

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 time 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 engineering 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)

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200MP

Interface modules > IM 155-5 PN**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

Ordering data	Article No.	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 IM 155-5 PN ST, Standard version IM 155-5 PN HF, High Feature version with additional functions	6ES7155-5AA00-0AA0 6ES7155-5AA01-0AB0 6ES7155-5AA00-0AC0	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 6ES7590-0CA00-0AA0
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 • 245 mm • 482 mm • 530 mm • 830 mm For cutting to length by customer, without drill holes; grounding elements must be ordered separately • 2 000 mm	6ES7590-1AB60-0AA0 6ES7590-1AC40-0AA0 6ES7590-1AE80-0AA0 6ES7590-1AF30-0AA0 6ES7590-1AJ30-0AA0 6ES7590-1BC00-0AA0	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 10 units 50 units 6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0
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 24/48/60 V DC input voltage, power 60 W 24/48/60 V DC input voltage, power 60 W, buffering functionality 120/230 V AC input voltage, power 60 W	6ES7505-0KA00-0AB0 6ES7505-0RA00-0AB0 6ES7505-0RB00-0AB0 6ES7507-0RA00-0AB0	IE FC TP standard cable GP 2x2 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 6XV1840-2AH10
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		IE FC TP trailing cable 2 x 2 (Type C) 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 6XV1840-3AH10
		IE FC TP marine cable 2 x 2 (Type B) 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 6XV1840-4AH10
		IE FC stripping tool Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables 6GK1901-1GA00

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 ET 200MP, IM 155-5 PN BA	6ES7155-5AA00-0AC0 ET 200MP, IM 155-5 PN HF	6ES7155-5AA01-0AB0 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 backplane 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
Protocols			
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

Technical specifications

Article number	6ES7155-5AA00-0AA0 ET 200MP, IM 155-5 PN BA	6ES7155-5AA00-0AC0 ET 200MP, IM 155-5 PN HF	6ES7155-5AA01-0AB0 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	
• PROFINET system redundancy (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
Standards, approvals, certificates			
Network loading class	2		
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	

I/O systems

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

Interface modules > IM 155-5 DP

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 DIN rail

6ES7155-5BA00-0AB0

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
- 245 mm
- 482 mm
- 530 mm
- 830 mm

For cutting to length by customer,
without drill holes; grounding
elements must be ordered separately

- 2 000 mm

6ES7590-1AB60-0AA0
6ES7590-1AC40-0AA0
6ES7590-1AE80-0AA0
6ES7590-1AF30-0AA0
6ES7590-1AJ30-0AA0

6ES7590-1BC00-0AA0

PE connection element for 2 000 mm DIN rail

6ES7590-5AA00-0AA0

20 units

Load current 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

PROFIBUS connector

- Connection plug for PROFIBUS,
up to 12 Mbps, 90° cable outlet,
insulation displacement method,
without PG socket
- Connection plug for PROFIBUS,
up to 12 Mbps, 90° cable outlet,
insulation displacement method,
with PG socket

6ES7972-0BA70-0XA0

6ES7972-0BB70-0XA0

PROFIBUS stripping tool

6GK1905-6AA00

Stripping tool for fast stripping of
the PROFIBUS

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

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

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

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

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

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

Ordering data	Article No.		Article No.
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	IE FC stripping tool Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables	6GK1901-1GA00
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	6XV1831-2L		

Technical specifications

Article number	6ES7155-5BA00-0AB0 ET 200MP, IM155-5 DP ST
General information	
Product type designation	IM 155-5 DP ST
Product function	
• I&M data	Yes; I&M0 to I&M3
• Module swapping during operation (hot swapping)	No
• Isochronous mode	No
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V13 / V13
• STEP 7 configurable/ integrated from version	V5.5 SP3 / -
• PROFIBUS from GSD version/ GSD revision	V1.0 / V5.1
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Short-circuit protection	Yes
Input current	
Current consumption (rated value)	0.2 A; at 24 V DC and without load
Address area	
Address space per station	
• Address space per station, max.	244 byte; per input / output
Hardware configuration	
Integrated power supply	Yes
Rack	
• Modules per rack, max.	12; I/O modules
Interfaces	
Number of PROFIBUS interfaces	1
1. Interface	
Interface types	
• RS 485	Yes
Protocols	
• PROFIBUS DP slave	Yes
Interface types	
RS 485	
• Transmission rate, max.	12 Mbit/s

Article number	6ES7155-5BA00-0AB0 ET 200MP, IM155-5 DP ST
Protocols	
Open IE communication	
• TCP/IP	No
PROFIBUS DP	
Services	
- SYNC capability	Yes
- FREEZE capability	Yes
- DPV1	Yes
Interrupts/diagnostics/ status information	
Status indicator	Yes
Alarms	Yes
Diagnostics function	Yes
Diagnostics indication LED	
• RUN LED	Yes; green LED
• ERROR LED	Yes; red LED
• MAINT LED	Yes; Yellow LED
• Connection display DP	Yes; green LED
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-25 °C; from FS04
• horizontal installation, max.	60 °C
• vertical installation, min.	-25 °C; from FS04
• vertical installation, max.	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
connection method	
ET-Connection	
• via BU/BA Send	No
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	360 g

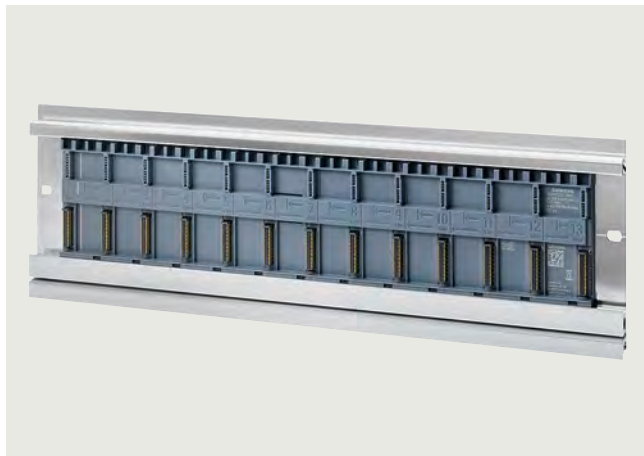
I/O systems

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

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
- 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