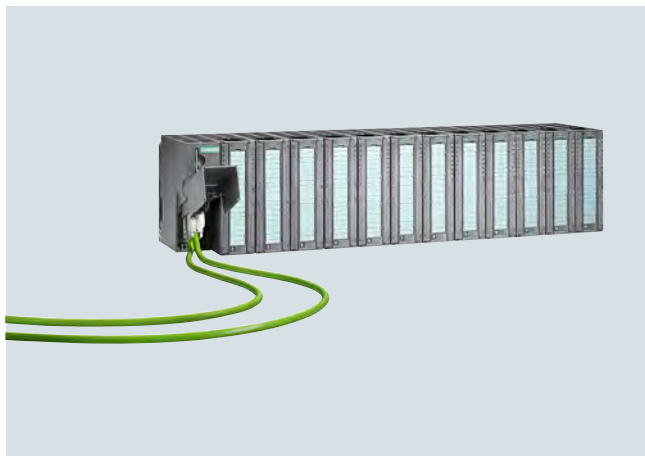


Overview



- Modular I/O system with IP20 degree of protection, particularly suitable for user-specific and complex automation tasks
- Consists of a PROFIBUS DP or PROFINET interface module IM 153, up to 8 or 12 I/O modules of the S7-300 automation system (structure with bus connection or with active bus modules), and a power supply if applicable
- Can be expanded with S7-300 automation system signal, communication and function modules
- Applicable Ex analog input or output modules with HART optimize the ET 200M for use in process engineering
- Can be used in redundant systems (S7-400H, S7-400F/FH)
- Modules can be replaced during operation (hot swapping) with the bus modules active
- Transmission rates up to 12 Mbps
- Ex approval to Cat. 3 for Zone 2 acc. to ATEX 100 a
- Fail-safe digital in/outputs as well as analog inputs for safety-oriented signal processing in accordance with PROFIsafe
- Supports modules with expanded user data, e.g. HART modules with HART minor variables

Availability

As part of our established product portfolio, the SIMATIC S7-300 / ET 200M system families will generally be available until 2023. Following the product phase-out declaration, products will be available as spare parts for another ten years.

Technical specifications

General technical data ET 200M

Cables and connections	Screw and spring-loaded connections in permanent wiring
Degree of protection	IP20
Ambient temperature on vertical wall (preferred mounting position)	<ul style="list-style-type: none"> • with horizontal assembly 0 to +60 °C • with other assembly 0 to +40 °C
Relative humidity	5 to 95% (RH stress level 2 according to IEC 1131-2)
Atmospheric pressure	795 to 1080 hPa
Mechanical stress	
• Vibrations	IEC 68, parts 2 – 6: 10 - 57 Hz (const. amplitude 0.075 mm) 57 - 150 Hz (constant acceleration 1 g)
• Shock	IEC 68, parts 2 – 27 half-sine, 15 g, 11 ms

I/O systems

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

Interface modules > IM 153-1/153-2**Overview**

The ET 200M system with various interface modules is available for the distributed use of S7-300 I/O modules. Depending on the application purpose, the best suited IM in terms of costs and functions can be selected:

IM153-1 Standard

The IM153-1 is one reasonably priced variant that is excellently suited for most applications in the manufacturing environment. It permits the use of up to 8 S7-300 I/O modules.

IM153-2 High Feature

For higher requirements in manufacturing technology, such as the use of F technology or the highest performance in conjunction with clock synchronization, the IM153-2 High Feature is available. This IM is also designed for use with the PCS7 in the field of process-oriented applications. This IM can be redundantly used and supports typical functions as they are required in the control field. These include, for example, clock synchronization or time stamping with an accuracy of up to 1 ms.

Ordering data**Article No.****IM 153-1 interface module**

Slave interface for connecting an ET 200M to PROFIBUS DP

- Standard temperature range

6ES7153-1AA03-0XB0**IM 153-2 interface module**

Slave interface for connecting an ET 200M to PROFIBUS DP; also for use in redundant systems

- High Feature
- High Feature with extended temperature range

6ES7153-2BA10-0XB0
6ES7153-2BA70-0XB0**Active IM 153/IM 153 bus module**

For two IM 153-2 High Feature modules for designing redundant systems

6ES7195-7HD10-0XA0**Bus module for ET 200M**

- For accommodating a power supply and an IM 153 module for the hot-swapping function during RUN, incl. bus module cover
- For accommodating two 40 mm-wide I/O modules for the hot-swapping function
- For accommodating one 80 mm-wide I/O module for the hot-swapping function

6ES7195-7HA00-0XA0
6ES7195-7HB00-0XA0
6ES7195-7HC00-0XA0**ET 200M redundancy bundle**

Comprising two IM 153-2 High Feature modules and one IM 153/IM 153 bus module

6ES7153-2AR04-0XA0**Article No.****Accessories****PROFIBUS bus connector**

90° outgoing cable, terminating resistor with disconnecting function, up to 12 Mbps, FastConnect

Without PG interface

- 1 unit
- 100 units

6ES7972-0BA52-0XA0
6ES7972-0BA52-0XB0

With PG interface

- 1 unit
- 100 units

6ES7972-0BB52-0XA0
6ES7972-0BB52-0XB0**SIMATIC DP DIN rail for ET 200M**

Accommodates up to 5 bus modules; for hot-swapping function

- Length: 483 mm (19")
- Length: 530 mm
- Length: 620 mm
- Length: 2000 mm

6ES7195-1GA00-0XA0
6ES7195-1GF30-0XA0
6ES7195-1GG30-0XA0
6ES7195-1GC00-0XA0**SIMATIC S7-300 DIN rail**

- Length: 160 mm
- Length: 480 mm (19")
- Length: 530 mm
- Length: 830 mm
- Length: 2000 mm

6ES7390-1AB60-0AA0
6ES7390-1AE80-0AA0
6ES7390-1AF30-0AA0
6ES7390-1AJ30-0AA0
6ES7390-1BC00-0AA0**S7 Manual Collection****6ES7998-8XC01-8YE0**

Electronic manuals on DVD, multi-language:
S7-200, TD 200, S7-300, M7-300, C7, S7-400, M7-400, STEP 7, Engineering Tools, Runtime Software, SIMATIC DP (Distributed I/O), SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication)

S7 Manual Collection update service for 1 year**6ES7998-8XC01-8YE2**

Scope of delivery:
Current DVD "S7 Manual Collection" and the three subsequent updates

Technical specifications

Article number	6ES7153-1AA03-0XB0 ET200M, Interface Module IM153-1	6ES7153-2BA10-0XB0 ET200M, Interface IM153-2 HF	6ES7153-2BA70-0XB0 ET200M, INTERFACE IM153-2 HF OUTDOOR
General information			
Product type designation	IM 153-1 DP ST	IM 153-2 DP HF	IM 153-2 HF
Supply voltage			
Rated value (DC)	24 V	24 V	24 V
external protection for power supply lines (recommendation)	not necessary		
Input current			
Current consumption, max.	350 mA; At 24 V DC	650 mA; with 24 V DC supply	650 mA
Output voltage			
Rated value (DC)	5 V		
Output current			
for backplane bus (5 V DC), max.	1 A	1.5 A	1.5 A
Power loss			
Power loss, typ.	3 W	5.5 W	5.5 W
Address area			
Addressing volume			
• Inputs	128 byte	244 byte	244 byte
• Outputs	128 byte	244 byte	244 byte
Hardware configuration			
Number of modules per DP slave interface, max.	8	12	12
Time stamping			
Accuracy		1 ms; 1 ms at up to 8 modules; 10 ms at up to 12 modules	1 ms; 1 ms at up to 8 modules; 10 ms at up to 12 modules
Number of message buffers		15	15
Messages per message buffer		20	20
Number of stampable digital inputs, max.		128; Max. 128 signals/station; max. 32 signals/slot	128; Max. 128 signals/station; max. 32 signals/slot
Time format		RFC 1119	RFC 1119
Time resolution		0.466 ns	0.466 ns
Time interval for transmitting the message buffer if a message is present		1 000 ms	1 000 ms
Time stamp on signal change		rising / falling edge as signal entering or exiting	rising / falling edge as signal entering or exiting
Interfaces			
Transmission rate, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s
1. Interface			
automatic detection of transmission rate	Yes	Yes	Yes
Interface types			
• Output current of the interface, max.	90 mA	70 mA	70 mA
• Design of the connection	9-pin sub D socket	9-pin sub D socket	9-pin sub D socket
PROFIBUS DP slave			
• GSD file	(for DPV1) SIEM801D.GSD; SI01801D.GSG	SI05801E.GSG	SI05801E.GSG
• automatic baud rate search	Yes	Yes	Yes
Protocols			
Bus protocol/transmission protocol	PROFIBUS DP to EN 50170	PROFIBUS DP to EN 50170	PROFIBUS DP to EN 50170
Protocols (Ethernet)			
• TCP/IP	No	No	
PROFIBUS DP			
• Number of node addresses, max.	1 to 125 permitted	1 to 125 permitted	1 to 125 permitted
Services			
- SYNC capability	Yes	Yes	Yes
- FREEZE capability	Yes	Yes	Yes
- Direct data exchange (slave-to-slave communication)	Yes; Sender	Yes; as publisher with all IO, as subscriber with F-IO only	Yes; as publisher with all IO, as subscriber with F-IO only

I/O systemsSIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200M**Interface modules > IM 153-1/153-2****Technical specifications**

Article number	6ES7153-1AA03-0XB0 ET200M, Interface Module IM153-1	6ES7153-2BA10-0XB0 ET200M, Interface IM153-2 HF	6ES7153-2BA70-0XB0 ET200M, INTERFACE IM153-2 HF OUTDOOR
Potential separation			
Potential separation exists	Yes	Yes	Yes
Ambient conditions			
Ambient temperature during operation			
• min.	0 °C	0 °C	
• max.	60 °C	60 °C	
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	3 000 m	3 000 m	3 000 m
Configuration			
Configuration software			
• STEP 7	STEP 7 / COM PROFIBUS / non-Siemens tools via GSD file	Yes; STEP 7 / COM PROFIBUS / non-Siemens tools via GSD file	Yes; STEP 7 / COM PROFIBUS / non-Siemens tools via GSD file
Dimensions			
Width	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm
Depth	117 mm	117 mm	117 mm
Weights			
Weight, approx.	360 g	360 g	360 g
Article number	6ES7195-7HD10-0XA0 ET200M, Bus Unit f. 2 IM 153-2 red.		
Dimensions			
Width	97 mm		
Height	92 mm		
Depth	30 mm		
Weights			
Weight, approx.	133 g		
Article number	6ES7195-7HA00-0XA0 ET200M, Bus Unit f. PS and IM 153	6ES7195-7HB00-0XA0 ET200M, Bus Unit f. 2 40mm I/O Modules	6ES7195-7HC00-0XA0 ET200M, Bus Unit f. 1 80mm I/O Module
Dimensions			
Width	97 mm	97 mm; 80 mm when installed	97 mm; 80 mm when installed
Height	92 mm	92 mm	92 mm
Depth	30 mm	30 mm	30 mm
Weights			
Weight, approx.	111 g	140 g	127 g

Overview



- For connecting ET 200M to PROFINET IO (via copper line, RJ45) as an IO device
- 2 versions:
 - IM 153-4 PN STANDARD
 - IM 153-4 PN HIGH FEATURE: supports, in contrast to the STANDARD version, the operation of PROFIsafe F and HART modules. The operation of an S7-400H high availability PLC (system redundancy) is also possible.
- Integrated 2-port switch
- 12 modules per station
- Usable I/O capacity: 192 bytes each
- Active bus backplane to hot-swap modules available as an option
- Baud rate 10 Mbps / 100 Mbps (autonegotiation / full duplex)
- I&M functions according to PNO Guideline Order No. 3.502, Version V1.1

Note:

Micro Memory Card with at least 64 KB required if not all the stations in the network support LLDP (Link Layer Discovery Protocol; proximity detection).

Ordering data

IM 153-4 PN interface module

I/O device to connect an ET 200M to PROFINET

Standard

6ES7153-4AA01-0XB0

High Feature

6ES7153-4BA00-0XB0

Accessories

Bus modules for ET 200M

- For accommodating a power supply and an IM 153 module for the hot-swapping function during RUN, incl. bus module cover
- For accommodating two 40 mm-wide I/O modules for the hot-swapping function
- For accommodating one 80 mm-wide I/O module for the hot-swapping function

6ES7195-7HA00-0XA0

6ES7195-7HB00-0XA0

6ES7195-7HC00-0XA0

SIMATIC Micro Memory Card

64 KB¹⁾

6ES7953-8LF31-0AA0

SIMATIC DP mounting rail for ET 200M

Accommodates bus modules; for hot-swapping function

- Length: 483 mm (19")
- Length: 530 mm
- Length: 620 mm
- Length: 2 000 mm

6ES7195-1GA00-0XA0

6ES7195-1GF30-0XA0

6ES7195-1GG30-0XA0

6ES7195-1GC00-0XA0

SIMATIC S7-300 mounting rail

Length: 160 mm

6ES7390-1AB60-0AA0

Length: 480 mm (19")

6ES7390-1AE80-0AA0

Length: 530 mm

6ES7390-1AF30-0AA0

Length: 830 mm

6ES7390-1AJ30-0AA0

Length: 2000 mm

6ES7390-1BC00-0AA0

Power supply connector

For connection of the 24 V DC supply voltage; spare part, 1 pack containing 10 units

Spring-loaded connections

6ES7193-4JB00-0AA0

Screw terminal connections

6ES7193-4JB50-0AA0

S7 Manual Collection

Electronic manuals on DVD, multi-language: S7-200, TD 200, S7-300, M7-300, C7, S7-400, M7-400, STEP 7, Engineering Tools, Runtime Software, SIMATIC DP (Distributed I/O), SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication)

Article No.

6ES7998-8XC01-8YE0

S7 Manual Collection update service for 1 year

Scope of delivery: Current DVD "S7 Manual Collection" and the three subsequent updates

6ES7998-8XC01-8YE2

Industrial Ethernet FC RJ45 plug 180

RJ45 plug connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet

1 unit

6GK1901-1BB10-2AA0

10 units

6GK1901-1BB10-2AB0

50 units

6GK1901-1BB10-2AE0

Industrial Ethernet FastConnect installation cables

- FastConnect standard cable
- FastConnect trailing cable
- FastConnect marine cable

6XV1840-2AH10

6XV1840-3AH10

6XV1840-4AH10

Industrial Ethernet FastConnect

Stripping tool

6GK1901-1GA00

¹⁾ To operate the IM153-4, an MMC is required with at least 64 KB memory. Cards with higher memory capacity may also be used.

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200M

Interface modules > IM 153-4 PN**Technical specifications**

Article number	6ES7153-4AA01-0XB0 IM153-4 PN IO for 12 Modules S7-300	6ES7153-4BA00-0XB0 IM153-4 PN IO HF for 12 Modules S7-300
General information		
Product type designation	IM 153-4 PN ST	IM 153-4 PN HF
Supply voltage		
Rated value (DC)	24 V	24 V
external protection for power supply lines (recommendation)	In a construction with grounded reference potential, a fuse is necessary for redundant interface modules (Recommendation: 2.5 A)	In a construction with grounded reference potential, a fuse is necessary for redundant interface modules (Recommendation: 2.5 A)
Input current		
Current consumption, max.	600 mA; with 24 V DC supply	600 mA; with 24 V DC supply
Output voltage		
Rated value (DC)	5 V	5 V
Output current		
for backplane bus (5 V DC), max.	1.5 A	1.5 A
Power loss		
Power loss, typ.	6 W	6 W
Address area		
Addressing volume		
• Inputs	192 byte	672 byte; Extended HART user data
• Outputs	192 byte	192 byte
Hardware configuration		
Number of modules per DP slave interface, max.	12	12
Protocols		
Bus protocol/transmission protocol	PROFINET IO	PROFINET IO
Protocols (Ethernet)		
• TCP/IP	No	Yes
• SNMP		Yes
• LLDP		Yes
• ping		Yes
• ARP		Yes
PROFINET IO Device Services		
- IRT		Yes
- PROFinergy		No
- Prioritized startup		Yes
- Shared device		Yes
- Number of IO Controllers with shared device, max.		2
Redundancy mode		
• PROFINET system redundancy (S2)	No	Yes
Media redundancy		
- MRP	Yes	Yes
Interrupts/diagnostics/status information		
Diagnostics indication LED		
• LINK LED	Yes; green LED	Yes; green LED
• RX/TX LED	Yes; Yellow LED	Yes; Yellow LED
• for module diagnostics	Yes	Yes
Potential separation		
Potential separation exists	Yes	Yes; Only direction PROFINET, RWB is not separated

Technical specifications

Article number	6ES7153-4AA01-0XB0 IM153-4 PN IO for 12 Modules S7-300	6ES7153-4BA00-0XB0 IM153-4 PN IO HF for 12 Modules S7-300
Ambient conditions		
Ambient temperature during operation		
• min.	0 °C	0 °C
• max.	60 °C	60 °C
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	2 000 m	2 000 m
Dimensions		
Width	40 mm	40 mm
Height	125 mm	125 mm
Depth	118 mm	118 mm
Weights		
Weight, approx.	215 g	215 g

I/O systems

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

Interface modules > SIPLUS ET 200M IM 153-1/153-2

Overview



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.

For technical documentation on SIPLUS, see:

<http://www.siemens.com/siplus-extreme>

Ordering data

SIPLUS ET 200M IM 153-1

Slave interface for connecting an ET 200M to PROFIBUS DP for a maximum of 8 S7-300 modules

- Extended temperature range and exposure to environmental substances

6AG1153-1AA03-2XB0

SIPLUS ET 200M IM 153-2 High Feature

Slave interface for connecting an ET 200M to PROFIBUS DP for a maximum of 12 S7-300 modules; also for use in redundant systems

- Extended temperature range and exposure to environmental substances

6AG1153-2BA10-7XB0

Bus module for SIPLUS ET 200M

Bus module for accommodating a power supply and an IM 153 module for the hot-swapping function during RUN, incl. bus module cover

- Extended temperature range and exposure to environmental substances

6AG1195-7HA00-2XA0

Article No.

Bus module for accommodating two 40 mm-wide I/O modules for the hot-swapping function

- Extended temperature range and exposure to environmental substances

6AG1195-7HB00-7XA0

Bus module for accommodating one 80 mm-wide I/O module for the hot-swapping function

- Extended temperature range and exposure to environmental substances

6AG1195-7HC00-2XA0

Bus module for accommodating two IM 153 modules for the hot-swapping function; for setting up redundant systems

- Extended temperature range and exposure to environmental substances

6AG1195-7HD10-2XA0

RS 485 bus connector with 90° cable outlet

Max. transfer rate 12 Mbps

Extended temperature range and exposure to environmental substances

- Without PG interface
- With PG interface

6AG1972-0BA12-2XA0
6AG1972-0BB12-2XA0

Other accessories

see SIMATIC ET 200M IM 153-1/153-2, page 10/314

Technical specifications

Article number	6AG1153-1AA03-2XB0	6AG1153-2BA10-7XB0
Based on	6ES7153-1AA03-0XB0 SIPLUS IM153-1	6ES7153-2BA10-0XB0 SIPLUS ET200M IM153-2 HF
Ambient conditions		
Ambient temperature during operation		
• min.	-40 °C; = Tmin	-40 °C; = Tmin; Startup @ -25 °C
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax
• At cold restart, min.	-25 °C	-25 °C
Ambient temperature during storage/transportation		
• min.	-40 °C	-40 °C
• max.	70 °C	70 °C

Technical specifications

Article number	6AG1153-1AA03-2XB0	6AG1153-2BA10-7XB0		
Based on	6ES7153-1AA03-0XB0 SIPLUS IM153-1	6ES7153-2BA10-0XB0 SIPLUS ET200M IM153-2 HF		
Altitude during operation relating to sea level				
<ul style="list-style-type: none"> Installation altitude above sea level, max. Ambient air temperature-barometric pressure-altitude 	5 000 m 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)	5 000 m 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				
<ul style="list-style-type: none"> With condensation, tested in accordance with IEC 60068-2-38, max. 	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		
Resistance				
Use in stationary industrial systems				
<ul style="list-style-type: none"> 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				
<ul style="list-style-type: none"> 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 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; *		
Usage in industrial process technology				
<ul style="list-style-type: none"> 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				
<ul style="list-style-type: none"> 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!		
Article number	6AG1195-7HA00-2XA0	6AG1195-7HB00-7XA0	6AG1195-7HC00-2XA0	6AG1195-7HD10-2XA0
Based on	6ES7195-7HA00-0XA0 SIPLUS ET200M DP Busmodul	6ES7195-7HB00-0XA0 SIPLUS DP Busmodul ET200M 2X40	6ES7195-7HC00-0XA0 SIPLUS ET200M Busmodul	6ES7195-7HD10-0XA0 SIPLUS_ET200M_DP_Busmodul
Ambient conditions				
Ambient temperature during operation				
<ul style="list-style-type: none"> min. max. 	-40 °C; = Tmin 70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	-40 °C; = Tmin 70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	-40 °C; = Tmin 70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	-40 °C; = Tmin 70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Ambient temperature during storage/transportation				
<ul style="list-style-type: none"> min. max. 	-40 °C 70 °C	-40 °C 70 °C	-40 °C 70 °C	-40 °C 70 °C
Altitude during operation relating to sea level				
<ul style="list-style-type: none"> Installation altitude above sea level, max. Ambient air temperature-barometric pressure-altitude 	5 000 m 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)	5 000 m 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)	5 000 m 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)	5 000 m 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)

I/O systemsSIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200M

Interface modules > SIPLUS ET 200M IM 153-1/153-2

Technical specifications

Article number	6AG1195-7HA00-2XA0	6AG1195-7HB00-7XA0	6AG1195-7HC00-2XA0	6AG1195-7HD10-2XA0
Based on	6ES7195-7HA00-0XA0 SIPLUS ET200M DP Busmodul	6ES7195-7HB00-0XA0 SIPLUS DP Busmodul ET200M 2X40	6ES7195-7HC00-0XA0 SIPLUS ET200M Busmodul	6ES7195-7HD10-0XA0 SIPLUS_ET200M_DP_Bus- modul
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
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	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); *	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, *	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	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); *	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; *	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)	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)	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!	* 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!

Overview



- Integrated 2-port switch
- 12 modules per station
- Usable I/O quantity structure: 192 bytes each
- Active backplane bus for hot swapping of modules optionally available
- Baud rate 10 Mbps / 100 Mbps (Autonegotiation/Full Duplex)
- I&M functions according to PNO Guideline Order-No. 3.502, Version V1.1

Notes:

Micro Memory Card with min. 64 KB required if not all participants in the network support LLDP (Link Layer Discovery Protocol; neighbor detection).

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.

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

- For connection of ET 200M as IO device to PROFINET IO (via copper, RJ45)
- 2 versions:
 - IM 153-4 PN STANDARD
 - IM 153-4 PN HIGH FEATURE: additionally to the STANDARD version, operation of PROFI-safe F and HART modules

Ordering data

Article No.

Article No.

SIPLUS ET 200M IM 153-4 PN

(Extended temperature range and exposure to environmental substances)

Slave interface module for connecting an ET 200M to PROFINET for a maximum of 12 S7-300 modules

- Standard
- High Feature

6AG1153-4AA01-7XB0
6AG1153-4BA00-7XB0

Accessories**IE FC RJ45 plug 180**

180° cable outlet; 1 unit

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

See SIMATIC ET 200M IM 153-4 PN interface module, page 10/317

Technical specifications

Article number	6AG1153-4AA01-7XB0	6AG1153-4BA00-7XB0
Based on	6ES7153-4AA01-0XB0 SIPLUS ET200M IM 153-4 PN IO	6ES7153-4BA00-0XB0 SIPLUS ET200M IM153-4 PN IO HF
Ambient conditions		
Ambient temperature during operation		
• min.	-25 °C; = Tmin	-40 °C; = Tmin; Startup @ -25 °C
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; Tmax > 60 °C output current for backplane bus (5 V DC) max. 0.9 A
• At cold restart, min.		-25 °C
Ambient temperature during storage/transportation		
• min.	-40 °C	-40 °C
• max.	70 °C	70 °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 1 140 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)	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)

I/O systemsSIMATIC ET 200 systems for the control cabinet
SIMATIC ET 200M

Interface modules > SIPLUS ET 200M IM 153-4 PN IO

Technical specifications

Article number	6AG1153-4AA01-7XB0	6AG1153-4BA00-7XB0
Based on	6ES7153-4AA01-0XB0 SIPLUS ET200M IM 153-4 PN IO	6ES7153-4BA00-0XB0 SIPLUS ET200M IM153-4 PN IO HF
Relative humidity • With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
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!

Overview digital modules

- Digital inputs and outputs
- For flexible adaptation of the controller to the respective task
- For connecting digital sensors and actuators

For further information, see SIMATIC S7-300, chapter 5.

Overview analog modules

- Analog inputs and outputs
- For solving even complex tasks with analog process signals
- For connecting analog actuators and sensors without additional measuring amplifiers

For further information, see SIMATIC S7-300, chapter 5.

I/O systems

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

I/O modules > Analog modules with HART > Analog input module with HART

Overview



- Can only be plugged into ET 200M with IM 153-2 and IM 153-2 FO
- 8 AI HART
- Redundancy switching
- Firmware update
- HART minor variables

Ordering data

SM 331 HART analog input module

8 inputs, 0/4 – 20 mA, HART for ET 200M with IM 153-2 interface module

Accessories

Front connectors

- 20-pin, with screw contacts
 - 1 unit
 - 100 units
- 20-pin, with spring-loaded contacts
 - 1 unit
 - 100 units

LK 393 cable guide

Mandatory for operation in hazardous areas

SIMATIC DP mounting rail for ET 200M

For mounting of up to 5 bus modules for

- Length: 483 mm (19")
- Length: 530 mm

Article No.

6ES7331-7TF01-0AB0

6ES7392-1AJ00-0AA0
6ES7392-1AJ00-1AB0

6ES7392-1BJ00-0AA0
6ES7392-1BJ00-1AB0

6ES7393-4AA00-0AA0

6ES7195-1GA00-0XA0
6ES7195-1GF30-0XA0

Article No.

SIMATIC S7-300 mounting rail

- Length: 160 mm
- Length: 480 mm (19")
- Length: 530 mm
- Length: 830 mm
- Length: 2000 mm

Label cover

(10 units, spare part) for signal modules (not 32-channel modules), function modules and CPU 312 IFM

Labeling strips

(10 units, spare part) for signal modules (not 32-channel modules), function modules and CPU 312 IFM

Labeling sheets for machine printing

For modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units

Petrol

Light beige

Yellow

Red

6ES7390-1AB60-0AA0
6ES7390-1AE80-0AA0
6ES7390-1AF30-0AA0
6ES7390-1AJ30-0AA0
6ES7390-1BC00-0AA0

6ES7392-2XY00-0AA0

6ES7392-2XX00-0AA0

6ES7392-2AX00-0AA0
6ES7392-2BX00-0AA0
6ES7392-2CX00-0AA0
6ES7392-2DX00-0AA0

Technical specifications

Article number	6ES7331-7TF01-0AB0 SM331, 8AI, 0/4-20MA HART
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
Input current	
from load voltage L+ (without load), max.	20 mA
from backplane bus 5 V DC, max.	120 mA
Output voltage	
Power supply to the transmitters	
• present	Yes
• Rated value (DC)	24 V
• short-circuit proof	Yes
• Supply current, max.	60 mA
Power loss	
Power loss, typ.	1.5 W
Analog inputs	
Number of analog inputs	8
permissible input current for current input (destruction limit), max.	40 mA
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
Cable length	
• shielded, max.	800 m
Analog value generation for the inputs	
Measurement principle	Sigma Delta
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit
• Integration time, parameterizable	Yes
• Integration time (ms)	20 ms at 50 Hz; 16.6 ms at 60 Hz; 100 ms at 100 Hz
• Basic conversion time, including integration time (ms)	55 ms @ 60 Hz, 65 ms @ 50 Hz, 305 ms @ 100 Hz
• Interference voltage suppression for interference frequency f1 in Hz	10 / 50 / 60 Hz
Smoothing of measured values	
• parameterizable	Yes

Article number	6ES7331-7TF01-0AB0 SM331, 8AI, 0/4-20MA HART
Encoder	
Connection of signal encoders	
• for current measurement as 2-wire transducer	Yes
• for current measurement as 4-wire transducer	Yes
Errors/accuracies	
Operational error limit in overall temperature range	
• Current, relative to input range, (+/-)	0.15 %
Basic error limit (operational limit at 25 °C)	
• Current, relative to input range, (+/-)	0.1 %
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
• Diagnostic alarm	Yes
• Limit value alarm	Yes
Connection method	
required front connector	20-pin
Dimensions	
Width	40 mm
Height	125 mm
Depth	117 mm
Weights	
Weight, approx.	205 g

I/O systems

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

I/O modules > Analog modules with HART > Analog output module with HART

Overview



- For plugging into ET 200M exclusively with IM 153-2 and IM 153-2 FO
- 8 AO HART
- Redundancy switching
- Firmware update
- HART minor variables

Ordering data

SM 332 HART analog output module

HART analog output, 8 outputs, 0/4 – 20 mA, HART for ET 200M with IM 153-2

Accessories

Front connector (1 unit)

20-pin, with screw contacts

LK 393 cable guide

Mandatory for operation in hazardous areas

SIMATIC DP DIN rail for ET 200M

For mounting of up to 5 bus modules for

- Length: 483 mm (19")
- Length: 530 mm

SIMATIC S7-300 mounting rail

- Length: 160 mm
- Length: 480 mm (19")
- Length: 530 mm
- Length: 830 mm
- Length: 2000 mm

Label cover

(10 units, spare part) for signal modules (not 32-channel modules), function modules and CPU 312 IFM

Labeling strips

(10 units, spare part) for signal modules (not 32-channel modules), function modules and CPU 312 IFM

Article No.

6ES7332-8TF01-0AB0

6ES7392-1AJ00-0AA0

6ES7393-4AA00-0AA0

6ES7195-1GA00-0XA0

6ES7195-1GF30-0XA0

6ES7390-1AB60-0AA0

6ES7390-1AE80-0AA0

6ES7390-1AF30-0AA0

6ES7390-1AJ30-0AA0

6ES7390-1BC00-0AA0

6ES7392-2XY00-0AA0

6ES7392-2XX00-0AA0

Article No.

S7 Manual Collection

Electronic manuals on DVD, multi-language: S7-200, TD 200, S7-300, M7-300, C7, S7-400, M7-400, STEP 7, Engineering Tools, Runtime Software, SIMATIC DP (Distributed I/O), SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication)

6ES7998-8XC01-8YE0

S7 Manual Collection update service for 1 year

Scope of delivery: Current DVD "S7 Manual Collection" and the three subsequent updates

6ES7998-8XC01-8YE2

Labeling sheets for machine printing

For modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units

Petrol

6ES7392-2AX00-0AA0

Light beige

6ES7392-2BX00-0AA0

Yellow

6ES7392-2CX00-0AA0

Red

6ES7392-2DX00-0AA0

Technical specifications

Article number	6ES7332-8TF01-0AB0 SM332, 8AO, 0/4 - 20MA HART
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
Input current	
from load voltage L+ (without load), max.	350 mA
from backplane bus 5 V DC, max.	110 mA
Power loss	
Power loss, typ.	6 W
Analog outputs	
Number of analog outputs	8
Current output, no-load voltage, max.	24 V
Output ranges, current	
• 0 to 20 mA	Yes
• -20 mA to +20 mA	No
• 4 mA to 20 mA	Yes
Connection of actuators	
• for current output two-wire connection	Yes
Load impedance (in rated range of output)	
• with current outputs, max.	750 Ω
• with current outputs, inductive load, max.	10 mH
Cable length	
• shielded, max.	800 m
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit
• Basic execution time of the module (all channels released)	10 ms; 10 ms in AO mode 50 ms in HART-AO mode
Settling time	
• for resistive load	0.1 ms
• for inductive load	0.5 ms

Article number	6ES7332-8TF01-0AB0 SM332, 8AO, 0/4 - 20MA HART
Errors/accuracies	
Operational error limit in overall temperature range	
• Current, relative to output range, (+/-)	0.2 %
Basic error limit (operational limit at 25 °C)	
• Current, relative to output range, (+/-)	0.1 %
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
• Diagnostic alarm	Yes
Connection method	
required front connector	20-pin
Dimensions	
Width	40 mm
Height	125 mm
Depth	117 mm
Weights	
Weight, approx.	220 g

I/O systems

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

I/O modules > Analog modules with HART > Ex-analog input module with HART

Overview



- For connecting HART devices in hazardous areas.
- Can only be plugged into ET 200M
- 2 AI HART, Ex
- 2 inputs in 2 channel groups (single-channel isolation)
- Measurement type and range can be selected for each channel
- Diagnostics and diagnostic alarm parameterizable

Ordering data

SIMATIC SM 331 HART analog input module

2 inputs, 0/4 – 20 mA, HART for ET 200M with IM 153-2 interface module

For HART protocol V5.0 and higher

Article No.

6ES7331-7TB10-0AB0

Accessories

Front connector¹⁾

20-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AJ00-0AA0
6ES7392-1AJ00-1AB0

LK 393 cable guide

Mandatory for operation in hazardous areas

6ES7393-4AA00-0AA0

SIMATIC DP mounting rail for ET 200M

For mounting of up to 5 bus modules for

- Length: 483 mm
- Length: 530 mm

6ES7195-1GA00-0XA0
6ES7195-1GF30-0XA0

Article No.

SIMATIC S7-300 mounting rail

- Length: 160 mm
- Length: 480 mm (19")
- Length: 530 mm
- Length: 830 mm
- Length: 2000 mm

6ES7390-1AB60-0AA0
6ES7390-1AE80-0AA0
6ES7390-1AF30-0AA0
6ES7390-1AJ30-0AA0
6ES7390-1BC00-0AA0

Label cover

(10 units, spare part) for signal modules (not 32-channel modules), function modules and CPU 312 IFM

6ES7392-2XY00-0AA0

Labeling strips

(10 units, spare part) for signal modules (not 32-channel modules), function modules and CPU 312 IFM

6ES7392-2XX00-0AA0

Labeling sheets for machine printing

For modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units

- Petrol
- Light beige
- Yellow
- Red

6ES7392-2AX00-0AA0
6ES7392-2BX00-0AA0
6ES7392-2CX00-0AA0
6ES7392-2DX00-0AA0

¹⁾ A connector with spring-loaded terminals cannot be used if the cable guide is used.

Technical specifications

Article number	6ES7331-7TB10-0AB0 SIMATIC DP, HART ANALOG INPUT M
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
Input current	
from load voltage L+ (without load), max.	180 mA
from backplane bus 5 V DC, max.	100 mA
Output voltage	
Power supply to the transmitters	
• present	Yes
• Rated value (DC)	15 V; at 22 mA
• short-circuit proof	Yes; approx. 30 mA
• No-load voltage (DC)	29.6 V
Power loss	
Power loss, typ.	4.5 W
Analog inputs	
Number of analog inputs	2
permissible input current for current input (destruction limit), max.	40 mA
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
• 4 mA to 20 mA	Yes
Cable length	
• shielded, max.	400 m
Analog value generation for the inputs	
Measurement principle	Sigma Delta
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit; 10 bit to 15 bit + sign
• Integration time, parameterizable	Yes
• Basic conversion time, including integration time (ms)	2.5 / 16.67 / 20 / 100 (1 channel enabled); 7.5 / 50 / 60 / 300 (2 channels enabled)
Encoder	
Connection of signal encoders	
• for current measurement as 2-wire transducer	Yes
• for current measurement as 4-wire transducer	Yes

Article number	6ES7331-7TB10-0AB0 SIMATIC DP, HART ANALOG INPUT M
Errors/accuracies	
Operational error limit in overall temperature range	
• Current, relative to input range, (+/-)	0.45 %; From 0/4 to 20 mA
Basic error limit (operational limit at 25 °C)	
• Current, relative to input range, (+/-)	0.1 %; From 0/4 to 20 mA
Interrupts/diagnostics/status information	
Diagnostics function	Yes; Parameterizable
Alarms	
• Diagnostic alarm	Yes; Parameterizable
• Limit value alarm	Yes; Parameterizable, channels 0 and 1
Ex(i) characteristics	
Module for Ex(i) protection	Yes
maximum values for connecting terminals for gas group IIC	
• U _o (no-load voltage), max.	26 V
• I _o (short-circuit current), max.	96.1 mA
• P _o (power output), max.	511 mW
• C _o (permissible external capacity), max.	62 nF
• L _o (permissible external inductivity), max.	3 mH
• U _m (voltage at non-intrinsically safe connecting terminals), max.	250 V; DC
Standards, approvals, certificates	
CE mark	Yes
UL approval	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
EAC (formerly Gost-R)	Yes
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C
• max.	60 °C
Connection method	
required front connector	1x 20-pin
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	260 g

I/O systems

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

I/O modules > Analog modules with HART > Ex-analog output module with HART

Overview



- For using HART devices in hazardous areas
- Can only be plugged into ET 200M
- 2 AO HART, Ex
- 2 current outputs in 2 channel groups (single-channel isolation)
- Output type and range can be selected for each channel
- Diagnostics and diagnostic alarm parameterizable
- Read-back capability of the analog outputs

Ordering data

SM 332 HART analog output module

HART analog output, 8 outputs, 0/4 – 20 mA, HART for ET 200M with IM 153-2

For HART protocol V5.0 and higher

Article No.

6ES7332-5TB10-0AB0

Accessories

Front connectors

20-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AJ00-0AA0

6ES7392-1AJ00-1AB0

LK 393 cable guide

6ES7393-4AA00-0AA0

Mandatory for operation in hazardous areas

SIMATIC DP mounting rail for ET 200M

For mounting of up to 5 bus modules for

- Length: 483 mm (19")
- Length: 530 mm

6ES7195-1GA00-0XA0

6ES7195-1GF30-0XA0

SIMATIC S7-300 mounting rail

- Length: 160 mm
- Length: 480 mm (19")
- Length: 530 mm
- Length: 830 mm
- Length: 2000 mm

6ES7390-1AB60-0AA0

6ES7390-1AE80-0AA0

6ES7390-1AF30-0AA0

6ES7390-1AJ30-0AA0

6ES7390-1BC00-0AA0

Label cover

6ES7392-2XY00-0AA0

(10 units, spare part) for signal modules (not 32-channel modules), function modules and CPU 312 IFM

Article No.

Labeling strips

(10 units, spare part) for signal modules (not 32-channel modules), function modules and CPU 312 IFM

Software for machine labeling of modules directly from the STEP 7 project

6ES7392-2XX00-0AA0

Labeling sheets for machine printing

for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units

petrol

6ES7392-2AX00-0AA0

light beige

6ES7392-2BX00-0AA0

yellow

6ES7392-2CX00-0AA0

red

6ES7392-2DX00-0AA0

S7 Manual Collection

6ES7998-8XC01-8YE0

Electronic manuals on DVD, multi-language:
S7-200, TD 200, S7-300, M7-300, C7, S7-400, M7-400, STEP 7, Engineering Tools, Runtime Software, SIMATIC DP (Distributed I/O), SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication)

S7 Manual Collection update service for 1 year

6ES7998-8XC01-8YE2

Scope of delivery: Current DVD "S7 Manual Collection" and the three subsequent updates

Technical specifications

Article number	6ES7332-5TB10-0AB0 SIMATIC DP, HART ANALOG OUTPUT
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
Input current	
from load voltage L+ (without load), max.	150 mA
from backplane bus 5 V DC, max.	100 mA
Power loss	
Power loss, typ.	3.5 W
Analog outputs	
Number of analog outputs	2
Current output, no-load voltage, max.	19 V
Cycle time (all channels) max.	5 ms
Output ranges, current	
• 0 to 20 mA	Yes
• -20 mA to +20 mA	No
• 4 mA to 20 mA	Yes
Connection of actuators	
• for current output two-wire connection	Yes
Load impedance (in rated range of output)	
• with current outputs, max.	650 Ω
• with current outputs, inductive load, max.	7.5 mH
Cable length	
• shielded, max.	400 m
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	12 bit; + sign
• Conversion time (per channel)	40 ms
Settling time	
• for resistive load	2.5 ms
• for capacitive load	4 ms
• for inductive load	2.5 ms

Article number	6ES7332-5TB10-0AB0 SIMATIC DP, HART ANALOG OUTPUT
Errors/accuracies	
Operational error limit in overall temperature range	
• Current, relative to output range, (+/-)	0.55 %
Basic error limit (operational limit at 25 °C)	
• Current, relative to output range, (+/-)	0.15 %
Interrupts/diagnostics/status information	
Diagnostics function	Yes; Parameterizable
Alarms	
• Diagnostic alarm	Yes; Parameterizable
Ex(i) characteristics	
Module for Ex(i) protection	Yes
maximum values for connecting terminals for gas group IIC	
• U _o (no-load voltage), max.	19 V
• I _o (short-circuit current), max.	66 mA
• P _o (power output), max.	506 mW
• C _o (permissible external capacity), max.	230 nF
• L _o (permissible external inductivity), max.	7.5 mH
• U _m (voltage at non-intrinsically safe connecting terminals), max.	60 V; DC
Standards, approvals, certificates	
FM approval	Yes
Ambient conditions	
Ambient temperature during operation	
• max.	60 °C
Connection method	
required front connector	20-pin
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	290 g

I/O systems

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

I/O modules > Analog modules with HART > SIPLUS S7-300 analog input module with HART

Overview



- Can only be plugged into ET 200M with IM 153-2 and IM 153-2 FO
- 8 AI HART
- Redundant connection
- Firmware update
- HART secondary variables

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.

For technical documentation on SIPLUS, see:

<http://www.siemens.com/siplus-extreme>

Ordering data

Article No.

SIPLUS SM 331 analog input module with HART

8 inputs, 0/4 – 20 mA,
HART for ET 200M with
IM 153-2 interface module

Extended temperature range and
exposure to environmental
substances

6AG1331-7TF01-7AB0

Accessories

See SIMATIC ET 200M
analog input module
with HART, page 10/326

Technical specifications

Article number	6AG1331-7TF01-7AB0
Based on	6ES7331-7TF01-0AB0 SIPLUS SM331 AI 8 x 0/4...20mA HART
Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL use
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	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)
Resistance	
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 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, *
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!

Overview



- Can only be plugged onto ET 200M with IM 153-2 and IM 153-2 FO
- 8 AO HART
- Redundant connection
- Firmware update
- HART secondary variables

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.

For technical documentation on SIPLUS, see:

<http://www.siemens.com/siplus-extreme>

Ordering data

Article No.

SIPLUS SM 332 analog output module with HART

8 outputs, 0/4 ... 20 mA HART, for ET 200M with IM 153-2 interface module

Extended temperature range and exposure to environmental substances

6AG1332-8TF01-2AB0

Accessories

See SIMATIC SM 332 analog output module with HART, page 10/328

Technical specifications

Article number	6AG1332-8TF01-2AB0
Based on	6ES7332-8TF01-0AB0 SIPLUS SM332 8AO HART
Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	60 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	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)
Resistance	
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 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, *

Article number	6AG1332-8TF01-2AB0
Based on	6ES7332-8TF01-0AB0 SIPLUS SM332 8AO HART
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!

I/O systems

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

I/O modules > Analog modules with HART > SIPLUS S7-300 Ex analog input module with HART

Overview



- For connecting HART devices in hazardous areas.
- Can only be plugged into ET 200M
- 2 AI HART, Ex
- 2 inputs in 2 channel groups (single-channel isolation)
- Measurement type and range can be selected for each channel
- Programmable diagnostics and diagnostic interrupt

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.

For technical documentation on SIPLUS, see:

<http://www.siemens.com/siplus-extreme>

Ordering data

SIPLUS SM 331 Ex analog input module with HART

2 inputs, 0/4 ... 20 mA,
HART for ET 200M with IM 153-2
interface module

Extended temperature range
and exposure to environmental
substances

Article No.

6AG1331-7TB00-7AB0

Article No.

Accessories

See SIMATIC ET 200M
Ex-analog input module
with HART, page 10/330

Technical specifications

Article number	6AG1331-7TB00-7AB0
Based on	6ES7331-7TB00-0AB0 SIPLUS S7-300 SM331 2AE HART
Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	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)
Resistance	
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 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, *

Article number	6AG1331-7TB00-7AB0
Based on	6ES7331-7TB00-0AB0 SIPLUS S7-300 SM331 2AE HART
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!

Overview F-digital/analog modules

The fail-safe SIMATIC S7 CPUs and the fail-safe signal modules of SIMATIC ET 200S, ET 200pro, ET 200eco and ET 200M have been specially developed for distributed, safety-related applications in production engineering. Thanks to the discreetly modular structure of the fail-safe I/Os, safety technology only has to be applied where actually required. The new system replaces conventional electromechanical components, such as:

- Freely programmable, safe linking of sensors to actuators
- Selective safe shutdown of actuators
- Mixed configuration of F-modules and standard modules in a station
- Single-bus concept; fail-safe signals and standard signals are transferred over a single bus medium (PROFIBUS DP, PROFINET)

Totally Integrated Automation (TIA)

Safety technology (Safety Integrated) is a component of Totally Integrated Automation which provides total integration of safety automation and standard automation (SIMATIC S7).

Whereas standard automation (classical PLCs) and safety automation (electromechanics) are still separate today, these two worlds are growing together into a uniform, integrated overall system.

Siemens can therefore present itself as a complete supplier for automation technology in which safety engineering is part of standard automation and system-wide integration exists.

For further information, see SIMATIC S7-300, chapter 5.

Overview Ex modules

- Input/output modules for applications in chemical plants with explosion hazards
- For connecting sensors and actuators from zones 1 and 2 of plants with explosion hazards
- Associated electrical equipment Ex [ib] [ibD] IIC
- For separating the non-intrinsically-safe electrical circuits of the automation system and the intrinsically-safe electrical circuits of the process

For further information, see SIMATIC S7-300, chapter 5.

I/O systems

SIMATIC ET 200 systems for the control cabinet

SIMATIC ET 200M

I/O modules > Function modules

Overview

Function modules unburden the CPU of work-intensive tasks such as counting, positioning and controlling

Module spectrum

- Counter modules
- Positioning modules for rapid traverse and creep speed drives
- Positioning modules for stepper motors
- Positioning modules for servo motors
- Positioning and continuous path modules
- SSI position detection modules
- Electronic cam controllers
- High-speed Boolean processor
- Controller modules

Function modules	
Counting	FM 350-1 counter module
	FM 350-2 counter module
Positioning • of rapid traverse and creep speed drives	FM 351 positioning module
	FM 357-2 path and position control module ¹⁾
Position and path control	SM 338 POS input modules
SSI position detection	FM 352 electronic cam controller
Electronic cam control	FM 352-5 high-speed Boolean processor
High speed logic operation	FM 355 controller module
Controlling	FM 355-2 temperature controller module
	SIWAREX
Weighing and proportioning electronics	

¹⁾ Not for ET 200M

Overview**Applicability with ET 200M distributed I/O device**

Almost all function modules can be used in the ET 200M distributed I/O device.

In doing so, the following details must be observed:

		For plugging in behind IM 153-1 (6ES7153-1AA03-0XB0)		For plugging in behind IM 153-2 (6ES7153-2BA02-0XB0)		For plugging in behind IM 153-2 FO (6ES7153-2BB00-0XB0)		For plugging in behind IM 153-4 PN (6ES7153-4AA00-0XB0)
		configurable with						
Module	Article No.	STEP 7 ¹⁾	GSD ²⁾	STEP 7 ¹⁾	GSD ²⁾	STEP 7 ¹⁾	GSD ²⁾	STEP 7 ¹⁾
FM 350-1 counter module	6ES7 350-1AH03-0AEO	<input type="checkbox"/>	--	<input type="checkbox"/>	--	<input type="checkbox"/>	--	<input type="checkbox"/>
FM 350-2 counter module	6ES7 350-2AH01-0AEO	<input type="checkbox"/>	--	<input type="checkbox"/>	--	<input type="checkbox"/>	--	<input type="checkbox"/>
FM 351 positioning module	6ES7 351-1AH01-0AEO	<input type="checkbox"/>	--	<input type="checkbox"/>	--	<input type="checkbox"/>	--	<input type="checkbox"/>
FM 352 cam controller	6ES7 352-1AH02-0AEO	<input type="checkbox"/>	--	<input type="checkbox"/>	--	<input type="checkbox"/>	--	<input type="checkbox"/>
FM 352-5 high-speed Boolean processor	6ES7 352-5AH00-0AEO	<input type="checkbox"/> ³⁾	<input type="checkbox"/>	<input type="checkbox"/> ³⁾	<input type="checkbox"/>	<input type="checkbox"/> ³⁾	<input type="checkbox"/>	<input type="checkbox"/>
FM 352-5 high-speed Boolean processor	6ES7 352-5AH10-0AEO	<input type="checkbox"/> ³⁾	<input type="checkbox"/>	<input type="checkbox"/> ³⁾	<input type="checkbox"/>	<input type="checkbox"/> ³⁾	<input type="checkbox"/>	<input type="checkbox"/>
FM 355 C controller module	6ES7 355-0VH10-0AEO	--	--	<input type="checkbox"/>	--	<input type="checkbox"/>	--	<input type="checkbox"/>
FM 355 S controller module	6ES7 355-1VH10-0AEO	--	--	<input type="checkbox"/>	--	<input type="checkbox"/>	--	<input type="checkbox"/>
FM 355-2 C temperature controller module	6ES7 355-2CH00-0AEO	<input type="checkbox"/>	--	<input type="checkbox"/>	--	<input type="checkbox"/>	--	<input type="checkbox"/>
FM 355-2 S temperature controller module	6ES7 355-2SH00-0AEO	<input type="checkbox"/>	--	<input type="checkbox"/>	--	<input type="checkbox"/>	--	<input type="checkbox"/>
SM 338 POS input module	6ES7 338-4BC01-0AB0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

configurable

--: not configurable

- 1) Configuration using the meta-knowledge integrated into STEP 7 (in Hardware Catalog under PROFIBUS DP > ET 200M > IM 153-1 / IM 153-2 or PROFINET IO > I/O > ET 200M > IM153-4 PN).
- 2) Configuration using GSD file (after installation of the GSD file configurable from the Hardware Catalog under PROFIBUS DP > Additional field devices > I/O > ET200M). During configuration on the CP 342-5 as DP master, S5 (IM 308C) as DP master or external masters, the GSD file must be configured.
- 3) Visible and configurable only with the corresponding configuration package in STEP 7.

Note:

Position measurement systems and pre-assembled connecting cables for counter and positioning function are offered under SIMODRIVE Sensor and Motion Connect 500.

<http://www.siemens.com/simatic-technology>

For further information, see SIMATIC S7-300, chapter 5.

I/O systems

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

I/O modules > Special modules, Communication, Power supplies

Overview special modules



The special modules provide the user with functions for diagnostics, as well as commissioning.

For further information, see SIMATIC S7-300, chapter 5.

Overview power supplies



- Load current supplies for S7-300/ET 200M
- For converting the line voltage to the required operating voltage (24 V DC)
- Output current 2 A, 5 A or 10 A

For further information, see SIMATIC S7-300, chapter 5.

Overview communication



- Communication boards for data exchange using point-to-point coupling
- Communication board for the connection of identification systems

For further information, see SIMATIC S7-300, chapter 5.