○ ○ ○ ○	● ● ● ●	● ● ● ○
EMC	● ● ● ○	● ● ● ●	● ● ● ●
Simple cable laying	● ● ● ○	● ● ● ○	–
Performance spectrum for special applications	Cables for indoor area; trailing cable; marine cable; FastConnect cables	Cables for indoor and outdoor area; trailing cable; halogen-free cable	–
Effect of voltage failure	Failure of a subnetwork 2)	Failure of a subnetwork 2)	Failure of a subnetwork 2)
Effect of path failure	Network breaks down into two sub-networks functioning in isolation 3)	Network breaks down into two sub-networks functioning in isolation 3)	–
Max. network expansion	5000 m 4)	Up to 150 km 4); over 150 km, consider signal propagation time	–
Max. distance between two network nodes / Access Points	100 m	50 m POF 100 m PCF 4000-5000 m multimode 120 km single mode	30 m indoors per segment 100 m indoors per segment
Pre-assembled cables	Yes	Yes	–
Assembly on site	without special tool; FastConnect technology	without special tool; FastConnect technology	–
Integrated diagnostics support	LED indicators; signaling contact; SNMP network management; Web-based management, PROFINET diagnostics	LED indicators; signaling contact; SNMP network management; Web-based management, PROFINET diagnostics	LED indicators; SNMP network management; Web-based management, PROFINET diagnostics
Redundant network structures	Electrical ring or doubling of the infrastructure (linear, star, tree)	Optical ring or doubling of the infrastructure (linear, star, tree)	Multiple illumination or use of different frequency bands (2.4 and 5 GHz)

1) suitable for 10 Mbit/s to 10 Gbit/s
2) Safeguard against subnetwork failure by means of redundant voltage supply
3) no effect in the case of ring structure
4) if there are 50 switches in the ring

● ● ● ● suitable
● ● ● ○ partly suitable
● ● ○ ○
● ○ ○ ○
○ ○ ○ ○ not applicable

G_IK10_XX_10013

Comparison of networking media

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Technical specifications

Article No.	**6XV1812-8A**	**6XV1830-8AH10**
Product-type designation	**Energy Cable 2 x 0.75**	**Energy Cable 5 x 1.5**
Product description	Energy cable (2-core), sold by the meter, not assembled	Energy cable (5-core), sold by the meter, not assembled
Acceptability for application	Connection of signaling contact and 24 V power supply to SCALANCE X and SCALANCE W	Power supply of ET 200 modules with 7/8" power port
Cable designation	L-YY-2x1x0.75 GR	L-Y11Y-Z 5x1x1.5 GR
Electrical data		
Operating voltage RMS value	600 V	600 V
Conductor cross section of the power wires	0.75 mm^2	1.5 mm^2
Continuous current of the power wires	6 A	16 A
Mechanical data		
Number of electrical wires	2	5
Design of the electrical connection FastConnect	-	No
Outer diameter		
• of the inner conductor	1.3 mm	1.55 mm
• of the wire insulation	2.5 mm	2.73 mm
• of the cable sheath	7.4 mm	10.5 mm
Material		
• of the wire insulation	PVC	PVC
• of the cable sheath	PVC	PUR
Symmetrical tolerance of outer diameter of cable sheath	0.3 mm	0.3 mm
Color		
• of the power wire insulation	Brown/blue	4x black, 1x green / yellow
• of the cable sheath	gray	gray
Bending radius		
• with single bend	19 mm	27 mm
• with multiple bends	45 mm	63 mm
• with continuous bending	-	75 mm
Number of bending cycles	-	5 000 000
• Note	-	For use in cable carriers, for 5 million bending cycles with a bending radius of 75 mm, an acceleration of 4 m/s^2 and a speed of 180 m/min
Traction stress maximum	100 N	500 N
Weight per length	70 kg/km	149 kg/km
Permitted ambient conditions		
Ambient temperature		
• during operating	-20 … +80 °C	-40 … +80 °C
• during storage	-20 … +80 °C	-40 … +80 °C
• during transport	-20 … +80 °C	-40 … +80 °C
• during installation	-20 … +80 °C	-40 … +80 °C
Burning behaviour	Flame retardant acc. to IEC 60332-1	Flame retardant acc. to IEC 60332-1
Chemical resistance		
• to mineral oil	Conditional resistance	Resistant
• to grease	Conditional resistance	Resistant
• to water	Conditional resistance	Conditional resistance
Radiological resistance to UV radiation	Resistant	Resistant
Product properties, functions, components general		
Product feature		
• halogen-free	No	No
• silicon-free	Yes	Yes
Standards, specifications, approvals		
UL/ETL listing with 300 V rating	Yes: CL3	No
UL/ETL style with 600 V rating	Yes	Yes
Verification of suitability		
• CE mark	Yes	Yes
• RoHS conformity	Yes	Yes

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Technical specifications (continued)

Article No.	6GK1908-0DC10-6AA3	6GK1907-0DC10-6AA3	6GK1907-0DB10-6AA3
Product-type designation	**Signaling Contact M12 Cable Connector**	**Power M12 Cable Connector PRO**	**Power M12 Plug PRO**
Product description	M12 connection socket for signaling contact; 5-pole, B-coded	M12 connection socket; 4-pole, A-coded	M12 power plug, 4-pole, A-coded
Acceptability for application	For connection to SCALANCE X208PRO for signaling contact	For connection to SCALANCE W-700 / X208PRO for 24 V DC voltage supply	For connection to PS791-1PRO power supply for 24 V DC voltage supply
Interfaces			
Number of electrical connections for network components and terminal equipment	1	1	1
Design of electrical connection for network components and terminal equipment	M12 connector (B-coded, 5-pin)	M12 connector (female insert, A-coded, 4-pin)	M12 connector (male insert, A-coded, 4-pin)
Mechanical data			
Material of the enclosure	plastic	plastic	plastic
Design, dimensions and weight			
Type of cable outlet	180 degree cable outlet	180 degree cable outlet	180 degree cable outlet
Width	14 mm	19 mm	19 mm
Height	14 mm	19 mm	19 mm
Depth	59 mm	73 mm	73 mm
Net weight	37 g	40 g	40 g
Permitted ambient conditions			
Ambient temperature			
• during operating	-40 … +70 °C	-40 … +70 °C	-40 … +70 °C
• during storage	-40 … +80 °C	-40 … +80 °C	-40 … +80 °C
• during transport	-40 … +80 °C	-40 … +80 °C	-40 … +80 °C
Relative humidity at 25 °C without condensation during operating maximum	-	-	-
Protection class IP	IP65/67	IP65/67	IP65/67
Chemical resistance to water	resistant	resistant	resistant
Product properties, functions, components general			
Product feature silicon-free	Yes	Yes	Yes
Product component strain relief	Yes	Yes	Yes
Standards, specifications, approvals			
Verification of suitability RoHS conformity	Yes	Yes	Yes

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Ordering data

	Article No.
Power cable 2 x 0.75 Power cable with trailing capability with 2 copper cores (0.75 mm^2) for connecting to M12 plug-in connector; sold by the meter; max. 1 000 m, minimum order quantity 20 m	**6XV1812-8A**
Power cable 5 x 1.5 Power cable with trailing capability with 5 copper cores (1.5 mm^2) for connecting to 7/8" plug-in connector; sold by the meter; max. 1 000 m; minimum order quantity 20 m	**6XV1830-8AH10**
M12 Power Connecting Cable M12-180/M12-180 Flexible 4-core power connecting cable, assembled with A-coded 5-pin M12 connector and A-coded, 5-pin M12 socket to supply the ET 200 with 24 V DC; length:	
• 0.3 m	**6XV1801-5DE30**
• 0.5 m	**6XV1801-5DE50**
• 1.0 m	**6XV1801-5DH10**
• 1.5 m	**6XV1801-5DH15**
• 2.0 m	**6XV1801-5DH20**
• 3.0 m	**6XV1801-5DH30**
• 5.0 m	**6XV1801-5DH50**
• 10 m	**6XV1801-5DN10**
• 15 m	**6XV1801-5DN15**

	Article No.
Additional components	
7/8" plug-in connector Plug with axial cable outlet for field assembly for ET 200, 5-core, plastic enclosure, 1 pack = 5 items	
• Male pins	**6GK1905-0FA00**
• Socket insert	**6GK1905-0FB00**
7/8" Power T-Tap PRO Power T-piece for ET 200 with two 7/8" socket inserts and one 7/8" pin insert 1 pack = 5 items	**6GK1905-0FC00**
Signaling Contact M12 Cable Connector PRO Socket for connection of SCALANCE X208PRO for signaling contact; 5-pole, B-coded, with assembly instructions; 3 items	**6GK1908-0DC10-6AA3**
Power M12 Cable Connector PRO Socket for connection of SCALANCE W-700 for 24 V DC supply voltage; 4-pole, A-coded, with assembly instructions, 3 items	**6GK1907-0DC10-6AA3**
Power M12 Plug PRO Plug for connection to PS791-1PRO power supply for 24 V DC supply voltage; 4-pole, A-coded, with assembly instructions, 3 items	**6GK1907-0DB10-6AA3**
SIMATIC NET Manual Collection Electronic manuals for communication systems, communication protocols, and communication products; on DVD, German/English	**6GK1975-1AA00-3AA0**

More information

Cable routing:

During storage, transport and cable laying, keep both ends sealed with a shrink-on cap.

Comply with the permissible bending radii and tensile load!

Note:

You can order components supplementary to the SIMATIC NET cabling range from your local contact.

Technical advice on this subject is available from:

J. Hertlein
I IA SC CI PRM 4
Phone: +49 (911) 750-4465
E-mail: juergen.hertlein@siemens.com

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Overview

SCALANCE X-100		Hardware																		
	Type of device	Connection to S7 backplane bus	Format module S7	PC module	Flat type of construction	Box type of construction	19" type of construction	Rugged, compact housing	Modular design	10 Gigabit Ethernet	Gigabit Ethernet	PoE (Power over Ethernet)	LED diagnosis	SIMATIC environment	Redundant power supply (2 x 24 V DC)	External supply for integrated switch	Signal contact	Local display (SET pushbutton)	C-PLUG slot	
	X104-2							•					•	•	•		•	•		G_IK10_XX_10316
	X106-1							•					•	•	•		•	•		
	X108							•					•	•	•		•	•		
	X108PoE							•				•	•	•	•		•	•		
	X112-2							•					•	•	•		•	•		
	X116							•					•	•	•		•	•		
	X124							•					•	•	•		•	•		
	• applies																			

Function overview SCALANCE X-100 unmanaged

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Overview



The unmanaged Industrial Ethernet switches of the SCALANCE X-100 product line are optimized for installing Industrial Ethernet networks at transmission rates of 10/100 Mbit/s in a line and star topology.

- Depending on the port type of the devices, the connection to a station or network is electrical or optical with Power-over-Ethernet (PoE) functionality according to IEEE 802.3at Type 1 (corresponds to IEEE 802.3af)
- Rugged metal enclosure for space-saving cubicle mounting on standard rails, S7-300 DIN rails, or for wall mounting
- Rugged, industry-standard station connections with PROFINET-compatible RJ45 connectors that offer additional strain relief and bending strain relief thanks to latching on the housing
- Redundant power supply
- Diagnostics on the device by means of LEDs (power, link status, data communication)
- Error signaling contact with easy adjustment using the SET button

Product versions

SCALANCE X104-2 / SCALANCE X106-1 / SCALANCE X112-2

- Construction of optical Industrial Ethernet line or star topologies:
  - SCALANCE X104-2;
    with 4 electrical ports and 2 optical ports
  - SCALANCE X106-1;
    with 6 electrical ports and 1 optical port
  - SCALANCE X112-2;
    with 12 electrical ports and 2 optical ports
- Diagnostics on the device using LEDs (power, link status, data traffic) and signaling contact (alarm screen form can be set using a button on the device)
- The RJ45 ports are suitable for industrial use and have additional retaining collars: optimized for connecting the IE FC RJ45 Plug 180

SCALANCE X108 / SCALANCE X108PoE / SCALANCE X116 / SCALANCE X124

- Construction of electrical Industrial Ethernet star and line topologies
  - SCALANCE X108
    with eight electrical ports
  - SCALANCE X108PoE
    with eight electrical ports, two of which have Power-over-Ethernet functionality
  - SCALANCE X116
    with 16 electrical ports
  - SCALANCE X124
    with 24 electrical ports
- Diagnostics on the device using LEDs (power, link status, data traffic) and signaling contact (alarm screen form can be set using a button on the device)
- The RJ45 ports are suitable for industrial use and have additional retaining collars: optimized for connecting the IE FC RJ45 Plug 180

Benefits

get Designed for Industry

- Ideal solution for configuring Industrial Ethernet line and star topologies
- Reduction of network installation costs by transmitting data and energy (Power-over-Ethernet) via the conventional 4-core Industrial Ethernet cable (only SCALANCE X108PoE)
- Additional power supply units can be omitted thanks to generating the Power-over-Ethernet voltage (48 V DC) direct at the switch (SCALANCE X108PoE only)
- Space-saving installation in the cabinet thanks to the compact design in S7-300 format
- Reliable plug-in connection thanks to industry-standard device connection in conjunction with PROFINET-compliant FastConnect connectors
- Installation is possible without a patch field by means of IE FC RJ45 Plug 180 and IE FC Standard Cable
- Use of uncrossed connection cables possible by means of integrated autocrossover function

Application

The switches of the SCALANCE X-100 product line support the inexpensive construction of Industrial Ethernet line or star topologies with switching functions. They are designed for installation in the control cabinet.

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Design

The SCALANCE Industrial Ethernet switches with a rugged metal housing are optimized for mounting on a standard rail and an S7-300 rail. Direct wall mounting in various positions is also possible. Due to the dimensions of the housing that conform to those of SIMATIC S7-300, the devices are optimized for integration in an automation solution with S7-300 components.

The SCALANCE X-100 switches have:

- A 4-pole terminal block for connecting the redundant supply voltage (2 x 24 V DC)
- A row of LEDs for displaying status information (power, link status, data communication, signaling contact)
- A 2-pole terminal block for connecting the floating signaling contact
- A SET button for on-site configuration of the signaling contact

The following port types are available:

- ***10/100BaseTX, RJ45 port;***
  automatic detection of the transmission rate (10 or 100 Mbit/s), with autosensing and autocrossover functions for connecting IE FC cables using IE FC RJ45 Plug 180 up to 100 m
- ***10/100BaseTX, RJ45 ports and Power-over-Ethernet functionality;***
  automatic detection of the transmission rate (10 or 100 Mbit/s), with autosensing and autocrossover functions for connecting IE FC cables using IE FC RJ45 Plug 180 up to 100 m and integrated Power-over-Ethernet functionality according to IEEE 802.3at Type 1
- ***100BaseFX, BFOC port;***
  for direct connection to the Industrial Ethernet glass FOC up to 5 km

Function

- Construction of electrical and optical Industrial Ethernet line or star topologies
- Use of uncrossed connecting leads is possible due to integrated auto-crossover function of the ports
- Power supply of Power-over-Ethernet-capable terminal equipment via the data line for SCALANCE X108PoE
- Isolation of the load due to integrated switch functions
- Easy network configuration and network expansion; no limitation of the expansion of the network when switches of the SCALANCE X-100 product line are cascaded

Network topology and network configuration

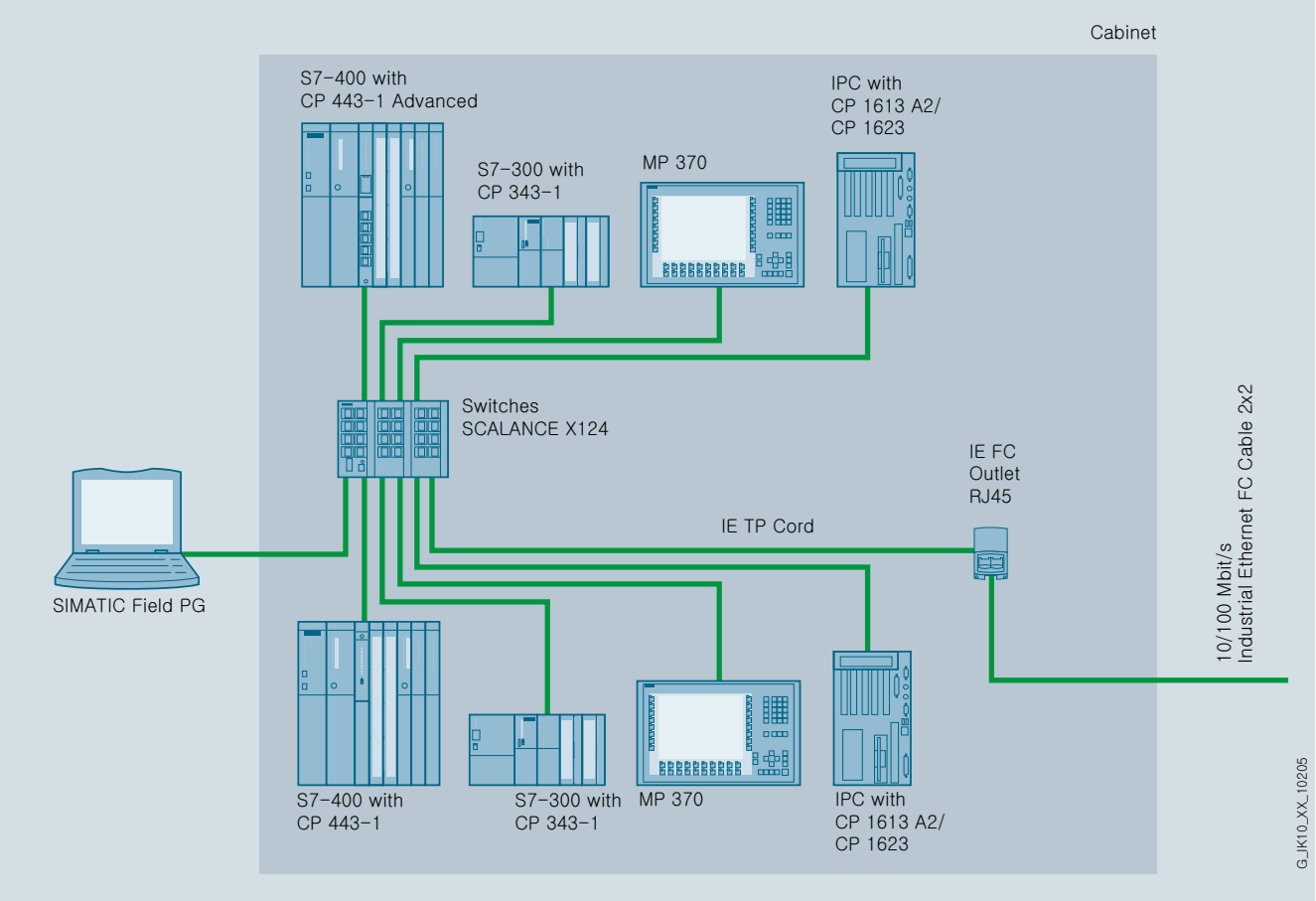
The SCALANCE X-100 switches are typically installed with the stations to be connected in a control cabinet. They can be mixed electrically and optically in star and line topologies.

When configuring the network, it is necessary to observe the following boundary conditions:

- Length of the TP cable between SCALANCE X switches:
  - Max. 100 m with Industrial Ethernet FastConnect products
- Length of the TP cable between SCALANCE X switch and Power-over-Ethernet terminal equipment:
  - Max. 100 m with Industrial Ethernet FastConnect products
- Length of the fiber-optic cables:
  - Max. 5 km with Industrial Ethernet glass fiber-optic cables

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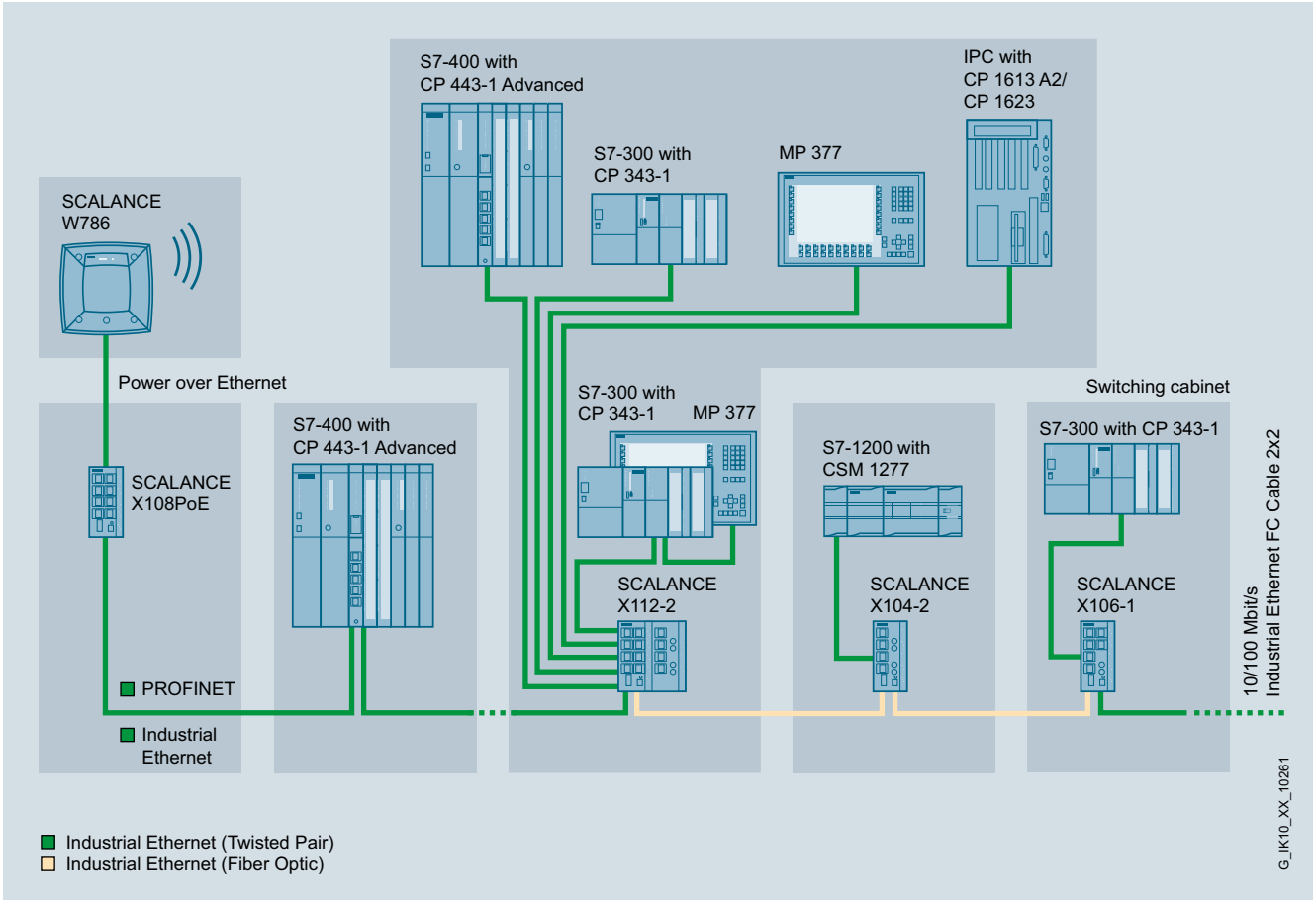
Function (continued)



Star-shaped network topology with SCALANCE X124

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Function (continued)

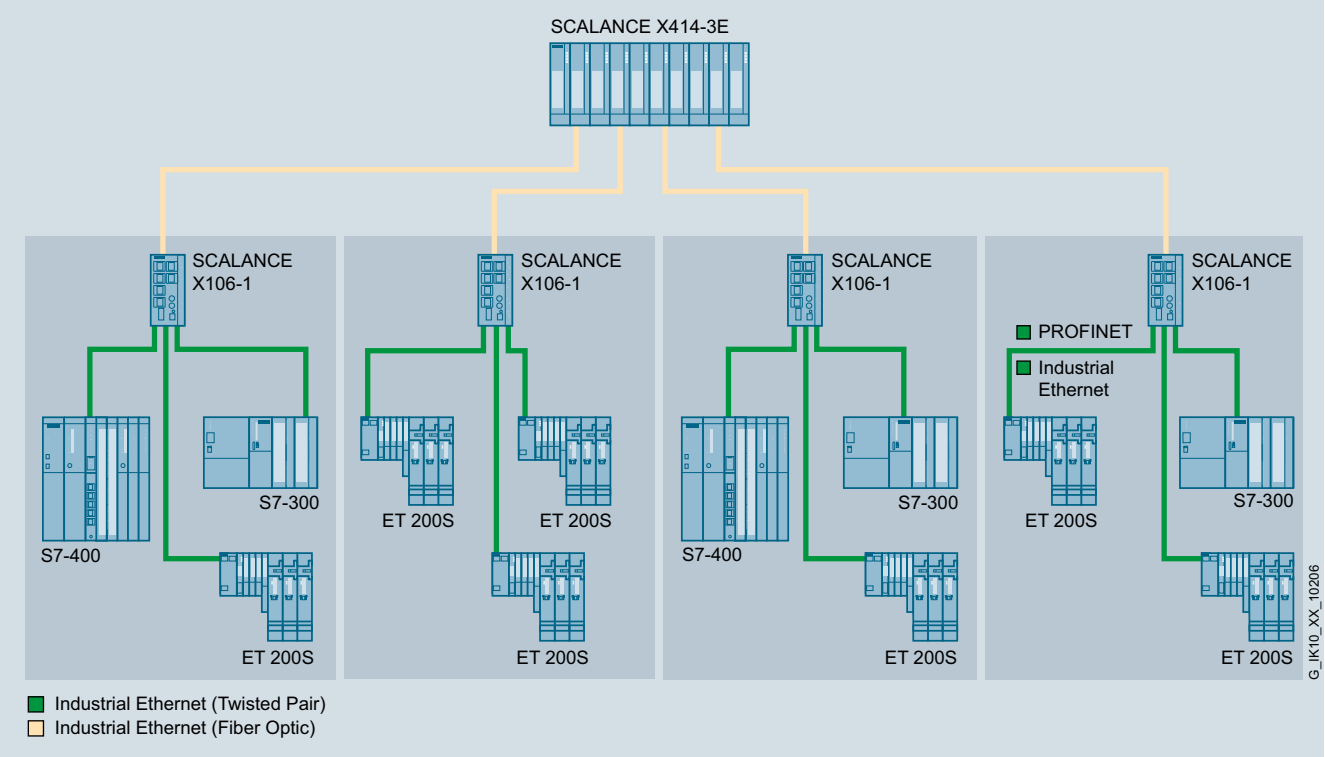


Electrical and optical line topology with SCALANCE X112-2, X104-2 and X106-1 as well as connection and supply of data terminals with Power-over-Ethernet (PoE) by SCALANCE X108PoE

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2

Function (continued)



Optical star topology with SCALANCE X106-1

Diagnostics

The following information is displayed by LEDs on site:

- Power
- Port status
- Data traffic

The Industrial Ethernet switches of the SCALANCE X-100 line can also be monitored over the floating signaling contact.

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Technical specifications

Article No.	6GK5104-2BB00-2AA3	6GK5106-1BB00-2AA3	6GK5108-0BA00-2AA3	6GK5108-0PA00-2AA3
Product-type designation	**SCALANCE X104-2**	**SCALANCE X106-1**	**SCALANCE X108**	**SCALANCE X108PoE**
Transmission rate				
Transfer rate 1	10 Mbit/s	10 Mbit/s	10 Mbit/s	10 Mbit/s
Transfer rate 2	100 Mbit/s	100 Mbit/s	100 Mbit/s	100 Mbit/s
Interfaces				
Number of electrical/optical connections for network components or terminal equipment maximum	6	7	8	8
Number of electrical connections				
• for network components and terminal equipment	4	6	8	6
• for Power-over-Ethernet for network components or terminal equipment	-	-	-	2
• for signaling contact	1	1	1	1
• for power supply	1	1	1	1
• for redundant power supply	1	1	1	1
Design of electrical connection				
• for network components and terminal equipment	RJ45 port	RJ45 port	RJ45 port	RJ45 port
• for Power-over-Ethernet for network components or terminal equipment	-	-	-	RJ45 port
• for signaling contact	2-pole terminal block	2-pole terminal block	2-pole terminal block	2-pole terminal block
• for power supply	4-pole terminal block	4-pole terminal block	4-pole terminal block	4-pole terminal block
Number of optical interfaces for optical waveguide				
• at 100 Mbit/s	2	1	-	-
Design of optical interface for optical waveguide				
• at 100 Mbit/s	BFOC sockets (multimode up to 5 km)	BFOC sockets (multimode up to 5 km)	-	-
Connectable optical power relative to 1 mW				
• of the transmitter output	-19 … -14 dB	-19 … -14 dB	-	-
• of the receiver input maximum	-14 dB	-14 dB	-	-
Optical sensitivity relative to 1 mW of the receiver input minimum	-32 dB	-32 dB	-	-
Attenuation of fiber-optic cable transmission link minimum necessary	0 dB	0 dB	-	-
Range at the optical interface depending on the optical fiber used	0 … 5 km	0 … 5 km	-	-
Signal-Inputs/outputs				
Operating voltage of signaling contacts at DC rated value	24 V	24 V	24 V	24 V
Operating current of signaling contacts at DC maximum	0.1 A	0.1 A	0.1 A	0.1 A
Supply voltage, current consumption, power loss				
Type of supply voltage	DC	DC	DC	DC
Supply voltage external	24 V	24 V	24 V	24 V
• minimum	18 V	18 V	18 V	18 V
• maximum	32 V	32 V	32 V	32 V
Product component fusing at power supply input	Yes	Yes	Yes	Yes
Type of fusing at input for supply voltage	0.6 A / 60 V	0.6 A / 60 V	0.6 A / 60 V	4 A / 125 V
Consumed current maximum	0.16 A	0.15 A	0.14 A	1.7 A
Active power loss at 24 V for DC	3.8 W	3.6 W	3.36 W	10 W

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2

Technical specifications (continued)

Article No.	6GK5104-2BB00-2AA3	6GK5106-1BB00-2AA3	6GK5108-0BA00-2AA3	6GK5108-0PA00-2AA3
Product-type designation	**SCALANCE X104-2**	**SCALANCE X106-1**	**SCALANCE X108**	**SCALANCE X108PoE**
Permitted ambient conditions				
Ambient temperature				
• during operating	-10 … +60 °C	-10 … +60 °C	-20 … +70 °C	-20 … +60 °C
• during storage	-40 … +80 °C	-40 … +80 °C	-40 … +80 °C	-40 … +80 °C
• during transport	-40 … +80 °C	-40 … +80 °C	-40 … +80 °C	-40 … +80 °C
Relative humidity at 25 °C without condensation during operating maximum	95 %	95 %	95 %	95 %
Protection class IP	IP30	IP30	IP30	IP30
Design, dimensions and weight				
Design	compact	compact	compact	compact
Width	60 mm	60 mm	60 mm	60 mm
Height	125 mm	125 mm	125 mm	125 mm
Depth	124 mm	124 mm	124 mm	124 mm
Net weight	0.78 kg	0.78 kg	0.78 kg	0.9 kg
Mounting type				
• 35 mm DIN rail mounting	Yes	Yes	Yes	Yes
• wall mounting	Yes	Yes	Yes	Yes
• S7-300 rail mounting	Yes	Yes	Yes	Yes
Mounting type	-	-	-	-
Standards, specifications, approvals				
Standard				
• for EMC from FM	FM3611: Class 1, Division 2, Group A, B, C, D / T.., Class 1, Zone 2, Group IIC, T..	FM3611: Class 1, Division 2, Group A, B, C, D / T.., Class 1, Zone 2, Group IIC, T..	FM3611: Class 1, Division 2, Group A, B, C, D / T.., Class 1, Zone 2, Group IIC, T..	FM3611: Class 1, Division 2, Group A, B, C, D / T.., Class 1, Zone 2, Group IIC, T..
• for hazardous zone	EN 60079-0: 2006, EN 60079-15: 2005, II 3 G Ex nA IIT.., KEMA 07 ATEX 0145 X	EN 60079-0: 2006, EN 60079-15: 2005, II 3 G Ex nA IIT.., KEMA 07 ATEX 0145 X	EN 60079-0: 2006, EN 60079-15: 2005, II 3 G Ex nA IIT.., KEMA 07 ATEX 0145 X	EN 60079-0: 2006, EN 60079-15: 2005, II 3 G Ex nA IIT.., KEMA 07 ATEX 0145 X
• for safety of CSA and UL	UL 60950-1, CSA C22.2 No. 60950-1	UL 60950-1, CSA C22.2 No. 60950-1	UL 60950-1, CSA C22.2 No. 60950-1	UL 60950-1, CSA C22.2 No. 60950-1
• for hazardous area of CSA and UL	UL 1604 and UL 2279-15 (Hazardous Location), Class 1 / Division 2 / Group A, B, C, D / T.., Class 1 / Zone 2 / Group IIC / T..	UL 1604 and UL 2279-15 (Hazardous Location), Class 1 / Division 2 / Group A, B, C, D / T.., Class 1 / Zone 2 / Group IIC / T..	UL 1604 and UL 2279-15 (Hazardous Location), Class 1 / Division 2 / Group A, B, C, D / T.., Class 1 / Zone 2 / Group IIC / T..	UL 1604 and UL 2279-15 (Hazardous Location), Class 1 / Division 2 / Group A, B, C, D / T.., Class 1 / Zone 2 / Group IIC / T..
• for emitted interference	EN 61000-6-4 (Class A)	EN 61000-6-4 (Class A)	EN 61000-6-4 (Class A)	EN 61000-6-4:2001
• for interference immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2:2001
Verification of suitability	EN 61000-6-2, EN 61000-6-4	EN 61000-6-2, EN 61000-6-4	EN 61000-6-2, EN 61000-6-4	EN 61000-6-2:2001, EN 61000-6-4:2001
• CE mark	Yes	Yes	Yes	Yes
• C-Tick	Yes	Yes	Yes	Yes
• KC approval	Yes	Yes	Yes	Yes
Marine classification association				
• American Bureau of Shipping Europe Ltd. (ABS)	Yes	Yes	Yes	No
• Bureau Veritas (BV)	Yes	Yes	Yes	No
• Det Norske Veritas (DNV)	Yes	Yes	Yes	No
• Germanische Lloyd (GL)	Yes	Yes	Yes	No
• Lloyds Register of Shipping (LRS)	Yes	Yes	Yes	No
• Nippon Kaiji Kyokai (NK)	Yes	Yes	Yes	No
• Polski Rejestr Statkow (PRS)	Yes	Yes	Yes	No

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Technical specifications (continued)

Article No.	6GK5112-2BB00-2AA3	6GK5116-0BA00-2AA3	6GK5124-0BA00-2AA3
Product-type designation	**SCALANCE X112-2**	**SCALANCE X116**	**SCALANCE X124**
Transmission rate			
Transfer rate 1	10 Mbit/s	10 Mbit/s	10 Mbit/s
Transfer rate 2	100 Mbit/s	100 Mbit/s	100 Mbit/s
Interfaces			
Number of electrical/optical connections for network components or terminal equipment maximum	14	16	24
Number of electrical connections			
• for network components and terminal equipment	12	16	24
• for signaling contact	1	1	1
• for power supply	1	1	1
• for redundant power supply	1	1	1
Design of electrical connection			
• for network components and terminal equipment	RJ45 port	RJ45 port	RJ45 port
• for signaling contact	2-pole terminal block	2-pole terminal block	2-pole terminal block
• for power supply	4-pole terminal block	4-pole terminal block	4-pole terminal block
Number of optical interfaces for optical waveguide			
• at 100 Mbit/s	2	-	-
Design of optical interface for optical waveguide			
• at 100 Mbit/s	BFOC sockets (multimode up to 5 km)	-	-
Connectable optical power relative to 1 mW			
• of the transmitter output	-19 … -14 dB	-	-
• of the receiver input maximum	-14 dB	-	-
Optical sensitivity relative to 1 mW of the receiver input minimum	-32 dB	-	-
Attenuation of fiber-optic cable transmission link minimum necessary	0 dB	-	-
Range at the optical interface depending on the optical fiber used	0 … 5 km	-	-
Signal-Inputs/outputs			
Operating voltage of signaling contacts at DC rated value	24 V	24 V	24 V
Operating current of signaling contacts at DC maximum	0.1 A	0.1 A	0.1 A
Supply voltage, current consumption, power loss			
Type of supply voltage	DC	DC	DC
Supply voltage external	24 V	24 V	24 V
• minimum	18 V	18 V	18 V
• maximum	32 V	32 V	32 V
Product component fusing at power supply input	No	No	No
Consumed current maximum	0.45 A	0.3 A	0.45 A
Active power loss at 24 V for DC	5.16 W	4.4 W	4.8 W
Permitted ambient conditions			
Ambient temperature			
• during operating	-10 … +70 °C	-20 … +70 °C	-20 … +70 °C
• during storage	-40 … +80 °C	-40 … +80 °C	-40 … +80 °C
• during transport	-40 … +80 °C	-40 … +80 °C	-40 … +80 °C
Relative humidity at 25 °C without condensation during operating maximum	95 %	95 %	95 %
Protection class IP	IP30	IP30	IP30

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Technical specifications (continued)

Article No.	6GK5112-2BB00-2AA3	6GK5116-0BA00-2AA3	6GK5124-0BA00-2AA3
Product-type designation	**SCALANCE X112-2**	**SCALANCE X116**	**SCALANCE X124**
Design, dimensions and weight			
Design	compact	compact	compact
Width	120 mm	120 mm	180 mm
Height	125 mm	125 mm	125 mm
Depth	124 mm	124 mm	124 mm
Net weight	1.1 kg	1.1 kg	1.5 kg
Mounting type			
• 35 mm DIN rail mounting	Yes	Yes	Yes
• wall mounting	Yes	Yes	Yes
• S7-300 rail mounting	Yes	Yes	Yes
Mounting type	-	-	-
Standards, specifications, approvals			
Standard			
• for EMC from FM	FM3611: Class 1, Division 2, Group A, B, C, D / T.., Class 1, Zone 2, Group IIC, T..	FM3611: Class 1, Division 2, Group A, B, C, D / T.., Class 1, Zone 2, Group IIC, T..	FM3611: Class 1, Division 2, Group A, B, C, D / T.., Class 1, Zone 2, Group IIC, T..
• for hazardous zone	EN 60079-0:2006, EN 60079-15:2005, II 3 G Ex nA II T.. KEMA 08 ATEX 0003 X	EN 60079-0:2006, EN 60079-15:2005, II 3 G Ex nA II T.. KEMA 08 ATEX 0003 X	EN 60079-0:2006, EN 600EN 60079-15:2005, II 3 G Ex nA II T.. KEMA 08 ATEX 0003 X
• for safety of CSA and UL	UL 60950-1, CSA C22.2 No. 60950-1	UL 60950-1, CSA C22.2 No. 60950-1	UL 60950-1, CSA C22.2 No. 60950-1
• for hazardous area of CSA and UL	UL 1604 and UL 2279-15 (Hazardous Location), Class 1 / Division 2 / Group A, B, C, D / T.., Class 1 / Zone 2 / Group IIC / T..	UL 1604 and UL 2279-15 (Hazardous Location), Class 1 / Division 2 / Group A, B, C, D / T.., Class 1 / Zone 2 / Group IIC / T..	UL 1604 and UL 2279-15 (Hazardous Location), Class 1 / Division 2 / Group A, B, C, D / T.., Class 1 / Zone 2 / Group IIC / T..
• for emitted interference	EN 61000-6-4:2001	EN 61000-6-4:2001	EN 61000-6-4:2001
• for interference immunity	EN 61000-6-2:2001	EN 61000-6-2:2001	EN 61000-6-2:2001
Verification of suitability	EN 61000-6-2:2001, EN 61000-6-4:2001	EN 61000-6-2:2001, EN 61000-6-4:2001	EN 61000-6-2:2001, EN 61000-6-4:2001
• CE mark	Yes	Yes	Yes
• C-Tick	Yes	Yes	Yes
• KC approval	Yes	Yes	Yes
Marine classification association			
• American Bureau of Shipping Europe Ltd. (ABS)	Yes	Yes	Yes
• Bureau Veritas (BV)	Yes	Yes	Yes
• Det Norske Veritas (DNV)	No	No	No
• Germanische Lloyd (GL)	No	No	No
• Lloyds Register of Shipping (LRS)	Yes	Yes	Yes
• Nippon Kaiji Kyokai (NK)	Yes	Yes	Yes
• Polski Rejestr Statkow (PRS)	No	No	No

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Ordering data

	Article No.
SCALANCE X-100 Industrial Ethernet switches	
Industrial Ethernet switches for 10/100 Mbit/s, incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM	
• **SCALANCE X104-2** 4 x 10/100 Mbit/s RJ45 ports, electrical 2 x BFOC ports, optical (multimode, glass) up to 5 km	**6GK5104-2BB00-2AA3**
• **SCALANCE X106-1** 6 x 10/100 Mbit/s RJ45 ports, electrical 1 x BFOC port, optical (multi-mode, glass) up to 5 km	**6GK5106-1BB00-2AA3**
• **SCALANCE X112-2** 12 x 10/100 Mbit/s RJ45 ports, electrical 2 x BFOC ports, optical (multi-mode, glass) up to 5 km	**6GK5112-2BB00-2AA3**
• **SCALANCE X108** 8 x 10/100 Mbit/s RJ45 ports, electrical	**6GK5108-0BA00-2AA3**
• **SCALANCE X108PoE** 6 x 10/100 Mbit/s RJ45 ports, electrical 2 x 10/100 Mbit/s RJ45 PoE ports, electrical	**6GK5108-0PA00-2AA3**
• **SCALANCE X116** 16 x 10/100 Mbit/s RJ45 ports, electrical	**6GK5116-0BA00-2AA3**
• **SCALANCE X124** 24 x 10/100 Mbit/s RJ45 ports, electrical	**6GK5124-0BA00-2AA3**
Accessories	
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**
FO Standard Cable GP 50/125/1400 [1) 2)] Multimode cable, sold by the meter; max. length 1 000 m; minimum order 20 m	**6XV1873-2A**
FC FO Standard Cable GP 62.5/200/230 FC FO standard cable for fixed routing indoors with PVC sheath; sold by the meter max. length 1 000 m, minimum order 20 m	**6XV1847-2A**
IE FC RJ45 Plug 180 2 x 2 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/CPUs 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**
FC BFOC Plug Screw connector for on-site assembly on FC fiber-optic cable; (1 pack = 20 units + cleaning cloths)	**6GK1900-1GB00-0AC0**
IE FC Stripping Tool Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	**6GK1901-1GA00**
FC FO termination kit Assembly case for local assembly of FC SC and FC BFOC connectors to FC FO standard cable, comprising a stripping tool, Kevlar cutters, fiber breaking tool and microscope	**6GK1900-1GL00-0AA0**
SITOP compact 24 V/ 0.6 A 1-phase power supply with wide-range input 85 – 264 V AC/110 – 300 V DC, stabilized output voltage 24 V, rated output current value 0.6 A, slim design	**6EP1331-5BA00**

1) Special fiber-optic cables, lengths and accessories available on request

2) Special tools and trained personnel are required for pre-assembling glass fiber-optic cables

More information

Selection tools:

To assist in selecting the right Industrial Ethernet switches as well as configuration of modular variants, the SIMATIC NET Selection Tool and the TIA Selection Tool are available at:

SIMATIC NET Selection Tool:

- Online version: http://www.siemens.com/snst
- Offline version: http://www.siemens.com/snst-download

TIA Selection Tool:

http://www.siemens.com/tia-selection-tool