

SIEMENS

Catalog
IC 12

Edition
2023

Electrical Components for the Railway Industry

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Overview



The managed Industrial Ethernet switches of the SCALANCE XC-200 product line are optimized for setting up Industrial Ethernet networks with data transfer rates of 10/100/1000 Mbps as well as 2 x 10 Gbps (e.g. SCALANCE XC206-2G PoE).

- Electrical or optical connection to stations or networks according to port characteristics of the devices
- Versions with transmission rates up to 10 Gbps optical or 1 Gbps electrical
- Rugged station connections with industry-standard RJ45 connectors that offer additional strain and bending strain relief thanks to latching on the enclosure
- Redundant power supply
- Console port for direct access to device
- Display of comprehensive operating mode and status information via LEDs and selection pushbuttons
- Signaling contact for connecting to an error signaling system
- Slot for optional C-PLUG removable data storage medium for easy device replacement without additional equipment such as a field PG
- Grounding screw for external ground connection
- Virtual LANs (VLAN) for easy structuring of large networks into smaller, logical subnetworks. Reasons for the subdivision into logical subnetworks are, for example, separation of the Ethernet networks to reduce the broadcast load, separation of sensitive areas from the main network, and subdivision of the network into logical working groups
- By learning the multicast sources and destinations (Internet Group Management Protocol (IGMP) Snooping), SCALANCE XC-200 switches can also filter multicast data traffic and thus limit the load on the network
- Integrated security functions offer protection against unauthorized network access and configuration (e.g. authentication via IEEE 802.1X)

Product versions

- Switches with electrical ports:
 - SCALANCE XC208G with 8x RJ45 ports 10/100/1000 Mbit/s
 - SCALANCE XC208; with 8x RJ45 ports 10/100 Mbps for mounting in the control cabinet
 - SCALANCE XC216 with 16x RJ45 ports 10/100 Mbps for mounting in the control cabinet
 - SCALANCE XC224; with 24x RJ45 ports 10/100 Mbps for mounting in the control cabinet
- Switches with Power over Ethernet:
 - SCALANCE XC206-2G PoE with 6x RJ45 PoE ports 10/100/1000 Mbps and 2x SFP+ 1000/10000 Mbps
 - SCALANCE XC206-2G PoE (DC 54 V) with 6x RJ45 PoE ports 10/100/1000 Mbps and 2x SFP+ 1000/10000 Mbps, PoE support for 54 V DC Infeed
 - SCALANCE XC206-2G PoE EEC with 6x RJ45 PoE ports 10/100/1000 Mbps and 2x SFP+ 1000/10000 Mbps, PoE support for 54 V DC Infeed
 - SCALANCE XC208G PoE with 6x RJ45 PoE ports 10/100/1000 Mbps and 2x RJ45 ports 10/100/1000 Mbps
 - SCALANCE XC208G PoE (DC 54 V) with 6x RJ45 PoE ports 10/100/1000 Mbps and 2x RJ45 ports 10/100/1000 Mbps, PoE support for 54 V DC Infeed
- Switches with electrical and optical ports
 - SCALANCE XC206-2; with 6x RJ45 ports 10/100 Mbps and 2x ST/BFOC ports 100 Mbps
 - SCALANCE XC206-2; with 6x RJ45 ports 10/100 Mbps and 2x SC ports 100 Mbps
 - SCALANCE XC206-2SFP; with 6x RJ45 ports 10/100 Mbps and 2x SFP plug-in transceivers with 100 or 1000 Mbps

Benefits

- Operational reliability in industrial environments, e.g. due to rugged enclosure, redundancy, temperature range from -40 °C to +70 °C
- Fast mobile diagnostics by smartphone or tablet in existing WLAN using NFC (near field communication)
- Integration of SCALANCE XC-200 switches into existing network management infrastructure (e.g. SINEC NMS) through SNMP access thanks to rugged, industry-standard device connects
- Reliable plug-in connection in conjunction with industry-standard FastConnect connectors

Network Components

SCALANCE X - Industrial Ethernet Switches

SCALANCE XC-200 managed

Article number	6GK5206-2BB00-2AC2	6GK5206-2BD00-2AC2	6GK5206-2BS00-2AC2
Product type designation	SCALANCE XC206-2 (ST/BFOC)	SCALANCE XC206-2 (SC)	SCALANCE XC206-2SFP
Standards, specifications, approvals CE			
Certificate of suitability CE marking	Yes	Yes	Yes
Product conformity according to EMC-guideline	2014/30/EU	2014/30/EU	2014/30/EU
Standard • for EMC interference emission • for immunity to EMI	EN 61000-6-4, EN 50121-4 EN 61000-6-2, EN 50121-4	EN 61000-6-4, EN 50121-4 EN 61000-6-2, EN 50121-4	EN 61000-6-4, EN 50121-4 EN 61000-6-2, EN 50121-4
Certificate of suitability RoHS conformity	Yes; 2011/65/EU	Yes; 2011/65/EU	Yes; 2011/65/EU
Standards, specifications, approvals hazardous environments			
Certificate of suitability • ATEX • IECEX • FM registration	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes
Standards, specifications, approvals miscellaneous			
Certificate of suitability • Railway application in accordance with EN 50121-4 • Regulatory Compliance Mark (RCM) • EAC approval	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes
Standards, specifications, approvals ship classification			
Marine classification association • American Bureau of Shipping Europe Ltd. (ABS) • DNV GL • Polski Rejestr Statkow (PRS)	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes
Standards, specifications, approvals product conformity			
MTBF at 40 °C	46.43 y	46.43 y	47.06 y
Accessories			
Product extension optional C-PLUG	Yes	Yes	Yes

Article number	6GK5208-0BA00-2AC2	6GK5216-0BA00-2AC2	6GK5224-0BA00-2AC2
Product type designation	SCALANCE XC208	SCALANCE XC216	SCALANCE XC224
Transmission rate			
Transfer rate	10/100 Mbit/s	10 /100 Mbit/s	10/100 Mbit/s
Interfaces for communication integrated			
Number of electrical connections • for network components or terminal equipment	8; RJ45	16; RJ45	24; RJ45
Number of 10/100 Mbit/s RJ45 ports integrated • with securing collar	8	16	24
Interfaces others			
Number of electrical connections • for operator console • for signaling contact • for power supply • for redundant voltage supply • Type of electrical connection • for operator console • for signaling contact • for power supply	1 1 1 1 RJ11 2-pole terminal block 4-pole terminal block	1 1 1 1 RJ11 2-pole terminal block 4-pole terminal block	1 1 1 1 RJ11 2-pole terminal block 4-pole terminal block
Design of the removable storage • C-PLUG	Yes	Yes	Yes
Signal-Inputs/outputs			
Operating voltage of the signaling contacts • at DC Rated value	24 V	24 V	24 V
Operating current of the signaling contacts • at DC maximum	0.1 A	0.1 A	0.1 A
Supply voltage, current consumption, power loss			
Type of voltage of the supply voltage	DC	DC	DC
Supply voltage • external • external minimum • external maximum	24 V 9.6 V 31.2 V	24 V 9.6 V 31.2 V	24 V 9.6 V 31.2 V
Supply voltage 4 Rated value • Consumed current 4 at rated supply voltage maximum	0.175 A	0.275 A	0.375 A
Product component fusing at power supply input	Yes	Yes	Yes
Fuse protection type at input for supply voltage	2.5 A / 125 V	2.5 A / 125 V	2.5 A / 125 V
Consumed current maximum	0.35 A	0.55 A	0.75 A
Power loss [W] • at DC at 24 V	4.2 W	6.6 W	9 W

Network Components

SCALANCE X - Industrial Ethernet Switches

SCALANCE XC-200 managed

Article number	6GK5208-0BA00-2AC2	6GK5216-0BA00-2AC2	6GK5224-0BA00-2AC2
Product type designation	SCALANCE XC208	SCALANCE XC216	SCALANCE XC224
Permitted ambient conditions			
Ambient temperature			
• during operation	-40 ... +70 °C	-40 ... +70 °C	-40 ... +70 °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 operation maximum	95 %	95 %	95 %
Protection class IP	IP20	IP20	IP20
Design, dimensions and weight			
Design	compact	compact	compact
Width	60 mm	120 mm	120 mm
Height	147 mm	147 mm	147 mm
Depth	125 mm	125 mm	125 mm
Net weight	0.52 kg	0.8 kg	0.88 kg
Material of the enclosure	Polycarbonate (PC-GF10) / pressure die cast aluminum	Polycarbonate (PC-GF10) / pressure die cast aluminum	Polycarbonate (PC-GF10) / pressure die cast aluminum
Mounting type			
• 35 mm DIN rail mounting	Yes	Yes	Yes
• wall mounting	Yes	Yes	Yes
• S7-300 rail mounting	Yes	Yes	Yes
• S7-1500 rail mounting	Yes	Yes	Yes
Product properties, functions, components general			
Cascading in the case of a redundant ring at reconfiguration time of <1-0.3>-s	50	50	50
Cascading in cases of star topology	any (depending only on signal propagation time)	any (depending only on signal propagation time)	any (depending only on signal propagation time)
Product function QoS according to DSCP		Yes	Yes
Product feature			
• Cut Through switching method	No	No	No
• Store & Forward switching method	Yes	Yes	Yes
Product functions management, configuration			
Product function			
• CLI	Yes	Yes	Yes
• web-based management	Yes	Yes	Yes
• MIB support	Yes	Yes	Yes
• TRAPs via email	Yes	Yes	Yes
• Configuration with STEP 7	Yes	Yes	Yes
• RMON	Yes	Yes	Yes
• SMTP server	No	No	No
• Port mirroring	Yes	Yes	Yes
• multiport mirroring	Yes	Yes	Yes
• CoS	Yes	Yes	Yes
• PROFINET IO diagnosis	Yes	Yes	Yes
• switch-managed	Yes	Yes	Yes
Telegram length for Ethernet maximum	1 632 byte	1 632 byte	1 632 byte
Protocol is supported			
• Telnet	Yes	Yes	Yes
• HTTP	Yes	Yes	Yes
• HTTPS	Yes	Yes	Yes
• TFTP	Yes	Yes	Yes
• BOOTP	No	No	No
• GMRP	Yes	Yes	Yes
• DCP	Yes	Yes	Yes
• LLDP	Yes	Yes	Yes
• EtherNet/IP	Yes	Yes	Yes
• SNMP v1	Yes	Yes	Yes
• SNMP v2	Yes	Yes	Yes
• SNMP v3	Yes	Yes	Yes
• IGMP (snooping/querier)	Yes	Yes	Yes
Identification & maintenance function			
• I&MO - device-specific information	Yes	Yes	Yes
• I&M1 - higher-level designation/location designation	Yes	Yes	Yes
Product functions Diagnosis			
Product function			
• Port diagnostics	Yes	Yes	Yes
• Statistics Packet Size	Yes	Yes	Yes
• Statistics packet type	Yes	Yes	Yes
• Error statistics	Yes	Yes	Yes
• SysLog	Yes	Yes	Yes

Network Components

SCALANCE X - Industrial Ethernet Switches

SCALANCE XC-200 managed

Article number	6GK5208-0BA00-2AC2	6GK5216-0BA00-2AC2	6GK5224-0BA00-2AC2
Product type designation	SCALANCE XC208	SCALANCE XC216	SCALANCE XC224
Product functions VLAN			
Product function			
• VLAN - port based	Yes	Yes	Yes
• VLAN - protocol-based	No	No	No
• VLAN - IP-based	No	No	No
• VLAN dynamic	Yes	Yes	Yes
Number of VLANs maximum	257	257	257
Number of VLANs - dynamic maximum	257	257	257
Protocol is supported GVRP	Yes	Yes	Yes
Product functions DHCP			
Product function			
• DHCP server	Yes	Yes	Yes
• DHCP client	Yes	Yes	Yes
• DHCP Option 82	Yes	Yes	Yes
• DHCP Option 66	Yes	Yes	Yes
• DHCP Option 67	Yes	Yes	Yes
Product functions Redundancy			
Product function			
• Ring redundancy	Yes	Yes	Yes
• High Speed Redundancy Protocol (HRP)	Yes	Yes	Yes
• high speed redundancy protocol (HRP) with redundancy manager	Yes	Yes	Yes
• high speed redundancy protocol (HRP) with standby redundancy	Yes	Yes	Yes
Protocol is supported Media Redundancy Protocol (MRP)	Yes	Yes	Yes
Product function			
• media redundancy protocol (MRP) with redundancy manager	Yes	Yes	Yes
• redundancy procedure STP	Yes	Yes	Yes
• redundancy procedure RSTP	Yes	Yes	Yes
• redundancy procedure MSTP	Yes	Yes	Yes
• Parallel Redundancy Protocol (PRP)/operation in the PRP-network	No	No	No
• Parallel Redundancy Protocol (PRP)/Redundant Network Access (RNA)	No	No	No
• Passive listening	Yes	Yes	Yes
Protocol is supported			
• LACP	Yes	Yes	Yes
Product functions Security			
Product function			
• IEEE 802.1x (radius)	Yes	Yes	Yes
• Broadcast/Multicast/Unicast Limiter	Yes	Yes	Yes
• broadcast blocking	Yes	Yes	Yes
Protocol is supported			
• SSH	Yes	Yes	Yes
• SSL	Yes	Yes	Yes
Product functions Time			
Product function			
• SICLOCK support	Yes	Yes	Yes
• NTP-client	Yes	Yes	Yes
• SNTP client	Yes	Yes	Yes
Protocol is supported			
• NTP	Yes	Yes	Yes
• SNTP	Yes	Yes	Yes
Standards, specifications, approvals CE			
Certificate of suitability CE marking	Yes	Yes	Yes
Product conformity according to EMC-guideline	2014/30/EU	2014/30/EU	2014/30/EU
Standard			
• for EMC interference emission	EN 61000-6-4, EN 50121-4	EN 61000-6-4, EN 50121-4	EN 61000-6-4, EN 50121-4
• for immunity to EMI	EN 61000-6-2, EN 50121-4	EN 61000-6-2, EN 50121-4	EN 61000-6-2, EN 50121-4
Certificate of suitability RoHS conformity	Yes; 2011/65/EU	Yes; 2011/65/EU	Yes; 2011/65/EU
Standards, specifications, approvals miscellaneous			
Certificate of suitability			
• Railway application in accordance with EN 50121-4	Yes	Yes	Yes
• Regulatory Compliance Mark (RCM)	Yes	Yes	Yes
• EAC approval	Yes	Yes	Yes
Standards, specifications, approvals product conformity			
MTBF at 40 °C	57.15 y	48.09 y	41.36 y
Accessories			
Product extension optional C-PLUG	Yes	Yes	Yes

Network Components

SCALANCE X - Industrial Ethernet Switches

SCALANCE XC-200 managed

Selection and ordering data

Version	Article No.
SCALANCE XC-200 Industrial Ethernet switches Industrial Ethernet switches with integrated SNMP access, online diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager; incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM	
• SCALANCE XC208G with 8x RJ45 ports 10/100/1000 Mbit/s • SCALANCE XC206-2G PoE with 6x RJ45 PoE ports 10/100/1000 Mbps and 2x SFP+ 1000/10000 Mbps • SCALANCE XC206-2G PoE (DC 54 V) with 6x RJ45 PoE ports 10/100/1000 Mbps and 2x SFP+ 1000/10000 Mbps, PoE support for 54 V DC Infeed • SCALANCE XC206-2G PoE EEC (DC 54 V) with 6x RJ45 PoE ports 10/100/1000 Mbps and 2x SFP+ 1000/10000 Mbps, PoE support for 54 V DC Infeed • SCALANCE XC208G PoE with 6x RJ45 PoE ports 10/100/1000 Mbps and 2x RJ45 ports 10/100/1000 Mbps • SCALANCE XC208G PoE (DC 54 V) with 6x RJ45 PoE ports 10/100/1000 Mbps and 2x RJ45 ports 10/100/1000 Mbps, PoE support for 54 V DC Infeed • SCALANCE XC206-2 (ST/BFOC) with six RJ45 ports 10/100 Mbps and two ST/BFOC ports 100 Mbps • SCALANCE XC206-2 (SC) with six RJ45 ports 10/100 Mbps and two SC ports 100 Mbps • SCALANCE XC206-2SFP with six RJ45 ports 10/100 Mbps and two SFP slots for SFPs with 100 or 1 000 Mbps • SCALANCE XC208 with eight RJ45 ports 10/100 Mbps • SCALANCE XC216 with sixteen RJ45 ports 10/100 Mbps • SCALANCE XC224 with twenty-four RJ45 ports 10/100 Mbps	6GK5208-0GA00-2AC2 6GK5206-2RS00-2AC2 6GK5206-2RS00-5AC2 6GK5206-2RS00-5FC2 6GK5208-0RA00-2AC2 6GK5208-0RA00-5AC2 6GK5206-2BB00-2AC2 6GK5206-2BD00-2AC2 6GK5206-2BS00-2AC2 6GK5208-0BA00-2AC2 6GK5216-0BA00-2AC2 6GK5224-0BA00-2AC2
Accessories	
FC RJ 45 port lock Mechanical locking of unused RJ45 ports at network components and end devices. For use on devices with and without retaining collar ²⁾	6GK1901-1BB50-0AA0
C-PLUG Removable data storage medium for simple replacement of devices in the event of a fault; for storing configuration or engineering and application data; can be used for SIMATIC NET products with C-PLUG slot • 1 pack = 1 unit	6GK1900-0AB10
Push-in terminal block For Scalance X//S • 2-pin for signaling contact (24 V DC) 1 pack = 5 units • 4-pin for power supply (24 V DC) 1 pack = 5 units	6GK5980-0BB10-0AA5 6GK5980-1DB10-0AA5
Screw-type terminal block For Scalance X//W/S • 2-pin for signaling contact (24 V DC) 1 pack = 5 units • 4-pin for power supply (24 V DC) 1 pack = 5 units	6GK5980-0BB00-0AA5 6GK5980-1DB00-0AA5
Fixing screw for SCALANCE X//W Screw for mounting on an S7-1500 and S7-300 mounting rail 1 pack = 5 units	6GK5980-4AA00-0AA5
SFP plug-in transceiver See "Plug-in transceivers for SCALANCE XR-500" / "Media modules for modular SCALANCE X-500"	
IE FC RJ45 plug 180 2x2 Industrial Ethernet FastConnect RJ45 plug 180 2x2, RJ45 connector (10/100 Mbps) with rugged metal enclosure and FC connection technology, for IE FC cable 2x2 180° cable outlet 1 pack = 1 unit	6GK1901-1BB10-2AA0
IE FC RJ45 plug 4x2 RJ45 plug-in data connector (10/100/1000 Mbps), for connection to IE FC TP cables 4x2, with rugged metal enclosure and FastConnect connection technology	6GK1901-1BB11-2AA0