

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200MP

Overview



SIMATIC ET 200MP video

https://players.brightcove.net/1813624294001/70fecf0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=6147385583001



SIMATIC ET 200MP is a modular and scalable I/O system with degree of protection IP20 for universal use, and offers the same system advantages as SIMATIC S7-1500. SIMATIC ET 200MP permits extremely short bus cycle times and very fast response times, even with large quantity structures.

SIMATIC ET 200MP consists of the following components:

- Interface modules for connecting the S7-1500 I/O modules to PROFINET, Ethernet/IP, Modbus TCP and PROFIBUS; up to 30 modules can be connected to one interface module (up to 12 modules for PROFIBUS).
- S7-1500 I/O modules for connecting digital and analog signals, safety modules, technology modules and communications modules and processors.
- Load current supply (PM) for feeding the input and output circuit (load circuits) as well as the sensors and actuators.
- Optional system power supplies (PS) for converting AC or DC line voltages into the required operating voltages for the internal electronics of the SIMATIC S7-1500 I/O system if the power supply of the interface module is not sufficient
- U-connector for connecting the individual modules or active backplane bus for even higher performance and the option of removing and inserting modules during operation (HotSwap)
- S7-1500 mounting rail for securely fastening the I/O system in the control cabinet
- Additional accessories such as universal front connectors, cable grips and shielding sets, SIMATIC TOP connect to reduce cabling effort and variants with increased resistance to external influences (SIPLUS variants)
- Adapter solution for easy migration of S7-300 modules to S7-1500 IO (details on request)

The SIMATIC ET 200MP distributed I/O system is particularly easy to install, wire, and commission.

With its extended ambient conditions, SIMATIC ET 200MP can be used almost anywhere. Many modules can be operated in a temperature range from -30°C to +60°C and at altitudes up to 5,000 m as standard. A wide range of SIPLUS modules is available for requirements beyond this.

Highlights:

- Modular I/O system with degree of protection IP20 for PROFINET, Ethernet/IP, Modbus TCP, or alternatively for PROFIBUS
- Compact dimensions and high channel density
- High degree of user-friendliness due to the following design features:
 - High channel density through 35 mm wide modules with up to 64 digital and 16 analog channels
 - Standardized 40-pin front connector simplifies ordering, logistics, and stock-keeping
 - Standardized pin assignment per module type simplifies wiring and helps avoid errors
 - Integrated potential bridges simplify wiring and allow flexible subsequent modification of potential groups
 - The cable storage space grows along with the requirements and allows a uniform appearance even with insulated conductors with a large core cross-section and/or thick insulation
 - The prewiring position for the front connector allows convenient wiring during both first commissioning and when making changes during operation
 - The DIN rail integrated in the S7-1500 mounting rail allows snapping-on of many standard components such as additional terminals, miniature circuit breakers or small relays
 - The 1:1 assignment of channel status and diagnostics LED, terminal and inscription allows fast location and elimination of errors. Assistance is provided by the cabling diagram printed on the inside of the front doors
 - The integrated shielding concept for analog input and technology modules allows reliable and rugged operation, in particular with High Speed applications. Installation does not require any tools
 - Particularly space-saving and simple design with slim 25 mm modules and high-density modules; the maximum possible station configuration with power supply (PS), interface module (IM) and 30 I/O modules can be accommodated on a 830 mm wide S7-1500 mounting rail
- Extensive product portfolio comprising digital and analog input and output modules (incl. HART protocol for analog modules) and connection of NAMUR encoders for digital input modules), technology modules, communications modules for IO-Link and point to point communication as well as F-modules up to SIL3.
 - Integrated technological functions in selected modules, such as counting, pulse width modulation (PWM) or integrated switching cycle counters, make cost-effective and convenient solutions possible.
 - Selected digital output modules enable safety-related load group shutdown in accordance with SIL 2 via an external safety relay.

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- Extensive system functions
 - Integrated system diagnostics when operated with S7-1500 and TIA Portal
 - Integrated switching cycle counter for relay modules enables preventive maintenance
 - Integrated operating cycles counter at 24 V DC High Feature and TRIAC modules for preventive maintenance of connected actuators, e.g. solenoid valves or other mechanical switchgear
 - Suitable for simple counting tasks with digital input modules with up to 20 kHz.
 - Consistent use of identification and maintenance data IM0 to IM3 for fast electronic and unambiguous identification of individual modules (Article No., serial number, etc.)
 - ID-Link on the side of the module for fast identification using a smart phone.
 - Uniform firmware update for the interface module and all I/O modules for subsequent function extensions (investment security)
 - Bus cycle time $\geq 250 \mu\text{s}$ and coupling to the isochronous task permit implementation of applications with high performance requirements with PROFINET
 - Up to 30 I/O modules (PROFINET) or 12 I/O modules (PROFIBUS) within a station save on interface modules and installation time
 - MMC not required with PROFINET; automatic address assignment via LLDP or manually via TIA Portal or PST tool
 - Shared device on up to two (IM 155-5 PN BA and IM 155-5 PN ST) or four (IM 155-5 MF HF) IO controllers
 - Module shared input/module shared output as system function for all S7-1500 I/O modules
- High plant availability:
 - Increased communication availability by means of Media Redundancy Protocol (MRP, MRPD) on PROFINET as well as operation of the IM 155-5 MF HF on an S7-1500 R/H using S2 redundancy; in addition, the IM 155-5 MF HF High Feature interface modules can be operated on an S7-400H. Configuration is carried out with STEP 7 V5.5 SP3 and a GSDML file. The IM 155-5 MF HF also support operation on an S7-400H CPU (system redundancy).
 - Increased plant availability due to the active backplane bus for up to 12 I/O modules per station; allows reaction-free pulling and plugging of I/O modules in operation without a CPU STOP; allows holding of reserves (empty slots) for plant expansion at a later time.

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Interface modules > IM 155-5

Overview



- Interface modules for connecting ET 200MP via PROFINET, Ethernet/IP, Modbus TCP or PROFIBUS
- These handle data exchange with the I/O controller in the controller
- Width 35 mm

Ordering data

Article No.

Article No.

IM 155-5 interface module

Degree of protection IP20,
module width 35 mm, installation on
S7-1500 mounting rail

SIMATIC ET 200MP, MultiFieldbus IM 155-5 MF HF interface module

PROFINET, flexible ports via
pluggable SIMATIC BusAdapters
(sold separately),
max. 30 I/O modules, multi hot
swap with active backplane sold
separately),
IRT with 250 µs, isochronous mode,
shared device with 4 controllers
(1440 bytes each),
256 bytes per I/O module, MRP,
MRPD, S2 redundancy,
PN Security Class 1,
optional cable grip
(sold separately)

SIMATIC ET 200MP PROFINET IO device IM 155-5 PN BA interface module

For ET 200MP electronic modules;
up to 12 IO modules;
integrated 2-port switch;
RJ45 shared device on
2 IO controllers;
MRP; FW update; I&M0...3

SIMATIC ET 200MP. PROFINET IO device IM 155-5 PN ST interface module

For ET 200MP electronic modules;
up to 12 IO modules without PS;
up to 30 IO modules with
additional PS;
integrated 2-port switch;
RJ45 shared device;
MRP; IRT >= 0.25 ms;
isochronous mode
FW update; I&M0...3;
FSU with 500 ms

SIMATIC ET 200MP. PROFIBUS IO device IM 155-5 DP ST interface module

PROFIBUS interface module for
max. 12 S7-1500 modules, incl.
PROFIBUS connection plug
(6ES7972-0BB70-0XA0)

6ES7155-5MU00-0CN0

6ES7155-5AA00-0AA0

6ES7155-5AA01-0AB0

6ES7155-5BA00-0AB0

Accessories

SIMATIC BA 2xRJ45 BusAdapter

For PROFINET interface modules,
Standard function class or above;
max. cable length 50 m

SIMATIC BA 2xFC BusAdapter

For PROFINET interface modules,
Standard function class or above;
for increased vibration and EMC
loads; max. cable length 50 m

BA 2xM12 BusAdapter

For IM 155-6PN ST, HF;
2 x M12 push-pull sockets,
D-coding, also suitable for standard
M12. For PROFINET

SIMATIC ET 200MP, spare part front door for IM 155-5 (6ES7155-5AA00-0AB0)

5 units per packing unit

SIMATIC S7-1500 mounting rail

Fixed lengths, with grounding
elements

SIMATIC S7-1500, mounting rail 160 mm (approx. 6.3 inches)

Incl. grounding screw, integrated
DIN rail for mounting small items
such as terminals, circuit breakers
and relays

SIMATIC S7-1500, mounting rail 245 mm (approx. 9.6 inches)

Incl. grounding screw, integrated
DIN rail for mounting small items
such as terminals, circuit breakers
and relays

SIMATIC S7-1500, mounting rail 482.6 mm (approx. 19 inches)

Incl. grounding screw, integrated
DIN rail for mounting small items
such as terminals, circuit breakers
and relays

SIMATIC S7-1500, mounting rail 530 mm (approx. 20.9 inches)

Incl. grounding screw, integrated
DIN rail for mounting small items
such as terminals, circuit breakers
and relays

6ES7193-6AR00-0AA0

6ES7193-6AF00-0AA0

6ES7193-6AM00-0AA0

6ES7528-0AA70-7AA0

6ES7590-1AB60-0AA0

6ES7590-1AC40-0AA0

6ES7590-1AE80-0AA0

6ES7590-1AF30-0AA0

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Interface modules > IM 155-5

Ordering data	Article No.		Article No.
SIMATIC S7-1500, mounting rail 830 mm (approx. 32.7 inches) Incl. grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays For cutting to length by customer, without drill holes; grounding elements must be ordered separately	6ES7590-1AJ30-0AA0	Power supply connector Spare part; for connecting the 24 V DC supply voltage	
SIMATIC S7-1500, mounting rail 2000 mm (approx. 78.7 inches) Without grounding screw, integrated DIN rail for mounting small items such as terminals, circuit breakers and relays for cutting to length by customer, grounding screw (6ES7590-5AA00-0AA0, 20 units) must be ordered separately	6ES7590-1BC00-0AA0	Connector, socket, 2x2-pin, ET 200SP, interface module, KP32F, PN-PN coupler Grid size 5.08 mm spring-loaded terminals, internally bridged, color-coded, 10 units per packing unit	6ES7193-4JB00-0AA0
SIMATIC S7-1500, grounding screw For connecting PE to the S7-1500 mounting rail; essential for 2000 mm mounting rail; 20 units per packing unit	6ES7590-5AA00-0AA0	SIMATIC S7-1500 / ET 200MP; active backplane bus 12 slots For plugging S7-1500 I/O modules for hot swapping; for use in the ET 200MP with IM 155-5 PN HF (from FW V4.4.1); please order S7-1500 mounting rail and slot covers separately	6ES7590-0BL00-0AA0
Strain relief For ET 200MP interface module IM 155-5 MF HF on SIMATIC BusAdapter; 5 units	6ES7590-5DA00-0AA0	PROFIBUS FastConnect RS485 bus connector with 90° cable outlet	
System power supply For supplying the S7-1500 backplane bus		SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method Without PG socket	6ES7972-0BA70-0XA0
SIMATIC S7-1500, system power supply PS 25 W 24 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0KA00-0AB0	SIMATIC DP, connection plug for PROFIBUS up to 12 Mbps 90° cable outlet, 15.8 x 72.2 x 36.4 mm (WxHxD), FastConnect insulation displacement method With PG socket	6ES7972-0BB70-0XA0
SIMATIC S7-1500, system power supply PS 60 W 24/48/60 V DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7505-0RA00-0AB0	SIMATIC S7-1500 / ET 200MP; slot cover For the active backplane bus of the S7-1500 for protection against ESD as well as for mechanical fixation on the S7-1500 mounting rail. Unused slots must be provided with a slot cover! 5 units per packing unit	6ES7590-0CA00-0AA0
SIMATIC S7-1500, system power supply with buffer functionality PS 60 W 24/48/60 V DC HF Supplies operating voltage to the backplane bus of the S7-1500 and enables non-volatile retention of the work memory (data) by the CPU	6ES7505-0RB00-0AB0	PROFIBUS FastConnect stripping tool Stripping tool for fast stripping of the PROFIBUS FastConnect bus cable	6GK1905-6AA00
SIMATIC S7-1500, system power supply PS 60 W 120/230 V AC/DC Supplies operating voltage to the backplane bus of the S7-1500	6ES7507-0RA00-0AB0	PROFIBUS FastConnect bus cable • Standard type with special design for quick mounting, 2-wire, shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m • 20 m • 50 m • 100 m • 200 m • 500 m • 1000 m	6XV1830-0EH10 6XV1830-0EN20 6XV1830-0EN50 6XV1830-0ET10 6XV1830-0ET20 6XV1830-0ET50 6XV1830-0EU10
SIMATIC S7-1500 spare part, connector for system power supply modules (PS) and load current supply modules (PM) 10 units per packing unit	6ES7590-8AA00-0AA0	FC robust cable Bus cable with PUR sheath for use under ambient conditions of extreme mechanical stress or aggressive chemicals, 2-wire, shielded, sold by the meter, max. delivery unit 1 000 m, minimum order quantity 20 m	6XV1830-0JH10
Load current supply			
SIMATIC PM 1507 24 V/3 A Stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC Output: 24 V DC/3 A	6EP1332-4BA00		
SIMATIC PM 1507 24 V/8 A Stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC Output: 24 V DC/8 A	6EP1333-4BA00		

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Ordering data	Article No.		Article No.
FC flexible cable PROFIBUS bus cable, flexible, with special design for quick mounting, 2-wire, shielded, sold by the meter, max. delivery unit 1 000 m, minimum order quantity 20 m	6XV1831-2K	Industrial Ethernet FastConnect RJ45 plug 180 2x 2 RJ45 plug-in connector (10/100 Mbps), with rugged metal enclosure and FC connection technology, for IE FC cable 2x 2; 180° cable outlet 1 pack = 50 units.	6GK1901-1BB10-2AE0
FC trailing cable PROFIBUS trailing cable, at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-wire, shielded, sold by the meter, max. delivery unit 1 000 m, minimum order quantity 20 m	6XV1830-3EH10	Industrial Ethernet FC TP standard cable, GP 2x2 (PROFINET type A) TP installation cable for connection to IE FC RJ45 2x2, for universal use, 4-wire, shielded Cat5e, sold by the meter, delivery unit maximum length of 4000 m minimum order quantity 20 m.	6XV1840-2AH10
FC bus cable PROFIBUS Food bus cable with PE sheath for use in the food and beverages industry, 2-wire, shielded, sold by the meter, max. delivery unit 1 000 m, minimum order quantity 20 m	6XV1830-0GH10	Industrial Ethernet FC TP trailing cable, 2x2 (PROFINET type C) TP installation cable for connection to FC outlet RJ 45, for use in cable carriers, 4-wire, shielded, Cat5e, sold by the meter (4 million bending cycles), delivery unit max. 2000 m, minimum order quantity 20 m.	6XV1840-3AH10
FC underground cable PROFIBUS underground cable, 2-wire, shielded, sold by the meter, max. delivery unit 1 000 m, minimum order quantity 20 m	6XV1830-3FH10	Industrial Ethernet FC TP marine cable TP installation cable for connection to FC outlet RJ45, marine certified, 4-wire, shielded, Cat5e, sold by the meter, delivery unit maximum length of 1000 m, minimum order quantity 20 m.	6XV1840-4AH10
FC FRNC cable PROFIBUS bus cable, flame-retardant and halogen-free, with copolymer sheath FRNC, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m	6XV1830-0LH10	Industrial Ethernet FastConnect stripping tool Stripping tool for fast stripping of insulation from the IE FastConnect cables.	6GK1901-1GA00
FC trailing cable IE FC RJ45 plug 180 180° cable outlet	6XV1831-2L		
Industrial Ethernet FastConnect RJ45 plug 180 2x 2 RJ45 plug-in connector (10/100 Mbps), with rugged metal enclosure and FC connection technology, for IE FC cable 2x 2; 180° cable outlet 1 pack = 1 unit.	6GK1901-1BB10-2AA0		
Industrial Ethernet FastConnect RJ45 plug 180 2x 2 RJ45 plug-in connector (10/100 Mbps), with rugged metal enclosure and FC connection technology, for IE FC cable 2x 2; 180° cable outlet 1 pack = 10 units.	6GK1901-1BB10-2AB0		

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Interface modules > IM 155-5

Technical specifications

Article number	6ES7155-5BA00-0AB0 ET 200MP, IM155-5 DP ST	6ES7155-5AA00-0AA0 ET 200MP, IM 155-5 PN BA	6ES7155-5AA01-0AB0 ET 200MP, IM 155-5 PN ST	6ES7155-5MU00-0CN0 ET 200MP, IM 155-5 MF HF
General information				
Product type designation	IM 155-5 DP ST	IM 155-5 PN BA	IM 155-5 PN ST	IM 155-5 MF HF
Product function				
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
• Module swapping during operation (hot swapping)	No	No	No	Yes; In combination with active backplane bus
• Isochronous mode	No	No	Yes	Yes
• IRT	No	No	Yes	Yes
• Tool changer	No	No	No	Yes; Docking station
• Local coupling, IO data	No	No	No	Yes
- Number of coupling modules				6; 1x output + max. 5x input
Engineering with				
• STEP 7 TIA Portal configurable/ integrated from version	V13	V15.1	V15	V20 HSP0454
• STEP 7 configurable/ integrated from version	use GSD file	use GSD file	use GSD file	use GSD file
• PROFIBUS from GSD version/ GSD revision	V1.0 / V5.1			
• PROFINET from GSD version/ GSD revision		GSDML V2.3	GSDML V2.3	GSDML V2.45
Supply voltage				
Rated value (DC)	24 V	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes	Yes
Short-circuit protection	Yes	Yes	Yes	Yes
Input current				
Current consumption (rated value)	0.2 A; at 24 V DC and without load	1 A; at 24 V DC and without load	0.2 A; at 24 V DC and without load	0.16 A; at 24 V DC and without load
Address area				
Address space per station				
• Address space per station, max.	244 byte; For input and output data respectively	64 byte; For input and output data respectively	512 byte; For input and output data respectively	1 440 byte; For input and output data respectively
Hardware configuration				
Integrated power supply	Yes; 14 W	Yes; 14 W	Yes; 14 W	Yes; 16 W
Rack				
• Modules per rack, max.	12; I/O modules	12; I/O modules	30; I/O modules	30; I/O modules
Submodules				
• Number of submodules per station, max.		108; 9 per I/O module	256; 9 per I/O module	256; 9 per I/O module
Interfaces				
Number of PROFINET interfaces		1; 2 ports (switch)	1; 2 ports (switch)	1; 2 ports (switch)
Number of PROFIBUS interfaces	1; 1 port			
1. Interface				
Interface types				
• RJ 45 (Ethernet)		Yes	Yes	Yes; with BusAdapter
• RS 485	Yes			
• Number of ports	1	2	2	2; with BusAdapter
• integrated switch	No	Yes	Yes	Yes
• BusAdapter (PROFINET)	No	No	No	Yes; BA 2x RJ45, BA 2x FC, BA 2x M12
Protocols				
• PROFINET IO Device		Yes	Yes	Yes
• PROFIBUS DP device	Yes			
• Open IE communication		Yes	Yes	Yes
• Media redundancy		Yes; PROFINET MRP client	Yes; PROFINET MRP client	Yes; PROFINET MRP client / HRP client

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Interface modules > IM 155-5

Technical specifications

Article number	6ES7155-5BA00-0AB0 ET 200MP, IM155-5 DP ST	6ES7155-5AA00-0AA0 ET 200MP, IM 155-5 PN BA	6ES7155-5AA01-0AB0 ET 200MP, IM 155-5 PN ST	6ES7155-5MU00-0CN0 ET 200MP, IM 155-5 MF HF
PROFINET IO Device				
Services				
- IRT		No	Yes; 250 µs to 4 ms in 125 µs frame	Yes; 250 µs to 4 ms in 125 µs frame
- PROFINergy		No	No	No
- Prioritized startup		No	Yes	No
- Shared device		Yes	Yes	Yes
- Number of IO Controllers with shared device, max.		2	2	4; for multi-fieldbus mixed operation: 2x PN controller + 2x EtherNet/IP scanner + 10x Modbus TCP master
Interface types				
RJ 45 (Ethernet)				
• Transmission procedure		PROFINET with 100 Mbit/s full duplex (100BASE-TX)	PROFINET with 100 Mbit/s full duplex (100BASE-TX)	PROFINET with 100 Mbit/s full duplex (100BASE-TX)
• 100 Mbps		Yes	Yes	Yes
• Autonegotiation		Yes	Yes	Yes
• Autocrossing		Yes	Yes	Yes
RS 485				
• Transmission rate, max.	12 Mbit/s			
Protocols				
Supports protocol for PROFINET IO	No	Yes	Yes	Yes
PROFIsafe	Yes	Yes; FW V4.3.0 or higher	Yes	Yes
PROFIBUS	Yes	No	No	No
EtherNet/IP	No	No	No	Yes
Modbus TCP	No	No	No	Yes
Redundancy mode				
• PROFINET system redundancy (S2)		No	No	Yes; NAP S2
- on S7-1500R/H		No	No	Yes
- on S7-400H		No	No	Yes; use GSD file
• PROFINET system redundancy (R1)		No	No	No
• H-Sync forwarding		No	No	Yes
Media redundancy				
- MRP		Yes	Yes	Yes
- MRPD		No	No	Yes
EtherNet/IP				
Services				
- CIP Implicit Messaging				Yes
- CIP Explicit Messaging				Yes
- CIP Safety				No
- Configuration control via Explicit Messaging				No
- Shared device				Yes; for multi-fieldbus mixed operation: 2x PN controller + 2x EtherNet/IP scanner + 10x Modbus TCP master
- Number of scanners with shared device, max.				2
Updating times				
- Requested Packet Interval (RPI)				2 ms
Address area				
- Address space per module, max.				256 byte; 246 byte outputs / 256 byte inputs
- ForwardOpen (Class1 & 32 bit Header)				500 byte; (246 byte outputs / 500 byte inputs)
- LargeForwardOpen (Class3)				4 002 byte
Connections				
- Number of rack connections				2

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Interface modules > IM 155-5

Technical specifications

Article number	6ES7155-5BA00-0AB0 ET 200MP, IM155-5 DP ST	6ES7155-5AA00-0AA0 ET 200MP, IM 155-5 PN BA	6ES7155-5AA01-0AB0 ET 200MP, IM 155-5 PN ST	6ES7155-5MU00-0CN0 ET 200MP, IM 155-5 MF HF
Modbus TCP				
Services				
- read coils (code=1)				Yes
- read discrete inputs (code=2)				Yes
- Read Holding Registers (Code=3)				Yes
- write single coil (code=5)				Yes
- write multiple coils (code=15)				Yes
- Write Multiple Registers (Code=16)				Yes
- Parameter change by master				Yes
- Modbus TCP Security Protocol				No
Address space per station				
- Address space per station, max.				500 byte; (246 byte outputs / 500 byte inputs)
- Access-consistent address space				250 byte; (246 byte outputs / 250 byte inputs)
Updating time				
- I/O request interval				2 ms
Connections				
- number of connections per device				9; (1x inputs / 2x outputs / 4x volatile registers / 2x Device Info)
Open IE communication				
• TCP/IP		Yes	Yes	Yes
• UDP				Yes
• SNMP		Yes	Yes	Yes
• LLDP		Yes	Yes	Yes
• ARP				Yes
• IGMP				Yes
• Multicast				Yes
• Broadcast				Yes
• IPv4				Yes
• IPv6				No
PROFIBUS DP				
Services				
- SYNC capability	Yes			
- FREEZE capability	Yes			
- DPV1	Yes			
Isochronous mode				
Equidistance		No	Yes	Yes
shortest clock pulse			250 µs	250 µs
max. cycle			4 ms	4 ms
Bus cycle time (TDP), min.			250 µs	250 µs
Interrupts/diagnostics/ status information				
Status indicator	Yes	Yes	Yes	Yes
Alarms	Yes	Yes	Yes	Yes
Diagnostics function	Yes	Yes	Yes	Yes
Diagnostics indication LED				
• RUN LED	Yes; green LED	Yes; green LED	Yes; green LED	Yes; green LED
• ERROR LED	Yes; red LED	Yes; red LED	Yes; red LED	Yes; red LED
• MAINT LED	Yes; Yellow LED	Yes; Yellow LED	Yes; Yellow LED	Yes; Yellow LED
• NS LED				Yes; green/red LED
• MS LED				Yes; green/red LED
• IO LED				Yes; red-green-yellow LED
• Connection display LINK TX/RX		Yes; 2x green-yellow LEDs	Yes; 2x green-yellow LEDs	Yes; 2x green LEDs on BusAdapter
• Connection display DP	Yes; green LED			

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SIMATIC ET 200MP

Interface modules > IM 155-5**Technical specifications**

Article number	6ES7155-5BA00-0AB0 ET 200MP, IM155-5 DP ST	6ES7155-5AA00-0AA0 ET 200MP, IM 155-5 PN BA	6ES7155-5AA01-0AB0 ET 200MP, IM 155-5 PN ST	6ES7155-5MU00-0CN0 ET 200MP, IM 155-5 MF HF
Standards, approvals, certificates				
Network loading class		2		3
Product functions / security				
PROFINET Security Class				1
signed firmware update				Yes
Secure Boot				Yes
safely removing data				Yes
data integrity				Yes
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-25 °C; from FS04	-30 °C; From FS03	-25 °C; From FS03	-30 °C
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	-25 °C; from FS04	-30 °C; From FS03	-25 °C; From FS03	-30 °C
• vertical installation, max.	40 °C	40 °C	40 °C	40 °C
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
connection method				
ET-Connection				
• via BU/BA Send	No		No	No
Mechanics/material				
Strain relief				Yes; Optional
Dimensions				
Width	35 mm	35 mm	35 mm	35 mm
Height	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm
Weights				
Weight, approx.	360 g	236 g		260 g; without BusAdapter

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SIMATIC ET 200MP

Interface modules > SIPLUS IM 155-5 PN

Overview



SIMATIC ET 200MP IM 155-5 MF HF



ET 200MP IM 155-5 PN BA interface module

- Interface modules for connecting ET 200MP via PROFINET, Ethernet/IP, Modbus TCP or PROFIBUS
- These handle data exchange with the I/O controller in the controller
- Width 35 mm

Note:

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

Ordering data

Article No.

SIPLUS IM 155-5 PN interface module (Extended temperature range and exposure to environmental substances) Degree of protection IP20, module width 35 mm, installation on S7-1500 mounting rail IM 155-5 PN ST, standard version	6AG1155-5AA01-7AB0
SIPLUS ET 200MP, IM155-5 MF MultiFieldbus interface module (Extended temperature range and exposure to environmental substances) For up to 30 I/O modules, S2 redundancy for operation on S7-400H	6AG1155-5MU00-7CN0
Accessories	See SIMATIC ET 200MP, IM 155-5 interface module, page 10/352

I/O systems

SIMATIC ET 200 systems for the control cabinet SIMATIC ET 200MP

Interface modules > SIPLUS IM 155-5 PN

Technical specifications

Article number	6AG1155-5AA01-7AB0	6AG1155-5MU00-7CN0
Based on	6ES7155-5AA01-0AB0 SIPLUS ET 200MP IM 155-5 PN ST	6ES7155-5MU00-0CN0 SIPLUS ET 200MP IM155-5 MF HF
Ambient conditions		
Ambient temperature during operation		
- horizontal installation, min. - horizontal installation, max. - vertical installation, min. - vertical installation, max.	-40 °C; = Tmin (incl. condensation/frost) 70 °C; = Tmax; ab > +60 °C no module permissible left of the IM -40 °C; = Tmin 40 °C	-40 °C; = Tmin (incl. condensation/frost) 70 °C; = Tmax -40 °C; = Tmin 40 °C; = Tmax
Altitude during operation relating to sea level		
- Installation altitude above sea level, max. - Ambient air temperature-barometric pressure-altitude	5 000 m Tmin ... Tmax at 1 080 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m); from 2 000 m max. 132 V AC	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Relative humidity		
With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance		
Coolants and lubricants		
Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3 - to chemically active substances according to EN 60721-3-3 - to mechanically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust; *
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6 - to chemically active substances according to EN 60721-3-6 - to mechanically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna) Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology		
- Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark		
Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating		
- Coatings for printed circuit board assemblies acc. to EN 61086 - Protection against fouling acc. to EN 60664-3 - Military testing according to MIL-I-46058C, Amendment 7 - Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200MP

Interface modules > SIPLUS IM 155-5 DP

Overview



- Interface module for linking the ET 200MP to PROFIBUS
- Handles data exchange with the PROFIBUS device in the PLC
- Max. 12 I/O modules
- Automatic detection of baud rate 9.6 kBd ... 12 MBd
- PROFIBUS addresses 1 ... 125; adjustable using DIP switches
- Identification and maintenance data IM0 ... IM3

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.

Ordering data

Article No.	
SIPLUS IM 155-5 DP ST interface module	6AG1155-5BA00-2AB0
(Extended temperature range and exposure to environmental substances)	
IP 20 degree of protection, module width 35 mm, installation on S7-1500 DIN rail	
Accessories	See SIMATIC ET 200MP, IM 155-5 interface module, page 10/352

Technical specifications

Article number	6AG1155-5BA00-2AB0
Based on	6ES7155-5BA00-0AB0 SIPLUS ET 200MP IM155-5 DP ST
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C
• horizontal installation, max.	60 °C; = Tmax

Article number	6AG1155-5BA00-2AB0
Based on	6ES7155-5BA00-0AB0 SIPLUS ET 200MP IM155-5 DP ST
Altitude during operation relating to sea level	
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 080 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology	
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200MP

I/O modules

Overview



I/O modules constitute the interface of SIMATIC ET 200MP to the process:

- Digital and analog modules provide exactly the inputs/outputs required for each task
- Technology modules for SIMATIC S7-1500 and ET 200MP
 - With integrated functions for high-speed counting and position detection
 - With integrated inputs and outputs for tasks at the process level and short response times
- Communications modules for SIMATIC S7-1500 and ET 200MP
 - For data exchange using point-to-point coupling
 - For connecting to PROFIBUS
 - For connecting to Industrial Ethernet
- Connection system for user-friendly, low-overhead wiring of the S7-1500 and ET 200MP modules

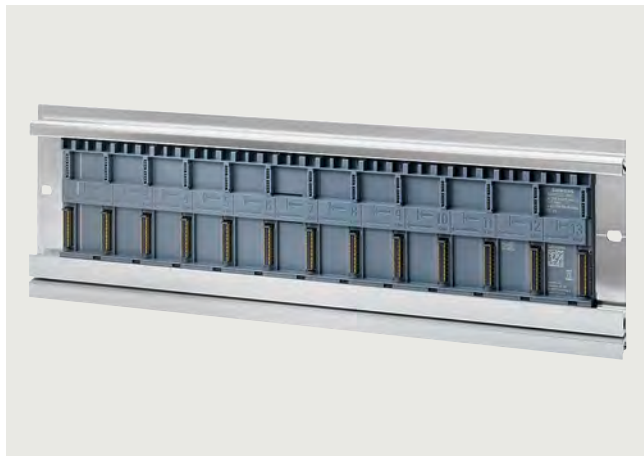
You can find additional information under [SIMATIC S7-1500, chapter 5](#).

I/O systems

SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200MP

Active backplane bus

Overview



Active backplane bus in S7-1500 DIN rail

- Considerably enhances system availability:
 - Reaction-free hot swapping of I/O modules during operation; system remains in RUN mode when replacing one or more I/O modules
 - Reserve capacity (= gaps in system configuration) for later use
- Can also be used exclusively with ET 200MP and PROFINET
- Can be inserted in the ET 200MP standard DIN rail, replaces the U connectors
- The comprehensive system functions of ET 200MP can still all be used
- Can be used with all PROFINET IO controllers by configuring via GSD file and PROFINET

Ordering data

Active backplane bus

for ET 200MP I/O modules for hot swapping; for insertion in the S7-1500 DIN rail.

Please order the S7-1500 DIN rail and slot covers separately.

- 4 slots
- 8 slots:
- 12 slots

Accessories

Slot cover for active backplane bus

To protect against electrostatic discharge as well as provide mechanical stability on the S7-1500 DIN rail;
5 units per packing unit

Article No.

6ES7590-0BD00-0AA0
6ES7590-0BH00-0AA0
6ES7590-0BL00-0AA0

6ES7590-0CA00-0AA0

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200MP

Active backplane bus

Technical specifications

Article number	6ES7590-0BD00-0AA0 SIMATIC S7-1500 active backplane/4 slot	6ES7590-0BH00-0AA0 SIMATIC S7-1500 act. backplane/8 slot	6ES7590-0BL00-0AA0 SIMATIC S7-1500 act. backplane/12 slot
General information			
Product type designation	Active Backplane ST 1+4 Slot	Active Backplane ST 1+8 Slot	Active backplane ST 1+12 slot
Product function			
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
• Isochronous mode	Yes	Yes	Yes
• Prioritized startup	Yes	Yes	Yes
Engineering with			
• STEP 7 TIA Portal configurable/ integrated from version	V16 / V17	V16 / V17	V16
• STEP 7 configurable/ integrated from version	V5.6 and higher	V5.6 and higher	V5.6 and higher
• PROFINET from GSD version/ GSD revision	V2.35 / -	V2.35 / -	V2.34 / -
Hardware configuration			
Slots			
• Grid size	35 mm; Utilization of 25 mm-wide modules possible	35 mm; Utilization of 25 mm-wide modules possible	35 mm; Utilization of 25 mm-wide modules possible
• Number of slots	5	9	13
- of which for CPU, max.	1; for S7-1500H CPU with CPU firmware V3.1 or higher; interface modules up to V1.1.0 only (active backplane bus)	1; for S7-1500H CPU with CPU firmware V3.1 or higher; interface modules up to V1.1.0 only (active backplane bus)	0
- of which for IM, max.	1	1	1
- of which for PS, max.	4; Max. 2 PS per station	8; Max. 2 PS per station	12; Max. 2 PS per station
- of which for IO/CM/CP/TM, max.	4	8	12
- of which for F-IO, max.	4	8	12
• Number of single-width slots, max.	4	8	12
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	-30 °C	-30 °C	-30 °C
• horizontal installation, max.	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C	-30 °C	-30 °C
• vertical installation, max.	40 °C	40 °C	40 °C
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Dimensions			
Width	154 mm	294 mm	434 mm
Height	99 mm	99 mm	99 mm
Depth	14 mm	14 mm	14 mm
Weights			
Weight, approx.	128 g	246 g	352 g

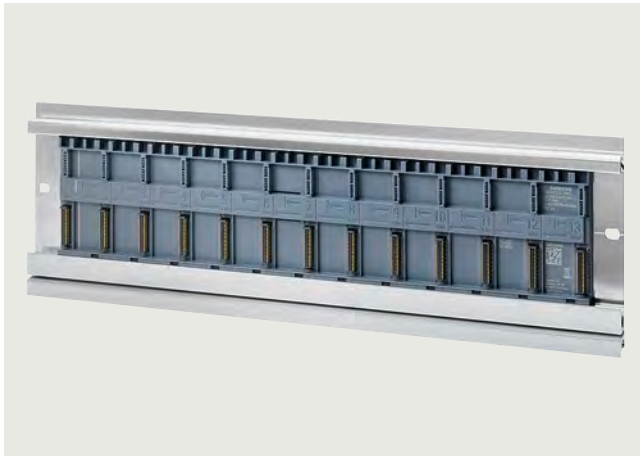
I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200MP

SIPLUS extreme active backplane bus

Overview



Active backplane bus in S7-1500 DIN rail

- Considerably enhances system availability:
 - Reaction-free hot swapping of I/O modules during operation; system remains in RUN mode when replacing one or more I/O modules
 - Reserve capacity (= gaps in system configuration) for later use
- Can also be used exclusively with ET 200MP and PROFINET
- Can be inserted in the ET 200MP standard DIN rail, replaces the U connectors
- The comprehensive system functions of ET 200MP can still all be used
- Can be used with all PROFINET IO controllers by configuring via GSD file and PROFINET

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.

Ordering data

Article No.

Active backplane bus

SIPLUS S7-1500 act. backpl. 8 slots

With 8 slots for inserting S7-1500 I/O modules for hot swapping; with conformal coating -40 ... +70 °C, for use in the ET 200MP. Please order S7-1500 mounting rail and slot covers separately

6AG1590-0BH00-7AA0

SIPLUS S7-1500 act. backpl. 12 slots

With 12 slots for inserting S7-1500 I/O modules for hot swapping; with conformal coating -40 ... +70 °C, for use in the ET 200MP. Please order S7-1500 mounting rail and slot covers separately

6AG1590-0BL00-7AA0

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200MP

SIPLUS extreme active backplane bus**Technical specifications**

Article number	6AG1590-0BH00-7AA0	6AG1590-0BL00-7AA0
Based on	6ES7590-0BH00-0AA0 SIPLUS S7-1500 act. backplane 8 slot	6ES7590-0BL00-0AA0 SIPLUS S7-1500 act. backplane 12 slot
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	70 °C; = Tmax	70 °C; = Tmax
• vertical installation, min.	-40 °C; = Tmin	-40 °C; = Tmin
• vertical installation, max.	40 °C; = Tmax	40 °C; = Tmax
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology		
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark		
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating		
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A