I/O systems
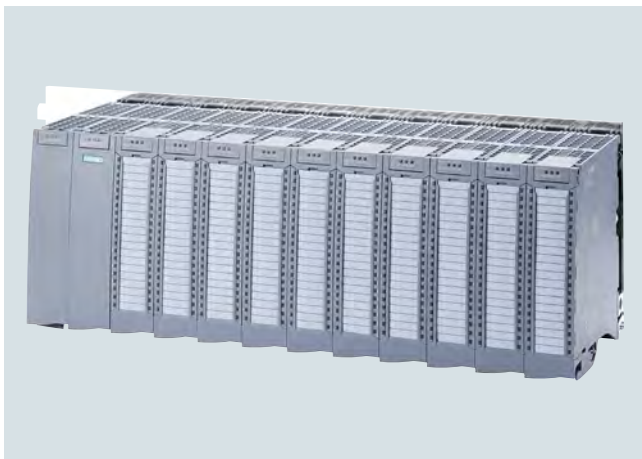## SIMATIC ET 200 systems for the control cabinet

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 IP20 degree of protection 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 S7-1500 I/O modules to PROFINET; up to 30 modules can be connected to one interface module
- Interface module for connecting S7-1500 I/O modules to PROFIBUS; up to 12 modules can be connected to one interface module

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 IP20 degree of protection for PROFINET 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 channels
  - Standardized 40-pin front connector simplifies ordering, logistics, and warehousing
  - 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 initial commissioning and when making changes during operation
  - The mounting rail integrated in the S7-1500 DIN 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 wiring diagram printed on the inside of the front panels
  - The integrated shielding concept for analog 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
- Comprehensive product portfolio comprising digital and analog input or output modules, technology modules, communications modules for IO-Link and point-to-point communication, and 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 SILCL 2 via an external safety relay.

■ Overview

- Extensive system functions
  - Integrated system diagnostics when operated with S7-1500 and TIA Portal
  - Integrated switching cycle counter for relay modules enables preventive maintenance
  - Consistent use of identification and maintenance data IM0 to IM3 for fast electronic and unambiguous identification of individual modules (Article No., serial number, etc.)
  - Uniform firmware update for the interface module and all I/O modules for subsequent expansion of functions (investment security)
  - Bus cycle time ≥ 250 μs 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 PN 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 PN HF on an S7-1500 R/H using S2 redundancy;
    in addition, the IM 155-5 PN HF High Feature interface module 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 PN HF also supports 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.

10

I/O systems
SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200MP

Interface modules > IM 155-5 PN

■ **Overview**

- Interface modules for connecting ET 200MP to PROFINET
- These handle data exchange with the PROFINET IO Controller in the PLC
- Integrated 2-port switch for line topology

IM 155-5 PN BA
- Max. 12 I/O modules
- Operation of F-modules and PROFIsafe
- Shortest bus cycle time 1 ms
- Media redundancy (MRP)
- Shared device on up to 2 IO controllers
- Omission of SIMATIC Memory Card (SMC); IM replacement without PG using LLDP

IM 155-5 PN ST, IM 155-5 PN HF
- Max. 30 I/O modules
- Shortest bus cycle 250 µs
- Connecting to the isochronous task of the CPU
- Prioritized fast startup (FSU) with max. 12 I/O modules
- Media Redundancy Protocol (MRP)
- Shared device on up to two IO controllers (when configuring using GSD file; depends on the respective configuration tool)
- Omission of SIMATIC Memory Card (SMC); IM replacement without PG using LLDP
- Operation of F-modules and PROFIsafe
- Submodule-granular shared device with up to two IO controllers
- Configuration control (option handling)
- Module shared input and module shared output (MSI/MSO), i.e. the inputs or outputs of a module can be made available simultaneously to up to two IO controllers

The IM155-5 PN HF interface module has the following additional functions:
- Shared device on up to 4 IO controllers
- Module shared input and module shared output (MSI/MSO) on up to four IO controllers
- Operation on a highly available SIMATIC S7-400H
- Support for the MRPD function (media redundancy with planned duplication)
- S2 redundancy for operation with an S7-1500 R/H
- Operation on the active backplane bus (as of FW V 4.4.1)

Overview

	IM 155-5 PN BA	IM 155-5 PN ST	IM 155-5 PN HF
Article No.	6ES7155-5AA00-0AA0	6ES7155-5AA01-0AB0	6ES7155-5AA00-0AC0
Quantity structures			
IO modules	All except PROFIsafe	All	All
Max. number IO modules / IM	12	30	30
Max. number of bytes / slot	64 inputs 64 outputs	256 inputs 256 outputs	256 inputs 256 outputs
Max. number bytes / station	64 inputs 64 outputs	512 inputs 512 outputs	512 inputs 512 outputs
Update time	1 ms	250 µs	250 µs
Configuration			
GSDML	Yes	Yes	Yes
STEP 7	GSDML	GSDML	GSDML
TIA Portal	Yes	Yes	Yes
PCS 7	No	No	No
General functions			
Reset to factory settings	TIA Portal	TIA Portal	TIA Portal
Device replacement: without PG	LLDP	LLDP	LLDP
Configuration management (option handling)	No	Yes	Yes
I&M data	IM 0 … 3	IM 0 … 3	IM 0 … 3
Isochronous mode	No	Yes	Yes
PROFIsafe	No	Yes	Yes
PROFINET functions			
RT	Yes	Yes	Yes
IRT	No	Yes	Yes
MRP	Yes	Yes	Yes
MRPD	No	No	Yes
S2 redundancy	No	No	Yes
Fast startup	No	Yes	Yes
Shared device	Yes; up to 2 ctrl.	Yes; up to 2 ctrl.	Yes; up to 4 ctrl.
MSI / MSO	Yes	Yes	Yes
Submodules	Yes	Yes	Yes

10

I/O systems
SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200MP

Interface modules   > IM 155-5 PN

■ **Ordering data**

	Article No.
IM 155-5 PN interface module	
IP20 degree of protection, module width 35 mm, installation on S7-1500 DIN rail	
IM 155-5 PN BA, Basic version	**6ES7155-5AA00-0AA0**
IM 155-5 PN ST, Standard version	**6ES7155-5AA01-0AB0**
IM 155-5 PN HF, High Feature version with additional functions	**6ES7155-5AA00-0AC0**
Accessories	
Front flap for IM 155-5 PN (spare part), 5 units	**6ES7528-0AA70-7AA0**
SIMATIC S7-1500 DIN rail	
Fixed lengths, with grounding elements	
• 160 mm	**6ES7590-1AB60-0AA0**
• 245 mm	**6ES7590-1AC40-0AA0**
• 482 mm	**6ES7590-1AE80-0AA0**
• 530 mm	**6ES7590-1AF30-0AA0**
• 830 mm	**6ES7590-1AJ30-0AA0**
For cutting to length by customer, without drill holes; grounding elements must be ordered separately	
• 2 000 mm	**6ES7590-1BC00-0AA0**
PE connection element for DIN rail 2 000 mm	**6ES7590-5AA00-0AA0**
20 units	
System power supply	
For supplying the S7-1500 backplane bus	
24 V DC input voltage, power 25 W	**6ES7505-0KA00-0AB0**
24/48/60 V DC input voltage, power 60 W	**6ES7505-0RA00-0AB0**
24/48/60 V DC input voltage, power 60 W, buffering functionality	**6ES7505-0RB00-0AB0**
120/230 V AC input voltage, power 60 W	**6ES7507-0RA00-0AB0**
Power plug	**6ES7590-8AA00-0AA0**
With coding element for power supply module; spare part, 10 units	
Load power supply	
24 V DC/3 A	**6EP1332-4BA00**
24 V DC/8 A	**6EP1333-4BA00**
Power supply connector	
Spare part; for connecting the 24 V DC supply voltage	
• with push-in terminals	**6ES7193-4JB00-0AA0**
Active backplane bus	**6ES7590-0BL00-0AA0**
With 12 slots for ET 200MP I/O modules for hot swapping; for insertion in the S7-1500 DIN rail. Please order S7-1500 DIN rail and slot covers separately	

	Article No.
Slot cover for active backplane bus	**6ES7590-0CA00-0AA0**
To protect against electrostatic discharge as well as provide mechanical stability on the S7-1500 DIN rail; 5 units per packing unit	
IE FC RJ45 plugs	
RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
IE FC RJ45 plug 180	
180° cable outlet	
1 unit	**6GK1901-1BB10-2AA0**
10 units	**6GK1901-1BB10-2AB0**
50 units	**6GK1901-1BB10-2AE0**
IE FC TP standard cable GP 2x2	**6XV1840-2AH10**
4-wire, shielded TP installation cable for connection to IE FC RJ45 outlet/ IE FC RJ45 plug; PROFINET-compatible; with UL approval;	
Sold by the meter; max. delivery unit 1 000 m; minimum order quantity 20 m	
IE FC TP trailing cable 2 x 2 (Type C)	**6XV1840-3AH10**
4-wire, shielded TP installation cable for connection to IE FC RJ45 outlet/ IE FC RJ45 plug 180/90 for use in cable carrier; PROFINET-compatible; with UL approval;	
Sold by the meter; max. delivery unit 1 000 m; minimum order quantity 20 m	
IE FC TP marine cable 2 x 2 (Type B)	**6XV1840-4AH10**
4-wire, shielded TP installation cable for connection to IE FC RJ45 outlet/ IE FC RJ45 plug 180/90 marine certified;	
Sold by the meter; max. delivery unit 1 000 m; minimum order quantity 20 m	
IE FC stripping tool	**6GK1901-1GA00**
Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	

10

Technical specifications

Article number	6ES7155-5AA00-0AA0	6ES7155-5AA00-0AC0	6ES7155-5AA01-0AB0
	ET 200MP, IM 155-5 PN BA	ET 200MP, IM 155-5 PN HF	ET 200MP, IM 155-5 PN ST
General information			
Product type designation	IM 155-5 PN BA	IM 155-5 PN HF	IM 155-5 PN ST
Product function			
• I&M data	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	Yes; In combination with active back-plane bus	No
• Isochronous mode	No	Yes	Yes
Engineering with			
• STEP 7 TIA Portal configurable/ integrated from version	V15.1 with HSP 187	V16 with HSP 308	V14 or higher with HSP 0223 / integrated with V15 or higher
• STEP 7 configurable/integrated from version	V5.5 SP3 / -	V5.5 SP3 / -	GSDML V2.32
• PROFINET from GSD version/ GSD revision	V2.3 / -	V2.3 / -	V2.3 / -
Supply voltage			
Rated value (DC)	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes
Short-circuit protection	Yes	Yes	Yes
Input current			
Current consumption (rated value)	1 A	0.2 A	0.2 A
Address area			
Address space per station			
• Address space per station, max.	64 byte; per input / output	512 byte; per input / output	512 byte; per input / output
Hardware configuration			
Integrated power supply	Yes	Yes	Yes
Rack			
• Modules per rack, max.	12; I/O modules	30; I/O modules	30; I/O modules
Submodules			
• Number of submodules per station, max.	108; 9 submodules / I/O modules	256	
Interfaces			
Number of PROFINET interfaces	1; 2 ports (switch) RJ45	1	1
1. Interface			
Interface types			
• RJ 45 (Ethernet)	Yes	Yes	Yes
• Number of ports	2	2	2
• integrated switch	Yes	Yes	Yes
• BusAdapter (PROFINET)	No		
Protocols			
• PROFINET IO Device	Yes	Yes	Yes
• Open IE communication	Yes	Yes	Yes
• Media redundancy	Yes	Yes	Yes; PROFINET MRP
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
PROFINET IO Device			
Services			
- IRT	No	Yes	Yes
- PROFIenergy	No	No	No
- Prioritized startup	No	Yes	Yes
- Shared device	Yes	Yes	Yes
- Number of IO Controllers with shared device, max.	2	4	2

10

I/O systems
SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200MP

Interface modules   > IM 155-5 PN

■ **Technical specifications**

Article number	6ES7155-5AA00-0AA0	6ES7155-5AA00-0AC0	6ES7155-5AA01-0AB0
	ET 200MP, IM 155-5 PN BA	ET 200MP, IM 155-5 PN HF	ET 200MP, IM 155-5 PN ST
Redundancy mode			
• PROFINET system redundancy (S2)	No	Yes	No
- on S7-1500R/H		Yes	
- on S7-400H		Yes; With GSDML file as of STEP 7 V5.5 SP3	
• Redundant PROFINET configuration (R1)		No	No
• H-Sync forwarding		Yes	
Media redundancy			
- MRP	Yes	Yes	Yes
- MRPD	No	Yes	No
Open IE communication			
• TCP/IP	Yes	Yes	Yes
• SNMP	Yes	Yes	Yes
• LLDP	Yes	Yes	Yes
Isochronous mode			
Equidistance	No	Yes	Yes
shortest clock pulse		250 µs	250 µs
max. cycle		4 ms	4 ms
Interrupts/diagnostics/ status information			
Status indicator	Yes	Yes	Yes
Alarms	Yes	Yes	Yes
Diagnostics function	Yes	Yes	Yes
Diagnostics indication LED			
• RUN LED	Yes; green LED	Yes; green LED	Yes; green LED
• ERROR LED	Yes; red LED	Yes; red LED	Yes; red LED
• MAINT LED	Yes; Yellow LED	Yes; Yellow LED	Yes; Yellow LED
• Connection display LINK TX/RX	Yes; 2x green-yellow LEDs	Yes; 2x green-yellow LEDs	Yes; 2x green-yellow LEDs
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	-30 °C; From FS03	-25 °C; from FS04	-25 °C; From FS03
• horizontal installation, max.	60 °C	60 °C	60 °C
• vertical installation, min.	-30 °C; From FS03	-25 °C; from FS04	-25 °C; From FS03
• 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
Connection method			
ET-Connection			
• via BU/BA Send		No	No
Dimensions			
Width	35 mm	35 mm	35 mm
Height	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm
Weights			
Weight, approx.	236 g	350 g	

10

Overview

- Interface module for connecting ET 200MP to PROFIBUS
- Handles data exchange with the PROFIBUS master 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

Ordering data

	Article No.		Article No.
IM 155-5 DP ST interface module IP20 degree of protection, module width 35 mm, installation on S7-1500 mounting rail	6ES7155-5BA00-0AB0	**PROFIBUS FastConnect bus cable** • Standard type with special design for quick mounting, 2-wire, shielded, sold by the meter, max. delivery unit 1 000 m, minimum order quantity 20 m	6XV1830-0EH10
Accessories		• 20 m	6XV1830-0EN20
Front flap for IM 155-5 PN (spare part), 5 units	6ES7528-0AA70-7AA0	• 50 m • 100 m	6XV1830-0EN50 6XV1830-0ET10
SIMATIC S7-1500 mounting rail		• 200 m	6XV1830-0ET20
Fixed lengths, with grounding elements		• 500 m	6XV1830-0ET50
• 160 mm	6ES7590-1AB60-0AA0	• 1000 m	6XV1830-0EU10
• 245 mm	6ES7590-1AC40-0AA0	**FC robust cable**	6XV1830-0JH10
• 482 mm	6ES7590-1AE80-0AA0		
• 530 mm	6ES7590-1AF30-0AA0	Bus cable with PUR sheath for use under 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	
• 830 mm	6ES7590-1AJ30-0AA0		
For cutting to length by customer, without drill holes; grounding elements must be ordered separately			
• 2 000 mm	6ES7590-1BC00-0AA0	**FC flexible cable**	6XV1831-2K
PE connection element for mounting rail 2 000 mm	6ES7590-5AA00-0AA0	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	
20 units			
Load power supply			
24 V DC/3 A	6EP1332-4BA00	**FC trailing cable**	6XV1830-3EH10
24 V DC/8 A	6EP1333-4BA00	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	
Power supply connector			
Spare part; for connecting the 24 V DC supply voltage			
• With push-in terminals	6ES7193-4JB00-0AA0		
PROFIBUS connector		**FC bus cable**	6XV1830-0GH10
• Connection plug for PROFIBUS, up to 12 Mbps, 90° cable outlet, insulation displacement method, without PG socket	6ES7972-0BA70-0XA0	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	
• Connection plug for PROFIBUS, up to 12 Mbps, 90° cable outlet, insulation displacement method, with PG socket	6ES7972-0BB70-0XA0		
PROFIBUS stripping tool	6GK1905-6AA00	**FC underground cable**	6XV1830-3FH10
Stripping tool for fast stripping of the PROFIBUS		PROFIBUS underground cable, 2-wire, shielded, sold by the meter, max. delivery unit 1 000 m, minimum order quantity 20 m	

10

I/O systems
SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200MP

Interface modules   > IM 155-5 DP

■ Ordering data

	Article No.		Article No.
FC FRNC cable	**6XV1830-0LH10**	**IE FC stripping tool**	**6GK1901-1GA00**
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		Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables	
FC trailing cable	**6XV1831-2L**		
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			

■ Technical specifications

Article number	6ES7155-5BA00-0AB0	Article number	6ES7155-5BA00-0AB0
	ET 200MP, IM155-5 DP ST		ET 200MP, IM155-5 DP ST
General information		**Interrupts/diagnostics/ status information**	
Product type designation	IM 155-5 DP ST	Status indicator	Yes
Product function		Alarms	Yes
• I&M data	Yes; I&M0 to I&M3	Diagnostics function	Yes
• Module swapping during operation (hot swapping)	No	**Diagnostics indication LED**	
• Isochronous mode	No	• RUN LED	Yes; green LED
Engineering with		• ERROR LED	Yes; red LED
• STEP 7 TIA Portal configurable/ integrated from version	V13 / V13	• MAINT LED	Yes; Yellow LED
• STEP 7 configurable/integrated from version	V5.5 SP3 / -	• Connection display DP	Yes; green LED
• PROFIBUS from GSD version/ GSD revision	V1.0 / V5.1	**Ambient conditions**	
Supply voltage		**Ambient temperature during operation**	
Rated value (DC)	24 V	• horizontal installation, min.	-25 °C; from FS04
Reverse polarity protection	Yes	• horizontal installation, max.	60 °C
Short-circuit protection	Yes	• vertical installation, min.	-25 °C; from FS04
Input current		• vertical installation, max.	40 °C
Current consumption (rated value)	0.2 A; at 24 V DC and without load	**Altitude during operation relating to sea level**	
Address area		• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Address space per station		**Connection method**	
• Address space per station, max.	244 byte; per input / output	**ET-Connection**	
Hardware configuration		• via BU/BA Send	No
Integrated power supply	Yes	**Dimensions**	
Rack		Width	35 mm
• Modules per rack, max.	12; I/O modules	Height	147 mm
Interfaces		Depth	129 mm
Number of PROFIBUS interfaces	1	**Weights**	
1. Interface		Weight, approx.	360 g
Interface types			
• RS 485	Yes		
Protocols			
• PROFIBUS DP slave	Yes		
RS 485			
• Transmission rate, max.	12 Mbit/s		
Open IE communication			
• TCP/IP	No		
PROFIBUS DP			
Services			
- SYNC capability	Yes		
- FREEZE capability	Yes		
- DPV1	Yes		

10

Overview

- Interface module for linking the ET 200MP to PROFINET
- Handles data exchange with the PROFINET I/O controller in the PLC
- Integrated 2-port switch for line topology
- Max. 30 I/O modules
- Shortest bus cycle 250 µs
- Linking to the isochronous task of the CPU
- Prioritized fast startup (FSU) with 500 ms (max. 12 I/O modules)
- Media Redundancy Protocol (MRP)
- Shared device on up to 2 I/O controllers (when configuring using GSD file; depends on the respective configuration tool)
- Omission of SIMATIC Memory Card (SMC); IM replacement without PG using LLDP

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)	
IP 20 degree of protection, module width 35 mm, installation on S7-1500 mounting rail	
IM 155-5 PN ST, standard version	**6AG1155-5AA01-7AB0**
IM 155-5 PN HF, High Feature version with additional functions	**6AG1155-5AA00-2AC0**
Accessories	See SIMATIC ET 200MP, IM 155-5 PN interface module, page 10/302

10

I/O systems

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

Interface modules   > SIPLUS IM 155-5 PN

Technical specifications

	6AG1155-5AA01-7AB0	6AG1155-5AA00-2AC0
Article number	**6AG1155-5AA01-7AB0**	**6AG1155-5AA00-2AC0**
Based on	**6ES7155-5AA01-0AB0**	**6ES7155-5AA00-0AC0**
	SIPLUS ET 200MP IM 155-5 PN ST	SIPLUS ET 200MP IM155-5 PN HF
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C
• horizontal installation, max.	70 °C; = Tmax; ab > +60 °C no module permissible left of the IM	60 °C; = Tmax
• vertical installation, min.	-40 °C; = Tmin	
• vertical installation, max.	40 °C	
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	5 000 m	5 000 m
• 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); from 2 000 m max. 132 V AC	Tmin ... Tmax at 1 140 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	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
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 and fungal spores (excluding fauna); Class 6B3 on request	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); *	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

10

Overview

- Interface module for linking the ET 200MP to PROFIBUS
- Handles data exchange with the PROFIBUS master 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 (Extended temperature range and exposure to environmental substances) IP 20 degree of protection, module width 35 mm, installation on S7-1500 mounting rail	**6AG1155-5BA00-2AB0**
Accessories	See SIMATIC ET 200MP, IM 155-5 DP interface module, page 10/305

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

10

I/O systems
SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200MP
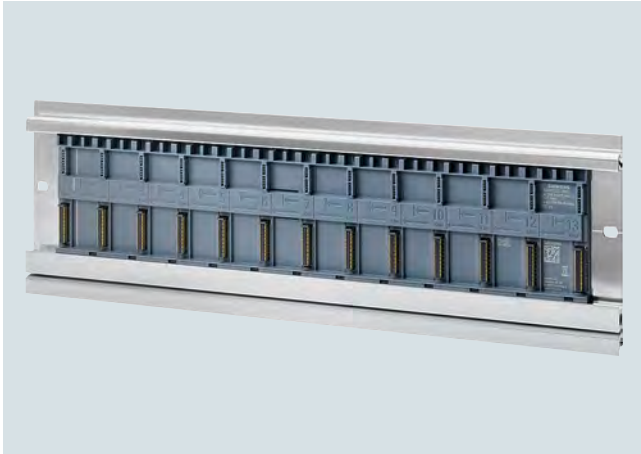
I/O modules

■ 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

10

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 ET200MP and PROFINET
- Can be inserted in the ET 200MP standard mounting rail, replaces the U connectors
- The comprehensive system functions of ET 200 MP can still all be used
- Can be used with all PROFINET IO controllers by configuring via GSD file and PROFINET

Ordering data

	Article No.
Active backplane bus	
With 12 slots 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	6ES7590-0BD00-0AA0
• 8 slots:	6ES7590-0BH00-0AA0
• 12 slots	6ES7590-0BL00-0AA0
Accessories	
Slot cover for active backplane bus	6ES7590-0CA00-0AA0
To protect against electrostatic discharge as well as provide mechanical stability on the S7-1500 DIN rail; 5 units per packing unit	

10

I/O systems
SIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200MP

Active backplane bus

■ Technical specifications

Article number	6ES7590-0BD00-0AA0	6ES7590-0BH00-0AA0	6ES7590-0BL00-0AA0
	SIMATIC S7-1500 active backplane/4 slot	SIMATIC S7-1500 act. backplane / 8 slot	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	V16	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.	0	0	0
- of which for IM, max.	1	1	1
- of which for PS, max.	2; Max. 2 PS per station	2; 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.	127 g	245 g	352 g

10