

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

SIEMENS

6GK7443-1GX30-0XE0

INDUSTRIAL ETHERNET COMMUNICATION PROCESSOR

Used with the applicable PLC System configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Siemens official manufacturer documentation

SIMATIC S7-400 advanced controller

Communication

CP 443-1

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Ordering data

Article No.

Article No.

CP 443-1

communications processor

For connecting SIMATIC S7-400 to Industrial Ethernet through TCP/IP, ISO and UDP; PROFINET IO Controller, MRP; integrated real-time switch ERTEC with two ports; 2 x RJ45 interface; S7 communication, open communication (SEND/RECEIVE) with FETCH/WRITE, with and without RFC 1006, DHCP, SNMP V2, diagnostics, multicast, access protection over IP access list, initialization over LAN 10/100 Mbps with electronic manual on DVD

Accessories

IE FC RJ45 Plug 180 2 x 2

RJ45 plug-in 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
- 1 pack = 10 units
- 1 pack = 50 units

IE FC RJ45 Plug 4 x 2

RJ45 plug connector for Industrial Ethernet (10/100/1000 Mbps) 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/CPUs with Industrial Ethernet interface

- 1 pack = 1 unit
- 1 pack = 10 units
- 1 pack = 50 units

6GK7443-1EX30-0XE0

6GK1901-1BB10-2AA0
6GK1901-1BB10-2AB0
6GK1901-1BB10-2AE0

6GK1901-1BB11-2AA0
6GK1901-1BB11-2AB0
6GK1901-1BB11-2AE0

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-compatible; with UL approval; sold by the meter; max. order length 1000 m, minimum order 20 m

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 applications; with UL approval; sold by the meter; max. order quantity 1000 m, minimum order 20 m

- AWG22, for connection to IE FC RJ45 Modular Outlet
- AWG24, for connection to IE FC RJ45 Plug 4 x 2

IE FC Stripping Tool

Pre-adjusted stripping tool for fast stripping of the Industrial Ethernet FC cables

SCALANCE X204-2 Industrial Ethernet Switch

Industrial Ethernet Switches with integral SNMP access, Web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbps RJ45 ports and two FO ports

Industrial Ethernet Switch SCALANCE X308-2

2 x 1000 Mbps multimode fiber-optic cable ports (SC sockets), 1 x 10/100/1000 Mbps RJ45 port, 7 x 10/100 Mbps RJ45 ports; for glass fiber-optic cable (multimode) up to max. 750 m

6XV1840-2AH10

6XV1870-2E

6XV1878-2A

6GK1901-1GA00

6GK5204-2BB10-2AA3

6GK5308-2FL00-2AA3

Note:

You'll find ordering data for software for communication to PC systems in catalog IK PI.

Overview



ISO	TCP/ UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
●	●	●	●	●	●	●	●

Communications processor for connecting a SIMATIC S7-400 to Industrial Ethernet networks, also as PROFINET IO controller or in SIMATIC H systems.

The CP supports:

- PG/OP communication
- S7 communication
- Open communication (SEND/RECEIVE)
- PROFINET communication
- IT communication
- Security functionality, firewall and VPN

The communications processor can also be used for redundant S7 communication in SIMATIC H systems and for fail-safe applications (PROFIsafe) in connection with an S7-400 F-CPU. In addition, the CP 443-1 Advanced provides e-mail functions and user-created Web pages, offering ideal support for maintenance and quality assurance. The Internet functions such as FTP even allow connection to the most diverse PC-based systems. This CP is therefore the bridge between the field level and the management level for the S7-400. The CP 443-1 Advanced connects seamlessly to the security structures of the office and IT worlds.

Technical specifications

Article number	6GK7443-1GX30-0XE0
Product type designation	CP 443-1 Advanced
Transmission rate	
Transfer rate	
• at the 1st interface	10 ... 1 000 Mbit/s
• at the 2nd interface	10 ... 100 Mbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	5
Number of electrical connections	
• at the 1st interface acc. to Industrial Ethernet	1
• at the 2nd interface acc. to Industrial Ethernet	4
Type of electrical connection	
• at the 1st interface acc. to Industrial Ethernet	RJ45 port
• at the 2nd interface acc. to Industrial Ethernet	RJ45 port
design of the removable storage C-PLUG	Yes
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage 1 from backplane bus	5 V
Relative symmetrical tolerance for DC	
• at 5 V	5 %
Consumed current	
• from backplane bus for DC at 5 V typical	1.8 A
Active power loss	9 W
Permitted ambient conditions	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	Compact module S7-400 single width
Width	25 mm
Height	290 mm
Depth	210 mm
Net weight	0.7 kg
Product properties, functions, components general	
Number of units	
• per CPU maximum	14
• Note	max. 4 as PN IO ctrl.

SIMATIC S7-400 advanced controller

Communication

CP 443-1 Advanced

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Technical specifications (continued)

Article number	6GK7443-1GX30-0XE0
Product type designation	CP 443-1 Advanced
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks	
• maximum	64
Amount of data	
• as user data per ISO connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per ISO on TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks maximum	2 Kibyte
Number of possible connections for open communication	
• by means of T blocks maximum	64
Amount of data	
• as user data per ISO on TCP connection for open communication by means of T blocks maximum	1 452 byte
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	128
• with PG connections maximum	2
• Note	when using several CPUs
Performance data multi-protocol mode	
Number of active connections with multi-protocol mode	128
Performance data IT functions	
Number of possible connections	
• as client by means of FTP maximum	20
• as server by means of FTP maximum	10
• as server by means of HTTP maximum	4
• as e-mail client maximum	1
Amount of data as user data for email maximum	8 Kibyte
Storage capacity of the user memory	
• as flash memory file system	30 Mibyte
• as RAM	16 Mibyte
• additionally buffered as RAM via central backup battery	512 Kibyte
Number of possible write cycles of the flash memory cells	100 000
Performance data PROFINET communication as PN IO-Controller	
Product function PROFINET IO controller	Yes
Number of PN IO devices on PROFINET IO controller usable total	128
Number of PN IO IRT devices on PROFINET IO controller usable	64
Number of external PN IO lines with PROFINET per rack	4

Article number	6GK7443-1GX30-0XE0
Product type designation	CP 443-1 Advanced
Amount of data	
• as user data for input variables as PROFINET IO controller maximum	8 Kibyte
• as user data for input variables as PROFINET IO controller maximum	8 Kibyte
• as user data for input variables per PN IO device as PROFINET IO controller maximum	1 433 byte
• as user data for output variables per PN IO device as PROFINET IO controller maximum	1 433 byte
• as user data for input variables per PN IO device for each sub-module as PROFINET IO controller maximum	240 byte
• as user data for output variables per PN IO device for each sub-module as PROFINET IO controller maximum	240 byte
Performance data PROFINET CBA	
Number of remote connection partners with PROFINET CBA	64
Number of connections with PROFINET CBA total	600
Amount of data	
• as user data for digital inputs with PROFINET CBA maximum	8 Kibyte
• as user data for digital outputs with PROFINET CBA maximum	8 Kibyte
• as user data for arrays and data types in the case of acyclic transmission with PROFINET CBA maximum	8 Kibyte
• as user data for arrays and data types with PROFINET CBA with cyclical transfer maximum	250 byte
• as user data for arrays and data types with PROFINET CBA in the case of local interconnection maximum	2 400 byte
Performance data PROFINET CBA remote connection with acyclic transmission	
Refresh time of the remote interconnections in the case of acyclic transmission with PROFINET CBA	100 ms
Number of remote connections to input variables in the case of acyclic transmission with PROFINET CBA maximum	150
Number of remote connections to output variables in the case of acyclic transmission with PROFINET CBA maximum	150
Amount of data	
• as user data for remote interconnections with input variables in the case of acyclic transmission with PROFINET CBA	8 Kibyte
• as user data for remote interconnections with output variables in the case of acyclic transmission with PROFINET CBA	8 Kibyte
Performance data PROFINET CBA remote connection with cyclic transmission	
Refresh time of the remote interconnections with PROFINET CBA with cyclical transfer	10 ms

Technical specifications (continued)

Article number	6GK7443-1GX30-0XE0
Product type designation	CP 443-1 Advanced
Number of remote connections to input variables with PROFINET CBA with cyclical transfer maximum	250
Number of remote connections to output variables with PROFINET CBA with cyclical transfer maximum	250
Amount of data	
• as user data for remote interconnections with input variables with PROFINET CBA with cyclical transfer maximum	2 000 byte
• as user data for remote interconnections with output variables with PROFINET CBA with cyclical transfer maximum	2 000 byte
Performance data PROFINET CBA HMI variables via PROFINET acyclic	
Number of connectable HMI stations for HMI variables in the case of acyclic transmission with PROFINET CBA	3
Refresh time of the HMI variables in the case of acyclic transmission with PROFINET CBA	500 ms
Number of HMI variables in the case of acyclic transmission with PROFINET CBA maximum	200
Amount of data as user data for HMI variables in the case of acyclic transmission with PROFINET CBA maximum	8 Kibyte
Performance data PROFINET CBA device-internal connections	
Number of internal connections with PROFINET CBA maximum	300
Amount of data of the internal connections with PROFINET CBA maximum	2 400 byte
Performance data PROFINET CBA connections to constants	
Number of connections with constants with PROFINET CBA maximum	500
Amount of data as user data for interconnections with constants with PROFINET CBA maximum	4 000 byte
Performance data PROFINET CBA PROFIBUS proxy functionality	
Product function with PROFINET CBA PROFIBUS proxy functionality	No
Performance data telecontrol	
Protocol is supported	
• TCP/IP	Yes

Article number	6GK7443-1GX30-0XE0
Product type designation	CP 443-1 Advanced
Product functions management, configuration	
Product function MIB support	Yes
Protocol is supported	
• SNMP v1	Yes
• SNMP v3	Yes
• DCP	Yes
• LLDP	Yes
Configuration software	
• required	STEP 7 V5.5 SP3 or higher / STEP 7 Professional V12 (TIA Portal) or higher
• for PROFINET CBA required	SIMATIC iMap V3.0 SP1 and higher
Product functions Diagnosis	
Product function Web-based diagnostics	Yes
Product functions switch	
Product feature Switch	Yes
Product function	
• switch-managed	No
• with IRT PROFINET IO switch	Yes
• Configuration with STEP 7	Yes
Product functions Redundancy	
Product function	
• Ring redundancy	Yes
• Redundancy manager	Yes
Protocol is supported Media Redundancy Protocol (MRP)	Yes
Product functions Security	
Firewall version	stateful inspection
Product function with VPN connection	IPSec
Type of encryption algorithms with VPN connection	AES-256, AES-192, AES-128, 3DES-168, DES-56
Type of authentication procedure with VPN connection	Preshared key (PSK), X.509v3 certificates
Type of hashing algorithms with VPN connection	MD5, SHA-1
Number of possible connections with VPN connection	32
Product function	
• password protection for Web applications	Yes
• ACL - IP-based	Yes
• ACL - IP-based for PLC/routing	Yes
• switch-off of non-required services	Yes
• Blocking of communication via physical ports	Yes
• log file for unauthorized access	No
Product functions Time	
Product function SICLOCK support	Yes
Product function pass on time synchronization	Yes
Protocol is supported NTP	Yes

SIMATIC S7-400 advanced controller

Communication

CP 443-1 Advanced

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Ordering data

Article No.

Article No.

Communications processor CP 443-1 Advanced

for connecting the SIMATIC S7-400 CPU to Industrial Ethernet:
1 x 10/100/1000 Mbit/s;
4 x 10/100 Mbit/s (IE SWITCH);
RJ45 ports; ISO; TCP; UDP;
PROFINET IO controller,
S7 communication;
open communication
(SEND/RECEIVE); S7 routing;
IP configuration via DHCP/block;
IP Access Control List; time
synchronization; expanded web
diagnostics; Fast Startup;
PROFenergy support;
IP routing; FTP; web server;
e-mail; PROFINET CBA
• With security functionality
(firewall and VPN)

6GK7443-1GX30-0XE0

Accessories

IE FC RJ45 Plug 180 2 x 2

RJ45 plug-in 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 CPUs/CPUs with Industrial Ethernet interface

- 1 pack = 1 unit
- 1 pack = 10 units
- 1 pack = 50 units

6GK1901-1BB10-2AA0
6GK1901-1BB10-2AB0
6GK1901-1BB10-2AE0

IE FC RJ45 Plug 4 x 2

RJ45 plug connector for Industrial Ethernet (10/100/1000 Mbit/s) with a sturdy metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPUs/CPUs with Industrial Ethernet interface

- 1 pack = 1 unit
- 1 pack = 10 units
- 1 pack = 50 units

6GK1901-1BB11-2AA0
6GK1901-1BB11-2AB0
6GK1901-1BB11-2AE0

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-compatible; with UL approval; sold by the meter; max. length 1000 m, minimum order quantity 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 applications; with UL approval; sold by the meter; max. quantity 1000 m, minimum order 20 m

- AWG22, for connection to IE FC RJ45 Modular Outlet
- AWG24, for connection to IE FC RJ45 Plug 4 x 2

6XV1870-2E

6XV1878-2A

IE FC Stripping Tool

Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables

6GK1901-1GA00

Industrial Ethernet Switch SCALANCE X204-2

Industrial Ethernet Switches with integral SNMP access, Web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbit/s RJ45 ports and two FO ports

6GK5204-2BB10-2AA3

Industrial Ethernet Switch SCALANCE X308-2

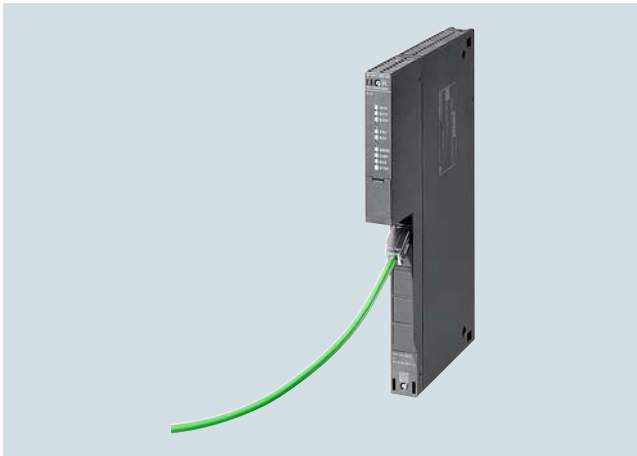
2 x 1000 Mbit/s multimode fiber-optic cable ports (SC sockets), 1 x 10/100/1000 Mbit/s RJ45 port, 7 x 10/100 Mbit/s RJ45 ports; for glass fiber-optic cable (multimode) up to max. 750 m

6GK5308-2FL00-2AA3

Note:

You can find order information for software for communication with PC systems in the IK PI catalog.

Overview



CP 443-1 OPC UA communications processor

Communications processor for connecting a SIMATIC S7-400 to Industrial Ethernet networks via OPC UA mechanisms.

The CP 443-1 OPC UA supports:

- PG/OP communication
- Communication via OPC UA as OPC UA server and/or OPC UA client for exchanging process data (data access)

The CP makes it possible to provide data for, or receive data from, other stations via a standardized OPC UA interface direct from the SIMATIC S7-400 controller. The CP can be used here as an OPC UA server and/or an OPC UA client. Communication as an OPC UA client takes place via user blocks standardized by the PLCopen organization. For more detailed information, see also:

www.plcopen.org/pages/tc4_communication/index.htm

It can be used in SIMATIC S7-400 H systems as well as in standard SIMATIC S7-400 systems, and for fail-safe applications (PROFIsafe) in connection with an S7-400 F-CPU.

Technical specifications

Article number	6GK7443-1UX00-0XE0
Product type designation	CP 443-1 OPC UA
Transmission rate	
Transfer rate	
• for Industrial Ethernet	10 ... 1 000 Mbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	1
Type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage 1 from backplane bus	5 V
Relative symmetrical tolerance at DC	
• at 5 V	5 %
Consumed current	
• from backplane bus at DC at 5 V typical	1.3 A
Power loss [W]	6.5 W
Permitted ambient conditions	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20

Article number	6GK7443-1UX00-0XE0
Product type designation	CP 443-1 OPC UA
Design, dimensions and weight	
Module format	Compact module S7-400 single width
Width	25 mm
Height	290 mm
Depth	210 mm
Net weight	0.7 kg
Product properties, functions, components general	
Number of units	
• per CPU maximum	1
Performance data S7 communication	
Number of possible connections for S7 communication	
• with PG connections maximum	2
Performance data as OPC UA server	
Protocol is supported OPC UA Server	Yes
Number of possible connections to OPC UA clients maximum	10
Number of variables (items) maximum	64 000
Storage capacity for variables (items) in summary	64 000 byte
Number of monitorings (subscriptions)	
• per connection maximum permissible	5
Number of variables (items)	
• per monitoring (subscriptions) maximum	900
Memory capacity for monitored variables (items)	45 000 byte

SIMATIC S7-400 advanced controller

SIPLUS S7-400 communication

SIPLUS S7-400 CP 443-1

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Ordering data**Article No.****SIPLUS CP 443-1 communications processor**

For connecting SIMATIC S7-400 to Industrial Ethernet through TCP/IP, ISO and UDP; PROFINET IO Controller, MRP; integrated real-time switch ERTEC with two ports; 2 x RJ-45 interface; S7 communication, open communication (SEND/RECEIVE) with FETCH/WRITE, with and without RFC 1006, DHCP, SNMP V2, diagnostics, multicast, access protection over IP access list, initialization over LAN 10/100 Mbit/s with electronic manual on DVD

Exposure to media

6AG1443-1EX20-4XE0**Article No.****Accessories****SIPLUS SCALANCE X204-2 Industrial Ethernet Switch**

Industrial Ethernet Switches with integral SNMP access, Web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbit/s RJ45 ports and two FO ports

Extended temperature range and exposure to media

6AG1204-2BB10-4AA3**IE FC RJ45 Plug 180**

180° cable outlet; 1 unit

Extended temperature range and exposure to media

6AG1901-1BB10-7AA0**Further accessories**

See SIMATIC CP 443-1, page 1/102

SIMATIC S7-400 advanced controller

SIPLUS S7-400 communication

SIPLUS S7-400 CP 443-1 Advanced

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Overview

ISO	TCP/ UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
●	●	●	●	●	●	●	●

- Connection of SIMATIC S7-400 to Industrial Ethernet
 - Multi-protocol operation for ISO, TCP/IP, UDP and PROFINET IO protocols
 - Adjustable keep-alive function
- Two separate interfaces (integrated network separation):
 - Gigabit interface with one RJ45 port with 10/100/1 000 Mbit/s, full/half-duplex with auto-sensing capability
 - PROFINET interface with four RJ45 ports with 10/100 Mbit/s, full/half duplex with autosensing and autocrossover functionality via integrated 4-port switch
- Communication services via both interfaces
 - Open communication (ISO, TCP/IP and UDP), multicast with UDP, including routing between both interfaces
 - PG/OP communication:
 - Cross-network by means of S7 routing
 - S7 communication (client, server, multiplexing) including routing between both interfaces
 - IT communication:
 - HTTP communication supports access to process data via own Web pages;
 - e-mail client function, sending of e-mails with authentication directly from user program;
 - FTP communication supports program-controlled FTP client communication;
 - access to data blocks through FTP server
- Communication services via PROFINET interface
 - PROFINET IO controller with real-time properties (RT and IRT)
 - PROFINET CBA
 - IP address assignment via DHCP, simple PC tool or via the user program (e.g. HMI)
 - Support of the prioritized startup of PROFINET IO devices
 - Configuration with STEP 7
- Media redundancy (MRP); the CP supports the media redundancy procedure MRP within an Ethernet network with ring topology.
- Access protection by means of configurable IP access list
- Module replacement without programming device; all information is stored on the C-PLUG (also file system for IT functions)

- Extensive diagnostic functions for all modules in the rack
- Integration into network management systems through the support of SNMP V1 MIB-II
- Operation in the SIMATIC H system for redundant S7-communication
- Operation in fail-safe applications (PROFIsafe) in combination with SIMATIC S7-400 CPU 416F

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

SIPLUS CP 443-1 Advanced	
Article No.	6AG1443-1GX30-4XE0
Article number based on	6GK7443-1GX30-0XE0
Ambient temperature range	0 ... +60 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies, except for the ambient conditions
Ambient conditions	
Relative humidity	100 %, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Air pressure (depending on the highest positive temperature range specified)	1 080 ... 795 hPa (-1 000 ... +2 000 m) see ambient temperature range 795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K 658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K

For technical documentation on SIPLUS, see:
www.siemens.com/siplus-extreme