

SIMATIC S7-300 Advanced Controllers



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Overview



S7-300

- The modular mini PLC system for the low and mid-performance ranges
- With comprehensive range of modules for optimum adaptation to the automation task
- Flexible use through simple implementation of distributed structures and versatile networking
- User-friendly handling and uncomplicated design without a fan
- Can be expanded without problems when the tasks increase
- High performance thanks to a range of integrated functions

S7-300F

- Fail-safe automation system for plants with increased safety requirements for production technology
- Based on S7-300
- Additional ET 200S and ET 200M distributed I/O devices complete with safety-related modules can be connected
- Safety-related communication via PROFIBUS DP with PROFIsafe profile
- Standard modules can be used in addition for non-safety-oriented applications

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 specifications SIMATIC S7-300

Degree of protection	IP20 according to IEC 60 529
Ambient temperature • For horizontal installation • For vertical installation	0 to 60 °C 0 to 40 °C
Relative humidity	10 to 95%, non-condensing, corresponds to relative humidity (RH), stress level 2 acc. to IEC 61131, Part 2
Air pressure	From 1080 to 795 hPa (corresponds to an altitude of -1000 to +2000 m)
Insulation • < 50 V • < 150 V • < 250 V	500 V DC test voltage 2500 V DC test voltage 4000 V DC test voltage
Electromagnetic compatibility • Pulse-shaped disturbance variables • Sinusoidal disturbance variables • Emission of radio interference	Requirements of the EMC directive; interference immunity according to IEC 61000-6-2 Test according to: Electrostatic discharge according to IEC 61000-4-2, burst pulses according to IEC 61000-4-4, energy single pulse (surge) according to IEC 61000-4-5, Test according to: HF irradiation according to IEC 61000-4-3, HF decoupling according to IEC 61000-4-6 Interference emission according to EN 50081-2 Test according to: Emitted interference of electromagnetic fields according to EN 55016: Limit value class A, (measured at a distance of 10 m) Interference emission via AC mains according to EN 55011: Limit value class A, Group 1
Mechanical strength • Vibrations	Frequency range $10 \text{ Hz} \leq f \leq 58 \text{ Hz}$ • Continuous: 0.0375 mm amplitude • Occasionally 0.75 mm amplitude Frequency range $58 \text{ Hz} \leq f \leq 150 \text{ Hz}$ • Continuous: 0.5 g constant acceleration • Occasionally 1 g constant acceleration Testing according to IEC 60068-2-6 Tested with: $5 \text{ Hz} \leq f \leq 9 \text{ Hz}$, constant amplitude 3.5 mm; $9 \text{ Hz} \leq f \leq 150 \text{ Hz}$, constant acceleration 1 g; Duration of oscillation: 10 frequency passes per axis in each direction of the 3 mutually perpendicular axes Testing according to IEC 60068-2-27 Tested with: Half-sine wave: strength of shock 15 g peak value, 11 ms duration; Shock direction: 3 shocks each in $\pm$ direction in each of the 3 mutually vertical axes
• Shock	

SIMATIC S7-300 Advanced Controllers

Introduction

S7-300/S7-300F, SIPLUS S7-300

Technical specifications

General technical data of SIPLUS S7-300

Ambient temperature range	-40/-25 ... +60/70 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies except for the environmental conditions.

Ambient conditions

Extended range of environmental conditions	
with reference to ambient temperature, air pressure and altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
At cold restart, min.	0° C
Relative humidity	
with condensation, max.	100 %; RH incl. bedewing/frost (no commissioning in bedewed state)
Resistance	
to biologically active substances/compliance with EN 60721-3-3	Yes; Class 3B2 mold and fungal spores (except fauna); the supplied plug covers must remain in place on the unused interfaces during operation.
to chemically active substances/compliance with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray in accordance with EN 60068-2-52 (severity 3); the supplied plug covers must remain in place on the unused interfaces during operation.
to mechanically active substances, compliance with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; the supplied plug covers must remain in place on unused interfaces during operation.

SIMATIC S7-300 Advanced Controllers

Central processing units

Standard CPUs**Overview CPU 312**

- The entry level CPU in Totally Integrated Automation (TIA)
- For smaller applications with moderate processing performance requirements

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 315-2 DP

- The CPU with medium to large program memory and quantity structures for optional use of SIMATIC engineering tools
- High processing performance in binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- PROFIBUS DP master/slave interface
- For comprehensive I/O expansion
- For configuring distributed I/O structures
- Isochronous mode on PROFIBUS

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 314

- For plants with medium program scope requirements
- High processing performance in binary and floating-point arithmetic

SIMATIC Micro Memory Card required for operation of CPU.

SIMATIC S7-300 Advanced Controllers

Central processing units

Standard CPUs

Overview CPU 315-2 PN/DP



- The CPU with medium-sized program memory and quantity frameworks
- High processing performance in binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- PROFINET interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or non-Siemens PROFINET IO controller
- Component-based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- Integrated web server with the option of creating user-defined web pages
- Combined MPI/PROFIBUS DP master/slave interface
- Isochronous mode on PROFIBUS and PROFINET

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 317-2 DP



- The CPU with a large program memory and quantity framework for demanding applications
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- High processing performance in binary and floating-point arithmetic
- 2 PROFIBUS DP master/slave interfaces
- For comprehensive I/O expansion
- For configuring distributed I/O structures
- Isochronous mode on PROFIBUS
- Optionally supports the use of SIMATIC engineering tools

SIMATIC Micro Memory Card required for operation of CPU.

SIMATIC S7-300 Advanced Controllers

Central processing units

Standard CPUs**Overview CPU 317-2 PN/DP**

- The CPU with a large program memory and quantity framework for demanding applications
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- High processing performance in binary and floating-point arithmetic
- PROFINET interface with 2-port switch
- PROFINET I/O controller for the operation of distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or non-Siemens PROFINET IO controller
- Distributed intelligence in Component Based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- Integrated web server with the option of creating user-defined web pages
- Combined MPI/PROFIBUS DP master/slave interface
- Isochronous mode on PROFIBUS and PROFINET
- Optionally supports the use of SIMATIC engineering tools

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 319-3 PN/DP

- The CPU with high command processing performance, large program memory and quantity framework for demanding applications.
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O on PROFIBUS and PROFINET
- PROFINET I/O controller for the operation of distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or non-Siemens PROFINET IO controller
- PROFINET interface with 2-port switch
- Isochronous mode on PROFIBUS or PROFINET
- Integrated web server with the option of creating user-defined web pages
- Distributed intelligence in Component Based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- Optionally supports the use of SIMATIC engineering tools

SIMATIC Micro Memory Card required for operation of CPU.

SIMATIC S7-300 Advanced Controllers

Central processing units

Standard CPUs

Ordering data

Article No.

CPU 312

32 KB work memory,
supply voltage 24 V DC, MPI;
MMC required

6ES7312-1AE14-0AB0

CPU 314

128 KB work memory,
supply voltage 24 V DC, MPI;
MC required

6ES7314-1AG14-0AB0

CPU 315-2 DP

256 KB work memory,
supply voltage 24 V DC,
MPI, PROFIBUS DP master/slave
interface; MMC required

6ES7315-2AH14-0AB0

CPU 315-2 PN/DP

384 KB work memory,
24 V DC supply voltage,
combined MPI/PROFIBUS DP
master/slave interface,
Ethernet/PROFINET interface with
2-port switch; MMC required

6ES7315-2EH14-0AB0

CPU 317-2 DP

1 MB work memory,
supply voltage 24 V DC, MPI,
PROFIBUS DP master/slave
interface; MMC required

6ES7317-2AK14-0AB0

CPU 317-2 PN/DP

1 MB work memory,
24 V DC supply voltage,
combined MPI/PROFIBUS DP
master/slave interface,
Ethernet/PROFINET interface with
2-port switch; MMC required

6ES7317-2EK14-0AB0

CPU 319-3 PN/DP

2 MB work memory,
24 V DC supply voltage,
combined MPI/PROFIBUS DP
master/slave interface,
PROFIBUS DP master/slave
interface, Ethernet/PROFINET
interface with 2-port switch;
MMC required

6ES7318-3EL01-0AB0

SIMATIC Micro Memory Card

64 KB

6ES7953-8LF31-0AA0

128 KB

6ES7953-8LG31-0AA0

512 KB

6ES7953-8LJ31-0AA0

2 MB

6ES7953-8LL31-0AA0

4 MB

6ES7953-8LM32-0AA0

8 MB

6ES7953-8LP31-0AA0

MPI cable

For connection of SIMATIC S7
and PG via MPI; length 5 m

6ES7901-0BF00-0AA0

Slot number plates

6ES7912-0AA00-0AA0

Article No.

SIMATIC Manual Collection

Electronic manuals on DVD,
multilingual:
all manuals for
S7-1200/1500/200/300/400,
LOGO!, SIMATIC DP, PC, PG,
STEP 7, Engineering software,
runtime SW, SIMATIC HMI,
SIMATIC NET, SIMATIC IDENT

6ES7998-8XC01-8YE0

SIMATIC Manual Collection update service for 1 year

Current Manual Collection DVD and
the three subsequent updates

6ES7998-8XC01-8YE2

Power supply connector

10 units, spare part

6ES7391-1AA00-0AA0

USB A2 PC adapter

For connecting a programming
device/PC or notebook to
PROFIBUS or MPI; USB cable
included in scope of delivery

6GK1571-0BA00-0AA0

PROFIBUS bus components

PROFIBUS DP RS 485 bus connector

- With 90° cable outlet, max.
transfer rate 12 Mbps
 - Without PG interface
 - With PG interface
- With 90° cable outlet for
FastConnect connection system,
max. transfer rate 12 Mbps
 - Without PG interface, 1 unit
 - Without PG interface, 100 units
 - With PG interface, 1 unit
 - With PG interface, 100 units
- With axial cable outlet for
SIMATIC OP, for connecting to
PPI, MPI, PROFIBUS

6ES7972-0BA12-0XA0
6ES7972-0BB12-0XA0

6ES7972-0BA52-0XA0
6ES7972-0BA52-0XB0
6ES7972-0BB52-0XA0
6ES7972-0BB52-0XB0
6GK1500-0EA02

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

6XV1830-0EH10

RS 485 repeater for PROFIBUS

Transmission rate up to 12 Mbps;
24 V DC; IP20 enclosure

6ES7972-0AA02-0XA0

SIMATIC S7-300 Advanced Controllers

Central processing units

Standard CPUs

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Ordering data	Article No.	Article No.
PROFINET bus components		
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	6XV1840-2AH10	
FO standard cable GP (50/125) Standard cable, splittable, UL approval, sold by the meter	6XV1873-2A	
SCALANCE XC206-2 Industrial Ethernet switch Manageable Layer 2 IE switch; IEC 62443-4-2 certified; 6x 100 Mbps RJ45 ports; 2x 100 Mbps ST/BFOC ports; 1x console port; diagnostics LED; redundant power supply; temperature range -40 °C to +70 °C; Mounting: DIN rail/S7 mounting rail/wall; redundancy functions; Office features (RSTP, VLAN, etc.); PROFINET IO device; Ethernet/IP-compliant C-plug slot.	6GK5206-2BB00-2AC2	
CSM 377 compact switch module Unmanaged switch for connecting SIMATIC S7-300, ET 200M and up to three other stations to Industrial Ethernet with 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module including electronic Equipment Manual on CD-ROM	6GK7377-1AA00-0AA0	
		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 145 145° cable outlet 1 unit 10 units 50 units
		IE FC RJ45 plug 180 180° cable outlet 1 unit 10 units 50 units
		PROFIBUS/PROFINET bus components For establishing MPI/PROFIBUS/PROFINET communication
		See SiePortal
		6GK1901-1BB30-0AA0 6GK1901-1BB30-0AB0 6GK1901-1BB30-0AE0
		6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0

Technical specifications				
Article number	6ES7312-1AE14-0AB0 CPU312, 32KB	6ES7314-1AG14-0AB0 CPU314, 128 KB	6ES7315-2AH14-0AB0 CPU315-2DP, 256 KB	6ES7315-2EH14-0AB0 CPU315-2 PN/DP, 384 KB
General information				
Product function • Isochronous mode			Yes	Yes; Via PROFIBUS DP or PROFINET interface
Engineering with • Programming package	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.2 + SP1 or higher with HSP 218	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.2 + SP1 or higher with HSP 218	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.2 + SP1 or higher with HSP 218	STEP 7 V5.5 or higher
Supply voltage				
Rated value (DC)	24 V	24 V	24 V	24 V
Memory				
Work memory • integrated • expandable	32 kbyte No	128 kbyte No	256 kbyte No	384 kbyte No
Load memory • Plug-in (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte	8 Mbyte
CPU processing times				
for bit operations, typ.	0.1 µs	0.06 µs	0.05 µs	0.05 µs
for word operations, typ.	0.24 µs	0.12 µs	0.09 µs	0.09 µs
for fixed point arithmetic, typ.	0.32 µs	0.16 µs	0.12 µs	0.12 µs
for floating point arithmetic, typ.	1.1 µs	0.59 µs	0.45 µs	0.45 µs

SIMATIC S7-300 Advanced Controllers

Central processing units

Standard CPUs

Technical specifications

Article number	6ES7312-1AE14-0AB0 CPU312, 32KB	6ES7314-1AG14-0AB0 CPU314, 128 KB	6ES7315-2AH14-0AB0 CPU315-2DP, 256 KB	6ES7315-2EH14-0AB0 CPU315-2 PN/DP, 384 KB
Counters, timers and their retentivity				
S7 counter				
• Number	256	256	256	256
IEC counter				
• present	Yes	Yes	Yes	Yes
S7 times				
• Number	256	256	256	256
IEC timer				
• present	Yes	Yes	Yes	Yes
Data areas and their retentivity				
Flag				
• Size, max.	256 byte	256 byte	2 048 byte	2 048 byte
Address area				
I/O address area				
• Inputs	1 024 byte	1 024 byte	2 048 byte	2 048 byte
• Outputs	1 024 byte	1 024 byte	2 048 byte	2 048 byte
Process image				
• Inputs, adjustable	1 024 byte	1 024 byte	2 048 byte	2 048 byte
• Outputs, adjustable	1 024 byte	1 024 byte	2 048 byte	2 048 byte
Time of day				
Clock				
• Hardware clock (real-time)		Yes	Yes	Yes
• Software clock	Yes			
Operating hours counter				
• Number	1	1	1	1
1. Interface				
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Interface types				
• RS 485	Yes	Yes	Yes	Yes
Protocols				
• MPI	Yes	Yes	Yes	Yes
• PROFIBUS DP master	No	No	No	Yes
• PROFIBUS DP slave	No	No	No	Yes
• Point-to-point connection	No	No	No	No
PROFIBUS DP master				
• Number of DP slaves, max.				124
2. Interface				
Interface type			Integrated RS 485 interface	PROFINET
Interface types				
• RJ 45 (Ethernet)				Yes
• RS 485			Yes	
• Number of ports				2
Protocols				
• MPI			No	No
• PROFINET IO Controller				Yes; Also simultaneously with IO-Device functionality
• PROFINET IO Device				Yes; Also simultaneously with IO Controller functionality
• PROFINET CBA				Yes
• PROFIBUS DP master			Yes	No
• PROFIBUS DP slave			Yes	No
PROFIBUS DP master				
• Number of DP slaves, max.			124; Per station	

SIMATIC S7-300 Advanced Controllers

Central processing units

Standard CPUs

Technical specifications

Article number	6ES7312-1AE14-0AB0 CPU312, 32KB	6ES7314-1AG14-0AB0 CPU314, 128 KB	6ES7315-2AH14-0AB0 CPU315-2DP, 256 KB	6ES7315-2EH14-0AB0 CPU315-2 PN/DP, 384 KB
PROFINET IO Controller				
Services				
- Number of connectable IO Devices, max.				128
- Of which IO devices with IRT, max.				64
- Number of IO Devices with IRT and the option "high flexibility"				128
- Number of connectable IO Devices for RT, max.				128
Protocols				
Open IE communication				
• TCP/IP				Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.				8
• ISO-on-TCP (RFC1006)				Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.				8
• UDP				Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.				8
Web server				
• supported				Yes
Communication functions				
PG/OP communication	Yes	Yes	Yes	Yes
Data record routing	No	No	Yes	Yes
Global data communication				
• supported	Yes	Yes	Yes	Yes
S7 basic communication				
• supported	Yes	Yes	Yes	Yes
S7 communication				
• supported	Yes	Yes	Yes	Yes
S5 compatible communication				
• supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
Number of connections				
• overall	6	12	16	16
Ambient conditions				
Ambient temperature during operation				
• min.	0 °C	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C	60 °C
Configuration				
Programming				
Programming language				
- LAD	Yes	Yes	Yes	Yes
- FBD	Yes	Yes	Yes	Yes
- STL	Yes	Yes	Yes	Yes
- SCL	Yes	Yes	Yes	Yes
- CFC		Yes	Yes	Yes
- GRAPH	Yes	Yes	Yes	Yes
- HiGraph®	Yes	Yes	Yes	Yes
Know-how protection				
• User program protection/password protection	Yes	Yes	Yes	Yes
• Block encryption	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy
Dimensions				
Width	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm
Depth	130 mm	130 mm	130 mm	130 mm
Weights				
Weight, approx.	270 g	280 g	290 g	340 g

SIMATIC S7-300 Advanced Controllers

Central processing units

Standard CPUs

Technical specifications

Article number	6ES7317-2AK14-0AB0 CPU317-2 DP, 1 MB	6ES7317-2EK14-0AB0 CPU317-2 PN/DP, 1 MB	6ES7318-3EL01-0AB0 CPU319-3 PN/DP, 2 MB
General information			
Product function			
• Isochronous mode		Yes; Via PROFIBUS DP or PROFINET interface	Yes; Via 2nd PROFIBUS DP or PROFINET interface
Engineering with			
• Programming package	STEP 7 as of V5.5 + SP1 or STEP 7 V5.2 + SP1 or higher with HSP 202	STEP 7 V5.5 or higher	STEP 7 V5.5 or higher
Supply voltage			
Rated value (DC)	24 V	24 V	24 V
Memory			
Work memory			
• integrated	1 024 kbyte	1 024 kbyte	2 048 kbyte
• expandable	No	No	No
Load memory			
• Plug-in (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte
CPU processing times			
for bit operations, typ.	0.025 µs	0.025 µs	0.004 µs
for word operations, typ.	0.03 µs	0.03 µs	0.01 µs
for fixed point arithmetic, typ.	0.04 µs	0.04 µs	0.01 µs
for floating point arithmetic, typ.	0.16 µs	0.16 µs	0.04 µs
Counters, timers and their retentivity			
S7 counter			
• Number	512	512	2 048
IEC counter			
• present	Yes	Yes	Yes
S7 times			
• Number	512	512	2 048
IEC timer			
• present	Yes	Yes	Yes
Data areas and their retentivity			
Flag			
• Size, max.	4 096 byte	4 096 byte	8 192 byte
Address area			
I/O address area			
• Inputs	8 192 byte	8 192 byte	8 192 byte
• Outputs	8 192 byte	8 192 byte	8 192 byte
Process image			
• Inputs, adjustable	8 192 byte	8 192 byte	8 192 byte
• Outputs, adjustable	8 192 byte	8 192 byte	8 192 byte
Time of day			
Clock			
• Hardware clock (real-time)	Yes	Yes	Yes
Operating hours counter			
• Number	4	4	4
1. Interface			
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Interface types			
• RS 485	Yes	Yes	Yes
Protocols			
• MPI	Yes	Yes	Yes
• PROFIBUS DP master	Yes	Yes	Yes
• PROFIBUS DP slave	Yes; A DP slave at both interfaces simultaneously is not possible	Yes	Yes; A DP slave at both interfaces simultaneously is not possible
• Point-to-point connection	No	No	No
PROFIBUS DP master			
• Number of DP slaves, max.	124	124	124

SIMATIC S7-300 Advanced Controllers

Central processing units

Standard CPUs

Technical specifications

Article number	6ES7317-2AK14-0AB0 CPU317-2 DP, 1 MB	6ES7317-2EK14-0AB0 CPU317-2 PN/DP, 1 MB	6ES7318-3EL01-0AB0 CPU319-3 PN/DP, 2 MB
2. Interface			
Interface type	Integrated RS 485 interface	PROFINET	Integrated RS 485 interface
Interface types			
• RJ 45 (Ethernet) • RS 485 • Number of ports	Yes	Yes 2	Yes
Protocols			
• MPI • PROFINET IO Controller • PROFINET IO Device • PROFINET CBA • PROFIBUS DP master • PROFIBUS DP slave	No Yes Yes; A DP slave at both interfaces simultaneously is not possible	No Yes; Also simultaneously with IO-Device functionality Yes; Also simultaneously with IO Controller functionality Yes No No	No No No No Yes Yes; A DP slave at both interfaces simultaneously is not possible
PROFIBUS DP master			
• Number of DP slaves, max.	124		124
PROFINET IO Controller			
Services			
- Number of connectable IO Devices, max. - Of which IO devices with IRT, max. - Number of IO Devices with IRT and the option "high flexibility" - Number of connectable IO Devices for RT, max.		128 64 128 128	
3. Interface			
Interface type			PROFINET
Interface types			
• RJ 45 (Ethernet) • Number of ports			Yes 2
Protocols			
• MPI • PROFINET IO Controller • PROFINET IO Device • PROFINET CBA • PROFIBUS DP master • PROFIBUS DP slave			No Yes; Also simultaneously with I-Device functionality Yes; Also simultaneously with IO Controller functionality Yes No No
PROFINET IO Controller			
Services			
- Number of connectable IO Devices, max. - Of which IO devices with IRT, max. - Number of IO Devices with IRT and the option "high flexibility" - Number of connectable IO Devices for RT, max.			256 64 256 256
Protocols			
Open IE communication			
• TCP/IP - Number of connections, max. • ISO-on-TCP (RFC1006) - Number of connections, max. • UDP - Number of connections, max.		Yes; via integrated PROFINET interface and loadable FBs 16 Yes; via integrated PROFINET interface and loadable FBs 16 Yes; via integrated PROFINET interface and loadable FBs 16	Yes; via integrated PROFINET interface and loadable FBs 32 Yes; via integrated PROFINET interface and loadable FBs 32 Yes; via integrated PROFINET interface and loadable FBs 32
Web server			
• supported		Yes	Yes

SIMATIC S7-300 Advanced Controllers

Central processing units

Standard CPUs

Technical specifications

Article number	6ES7317-2AK14-0AB0 CPU317-2 DP, 1 MB	6ES7317-2EK14-0AB0 CPU317-2 PN/DP, 1 MB	6ES7318-3EL01-0AB0 CPU319-3 PN/DP, 2 MB
Communication functions			
PG/OP communication	Yes	Yes	Yes
Data record routing	Yes	Yes	Yes
Global data communication			
• supported	Yes	Yes	Yes
S7 basic communication			
• supported	Yes	Yes	Yes
S7 communication			
• supported	Yes	Yes	Yes
S5 compatible communication			
• supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
Number of connections			
• overall	32	32	32
Ambient conditions			
Ambient temperature during operation			
• min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C
Configuration			
Programming			
Programming language			
- LAD	Yes	Yes	Yes
- FBD	Yes	Yes	Yes
- STL	Yes	Yes	Yes
- SCL	Yes	Yes	Yes
- CFC	Yes	Yes	Yes
- GRAPH	Yes	Yes	Yes
- HiGraph®	Yes	Yes	Yes
Know-how protection			
• User program protection/ password protection	Yes	Yes	Yes
• Block encryption	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy
Dimensions			
Width	40 mm	40 mm	120 mm
Height	125 mm	125 mm	125 mm
Depth	130 mm	130 mm	130 mm
Weights			
Weight, approx.	360 g	340 g	1 250 g

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 standard CPUs**Overview SIPLUS S7-300 CPU 314**

- For plants with medium requirements on the program scope
- High processing performance in binary and floating-point arithmetic

SIEMATIC Micro Memory Card required for operation of CPU.

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.

Overview SIPLUS S7-300 CPU 315-2 DP

- The CPU with medium to large program memory and quantity structures for optional use of SIMATIC engineering tools
- High processing performance in binary and floating-point arithmetic
- PROFIBUS DP master/slave interface
- For comprehensive I/O expansion
- For configuring distributed I/O structures

SIEMATIC Micro Memory Card required for operation of CPU.

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.

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 standard CPUs

Overview SIPLUS S7-300 CPU 315-2 PN/DP



- The CPU with medium-sized program memory and quantity frameworks
- High processing performance in binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- Component-based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET interface with 2-port switch
- Combined MPI/PROFIBUS DP master/slave interface
- Isochronous mode on PROFIBUS

SIMATIC Micro Memory Card required for operation of CPU.

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.

Overview SIPLUS S7-300 CPU 317-2 PN/DP



- The CPU with a large program memory and quantity framework for demanding applications
- Distributed intelligence in Component Based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- PROFINET I/O controller for the operation of distributed I/O on PROFINET
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- For comprehensive I/O expansion
- For configuring distributed I/O structures
- High processing performance in binary and floating-point arithmetic
- Combined MPI/PROFIBUS DP master/slave interface
- Optionally supports the use of SIMATIC engineering tools

Micro Memory Card required for operation of CPU.

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.

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 standard CPUs

Ordering data	Article No.		Article No.
SIPLUS S7-300 CPU 314 <i>For industrial applications with extended ambient conditions</i> CPU, 128 KB work memory, supply voltage 24 V DC, MPI; MMC required Extended temperature range and exposure to environmental substances	6AG1314-1AG14-7AB0	<i>For communication within the application</i> PROFIBUS DP RS 485 bus connector (Extended temperature range and exposure to environmental substances) With 90° cable outlet, max. transfer rate 12 Mbps - Without PG interface - With PG interface With angled cable outlet, max. transmission rate 12 Mbps - Without PG interface - With PG interface With insulation displacement terminals, max. transfer rate 12 Mbps - With PG interface, grounding via control cabinet cover (Extended temperature range) With axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS	6AG1972-0BA12-2XA0 6AG1972-0BB12-2XA0 6AG1972-0BA42-7XA0 6AG1972-0BB42-7XA0 6AG1972-0BB70-7XA0 6AG1500-0EA02-2AA0
SIPLUS S7-300 CPU 315-2 DP <i>For industrial applications with extended ambient conditions</i> CPU, 256 KB work memory, supply voltage 24 V DC, MPI, PROFIBUS DP master/slave interface; MMC required Extended temperature range and exposure to environmental substances	6AG1315-2AH14-7AB0		
SIPLUS S7-300 CPU 315-2 PN/DP <i>For industrial applications with extended ambient conditions</i> CPU, 384 KB work memory, supply voltage 24 V DC, combined MPI/PROFIBUS DP master/slave interface, Ethernet/PROFINET interface with 2-port switch; MMC required Extended temperature range and exposure to environmental substances	6AG1315-2EH14-7AB0	IE FC RJ45 plug 180 (Extended temperature range and exposure to environmental substances) 180° cable outlet 1 unit	6AG1901-1BB10-7AA0
SIPLUS S7-300 CPU 317-2 PN/DP <i>For industrial applications with extended ambient conditions</i> CPU, 1 MB work memory, supply voltage 24 V DC, combined MPI/PROFIBUS DP master/slave interface, Ethernet/PROFINET interface; MMC required Extended temperature range and exposure to environmental substances	6AG1317-2EK14-7AB0	Industrial Ethernet Switches SIPLUS SCALANCE XC-200 Industrial Ethernet switches with integrated SNMP access, Web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager; incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM Extended temperature range and exposure to environmental substances Switches with PROFINET delivery state SIPLUS SCALANCE XC206-2 (ST/BFOC) with six RJ45 ports 10/100 Mbps and two ST/BFOC ports 100 Mbps	6AG1206-2BB00-7AC2
Accessories <i>Mandatory</i> SIMATIC Micro Memory Card 64 KB 128 KB 512 KB 2 MB 4 MB 8 MB	6ES7953-8LF31-0AA0 6ES7953-8LG31-0AA0 6ES7953-8LJ31-0AA0 6ES7953-8LL31-0AA0 6ES7953-8LM32-0AA0 6ES7953-8LP31-0AA0	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 RS 485 repeater for PROFIBUS (Extended temperature range and exposure to environmental substances) Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure 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	6XV1830-0EH10 6AG1972-0AA02-7XA0 6XV1840-2AH10

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 standard CPUs

Ordering data

FO standard cable GP (50/125)

Standard cable, splittable,
UL approval, sold by the meter

For commissioning

MPI cable

For connection of SIMATIC S7
and PG via MPI; length 5 m

USB A2 PC adapter

For connecting a programming
device/PC or Notebook to
PROFIBUS or MPI; USB cable
included in scope of delivery

Consumables

Power supply connector

10 units, spare part

Slot number plates

Article No.

6XV1873-2A

6ES7901-0BF00-0AA0

6GK1571-0BA00-0AA0

6ES7391-1AA00-0AA0

6ES7912-0AA00-0AA0

Article No.

Documentation

SIMATIC Manual Collection

Electronic manuals on DVD,
multilingual:
all manuals for S7-1200/1500/
200/300/400, LOGO!,
SIMATIC DP, PC, PG, STEP 7,
Engineering software,
runtime SW, SIMATIC HMI,
SIMATIC NET, SIMATIC IDENT

SIMATIC Manual Collection update service for 1 year

Current Manual Collection DVD and
the three subsequent updates

6ES7998-8XC01-8YE0

6ES7998-8XC01-8YE2

Technical specifications

Article number

6AG1314-1AG14-7AB0

6AG1315-2AH14-7AB0

Based on

6ES7314-1AG14-0AB0

6ES7315-2AH14-0AB0

SIPLUS S7-300 CPU314

SIPLUS S7-300 CPU 315-2DP

Ambient conditions

Ambient temperature during operation

- min.
- max.

-25 °C; = Tmin

70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use

-25 °C; = Tmin

70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use

Altitude during operation relating to sea level

- Installation altitude above sea level,
max.
- Ambient air temperature-barometric
pressure-altitude

5 000 m

Tmin ... Tmax at 1 140 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

- 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
- to chemically active substances
according to EN 60721-3-3
- to mechanically active substances
according to EN 60721-3-3

Yes; Class 3B2 mold, fungus and dry rot spores
(with the exception of fauna); Class 3B3 on request
Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to
EN 60068-2-52 (severity degree 3); *
Yes; Class 3S4 incl. sand, dust, *

Yes; Class 3B2 mold, fungus and dry rot spores
(with the exception of fauna); Class 3B3 on request
Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to
EN 60068-2-52 (severity degree 3); *
Yes; Class 3S4 incl. sand, dust, *

Use on ships/at sea

- to biologically active substances
according to EN 60721-3-6
- to chemically active substances
according to EN 60721-3-6
- to mechanically active substances
according to EN 60721-3-6

Yes; Class 6B2 mold and fungal spores (excluding fauna);
Class 6B3 on request
Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to
EN 60068-2-52 (severity degree 3); *
Yes; Class 6S3 incl. sand, dust; *

Yes; Class 6B2 mold 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

- 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; 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; 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!

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 standard CPUs

Technical specifications

Article number	6AG1315-2EH14-7AB0	6AG1317-2EK14-7AB0
Based on	6ES7315-2EH14-0AB0 SIPLUS S7-300 CPU315-2PN/DP	6ES7317-2EK14-0AB0 SIPLUS S7-300 CPU317-2PN/DP
Ambient conditions		
Ambient temperature during operation		
• min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; @ 60°C for UL/ATEX/FM use
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)
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!

SIMATIC S7-300 Advanced Controllers

Central processing units

Compact CPUs

Overview CPU 312C



- The compact CPU with integral digital inputs/outputs
- For small applications with increased processing performance requirements
- With technological functions

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 313C-2 PtP



- The compact CPU with integrated digital inputs/outputs as well as second serial interface
- For plants with high processing performance and response time requirements
- With technological functions

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 313C



- The compact CPU with integrated digital and analog inputs/outputs
- For plants with high processing performance and response time requirements
- With technological functions

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 313C-2 DP



- The compact CPU with integral digital inputs/outputs and PROFIBUS DP master/slave interface
- For plants with high processing performance and response time requirements
- With technological functions
- For tasks with special functions
- For connecting distributed I/Os

SIMATIC Micro Memory Card required for operation of CPU.

SIMATIC S7-300 Advanced Controllers

Central processing units

Compact CPUs**Overview CPU 314C-2 PtP**

- The compact CPU with integrated digital and analog inputs/outputs as well as second serial interface
- For plants with high processing performance and response time requirements
- With technological functions

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 314C-2 PN/DP

- The compact CPU with integrated digital and analog inputs/outputs and technological functions
- High processing performance in binary and floating-point arithmetic
- For connecting distributed I/O via PROFIBUS and PROFINET
- Combined MPI/PROFIBUS DP master/slave interface
- PROFINET interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or non-Siemens PROFINET IO controller
- Component-based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- Integrated web server with the option of creating user-defined web pages
- Isochronous mode on PROFINET

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 314C-2 DP

- The compact CPU with integrated digital and analog inputs/outputs and PROFIBUS DP master/slave interface
- With technological functions
- For plants with high processing performance and response time requirements
- For connecting distributed I/Os

SIMATIC Micro Memory Card required for operation of CPU.

SIMATIC S7-300 Advanced Controllers

Central processing units

Compact CPUs

Ordering data	Article No.	Article No.
CPU 312C Compact CPU, 64 KB work memory, 24 V DC supply voltage, 10 DI/6 DQ integrated, integrated functions, MPI; including slot number labels; MMC required	6ES7312-5BF04-0AB0	Front connector (1 unit) For compact CPUs 40-pin, with screw connections • 1 unit • 100 units 40-pin, with spring-loaded contacts • 1 unit • 100 units SIMATIC TOP connect See page 5/237 for information about which components can be used for the respective module, see SiePortal
CPU 313C Compact CPU, 128 KB work memory, 24 V DC supply voltage, 24 DI/16 DQ, 4 AI/2 AQ integrated, integrated functions, MPI; MMC required	6ES7313-5BG04-0AB0	
CPU 313C-2 PtP Compact CPU, 128 KB work memory, 24 V DC supply voltage, 16 DI/16 DQ integrated, integrated functions, MPI, RS 422/485 interface; MMC required	6ES7313-6BG04-0AB0	
CPU 313C-2 DP Compact CPU, 128 KB work memory, 24 V DC supply voltage, 16 DI/16 DQ integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required	6ES7313-6CG04-0AB0	Front door, elevated design For compact CPUs; for connecting 1.3 mm ² /16 AWG conductors; cabling diagram and labeling strips in petrol
CPU 314C-2 PtP Compact CPU, 192 KB work memory, 24 V DC supply voltage, 24DI/16DQ/4AI/2AQ integrated, integrated functions, MPI, RS 422/485 interface; MMC required	6ES7314-6BH04-0AB0	Slot number plates SIMATIC Manual Collection Electronic manuals on DVD, multilingual: all manuals for S7-1200/1500/200/300/400, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering software, runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT
CPU 314C-2 DP Compact CPU, 192 KB work memory, 24 V DC supply voltage, 24 DI/16 DQ/4 AI/2 AQ integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required	6ES7314-6CH04-0AB0	SIMATIC Manual Collection update service for 1 year Current Manual Collection DVD and the three subsequent updates
CPU 314C-2 PN/DP Compact CPU, 192 KB work memory, 24 V DC supply voltage, 24 DI/16 DQ/4 AI/2 AQ integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; PROFINET IO controller/I-Device interface, MMC required	6ES7314-6EH04-0AB0	Power supply connector 10 units, spare part
SIMATIC Micro Memory Card 64 KB 128 KB 512 KB 2 MB 4 MB 8 MB	6ES7953-8LF31-0AA0 6ES7953-8LG31-0AA0 6ES7953-8LJ31-0AA0 6ES7953-8LL31-0AA0 6ES7953-8LM32-0AA0 6ES7953-8LP31-0AA0	Labeling strips 10 units, spare part
MPI cable For connection of SIMATIC S7 and PG via MPI; length 5 m	6ES7901-0BF00-0AA0	Label cover 10 units, spare part
Point-to-point link cable For connection to CPU 31xC-2 PtP 5 m 10 m 50 m	6ES7902-3AB00-0AA0 6ES7902-3AC00-0AA0 6ES7902-3AG00-0AA0	Labeling sheets for machine inscription For modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units Petrol Light beige Yellow Red
		USB A2 PC adapter For connecting a programming device/PC or notebook to PROFIBUS or MPI; USB cable included in scope of delivery

SIMATIC S7-300 Advanced Controllers

Central processing units

Compact CPUs

5

Ordering data	Article No.		Article No.
PROFIBUS DP RS 485 bus connector • With 90° cable outlet, max. transfer rate 12 Mbps - Without PG interface - With PG interface • With 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbps - Without PG interface, 1 unit - Without PG interface, 100 units - With PG interface, 1 unit - With PG interface, 100 units • With axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS	6ES7972-0BA12-0XA0 6ES7972-0BB12-0XA0 6ES7972-0BA52-0XA0 6ES7972-0BA52-0XB0 6ES7972-0BB52-0XA0 6ES7972-0BB52-0XB0 6GK1500-0EA02	SCALANCE XC206-2 Industrial Ethernet switch Manageable Layer 2 IE switch; IEC 62443-4-2 certified; 6x 100 Mbps RJ45 ports; 2x 100 Mbps ST/BFOC ports; 1x console port; diagnostics LED; redundant power supply; temperature range -40 °C to +70 °C; Mounting: DIN rail/S7 mounting rail/wall; redundancy functions; Office features (RSTP, VLAN, etc.); PROFINET IO device; Ethernet/IP-compliant C-plug slot.	6GK5206-2BB00-2AC2
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	6XV1830-0EH10	CSM 377 compact switch module Unmanaged switch for connecting SIMATIC S7-300, ET 200M and up to three other stations to Industrial Ethernet with 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module incl. electronic Equipment Manual on CD-ROM	6GK7377-1AA00-0AA0
RS 485 repeater for PROFIBUS Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure	6ES7972-0AA02-0XA0	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	
PROFINET bus components		IE FC RJ45 plug 180 180° cable outlet 1 unit 10 units 50 units	6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0
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 1000 m Minimum order quantity 20 m	6XV1840-2AH10	PROFIBUS/PROFINET bus components For establishing MPI/PROFIBUS/PROFINET communication	See SiePortal
FO standard cable GP (50/125) Standard cable, splittable, UL approval, sold by the meter Max. delivery unit 1000 m Minimum order quantity 20 m	6XV1873-2A		

SIMATIC S7-300 Advanced Controllers

Central processing units

Compact CPUs

Technical specifications

Article number	6ES7312-5BF04-0AB0	6ES7313-5BG04-0AB0	6ES7313-6BG04-0AB0	6ES7313-6CG04-0AB0
	CPU312C, 10DI/6DO, 64 KB	CPU313C, 24DI/16DO/ 5AI/2AO, 128 KB	CPU313C-2 PTP, 16DI/16DO, 128 KB	CPU313C-2 DP, 16DI/16DO, 128 KB
General information				
Engineering with				
• Programming package	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203	STEP 7 as of V5.5 + SP1 or STEP 7 V5.3 + SP2 or higher with HSP 204	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203
Supply voltage				
Rated value (DC)	24 V	24 V	24 V	24 V
Memory				
Work memory				
• integrated	64 kbyte	128 kbyte	128 kbyte	128 kbyte
• expandable	No	No	No	No
Load memory				
• Plug-in (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte	8 Mbyte
CPU processing times				
for bit operations, typ.	0.1 µs	0.07 µs	0.07 µs	0.07 µs
for word operations, typ.	0.24 µs	0.15 µs	0.15 µs	0.15 µs
for fixed point arithmetic, typ.	0.32 µs	0.2 µs	0.2 µs	0.2 µs
for floating point arithmetic, typ.	1.1 µs	0.72 µs	0.72 µs	0.72 µs
Counters, timers and their retentivity				
S7 counter				
• Number	256	256	256	256
IEC counter				
• present	Yes	Yes	Yes	Yes
S7 times				
• Number	256	256	256	256
IEC timer				
• present	Yes	Yes	Yes	Yes
Data areas and their retentivity				
Flag				
• Size, max.	256 byte	256 byte	256 byte	256 byte
Address area				
I/O address area				
• Inputs	1 024 byte	1 024 byte	1 024 byte	2 048 byte
• Outputs	1 024 byte	1 024 byte	1 024 byte	2 048 byte
Process image				
• Inputs, adjustable	1 024 byte	1 024 byte	1 024 byte	2 048 byte
• Outputs, adjustable	1 024 byte	1 024 byte	1 024 byte	2 048 byte
Time of day				
Clock				
• Hardware clock (real-time)		Yes	Yes	Yes
• Software clock	Yes			
Operating hours counter				
• Number	1	1	1	1
Digital inputs				
integrated channels (DI)	10	24	16	16
Digital outputs				
integrated channels (DO)	6	16	16	16
Analog inputs				
integrated channels (AI)	0	5; 4x current/voltage, 1x resistance	0	0
Input ranges				
• Voltage		Yes; ±10 V / 100 kΩ; 0 V to 10 V / 100 kΩ		
• Current		Yes; ±20 mA / 100 Ω; 0 mA to 20 mA / 100 Ω; 4 mA to 20 mA / 100 Ω		
• Resistance thermometer		Yes; Pt 100 / 10 MΩ		
• Resistance		Yes; 0 Ω to 600 Ω / 10 MΩ		

SIMATIC S7-300 Advanced Controllers

Central processing units

Compact CPUs

Technical specifications

Article number	6ES7312-5BF04-0AB0 CPU312C, 10DI/6DO, 64 KB	6ES7313-5BG04-0AB0 CPU313C, 24DI/16DO/ 5AI/2AO, 128 KB	6ES7313-6BG04-0AB0 CPU313C-2 PTP, 16DI/16DO, 128 KB	6ES7313-6CG04-0AB0 CPU313C-2 DP, 16DI/16DO, 128 KB
Analog outputs				
integrated channels (AO)	0	2	0	0
Output ranges, voltage				
• 0 to 10 V		Yes		
• -10 V to +10 V		Yes		
Output ranges, current				
• 0 to 20 mA		Yes		
• -20 mA to +20 mA		Yes		
• 4 mA to 20 mA		Yes		
1. Interface				
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Interface types				
• RS 485	Yes	Yes		Yes
Protocols				
• MPI	Yes	Yes	Yes	Yes
• PROFIBUS DP master	No	No	No	No
• PROFIBUS DP slave	No	No	No	No
• Point-to-point connection	No	No	No	No
2. Interface				
Interface type			Integrated RS 422/ 485 interface	Integrated RS 485 interface
Interface types				
• RS 485			Yes; RS 422 / 485 (X.27)	Yes
Protocols				
• MPI			No	No
• PROFINET IO Controller			No	No
• PROFINET IO Device			No	No
• PROFINET CBA			No	No
• PROFIBUS DP master			No	Yes
• PROFIBUS DP slave			No	Yes
PROFIBUS DP master				
• Number of DP slaves, max.				124
Communication functions				
PG/OP communication	Yes	Yes	Yes	Yes
Data record routing	No	No	No	Yes
Global data communication				
• supported	Yes	Yes	Yes	Yes
S7 basic communication				
• supported	Yes	Yes	Yes; Server	Yes
S7 communication				
• supported	Yes	Yes	Yes	Yes
S5 compatible communication				
• supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
Number of connections				
• overall	6	8	8	8
Integrated Functions				
Counter				
• Number of counters	2; See "Technological Functions" manual	3; See "Technological Functions" manual	3; See "Technological Functions" manual	3; See "Technological Functions" manual
• Counting frequency, max.	10 kHz	30 kHz	30 kHz	30 kHz
Frequency measurement	Yes	Yes	Yes	Yes
• Number of frequency meters	2; up to 10 kHz (see "Technological Functions" manual)	3; up to 30 kHz (see "Technological Functions" manual)	3; up to 30 kHz (see "Technological Functions" manual)	3; up to 30 kHz (see "Technological Functions" manual)
controlled positioning	No	No	No	No
integrated function blocks (closed-loop control)	No	Yes; PID controller (see "Technological Functions" manual)	Yes; PID controller (see "Technological Functions" manual)	Yes; PID controller (see "Technological Functions" manual)
PID controller	No	Yes	Yes	Yes
Number of pulse outputs	2; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)	3; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)	3; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)	3; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)
Limit frequency (pulse)	2.5 kHz	2.5 kHz	2.5 kHz	2.5 kHz

SIMATIC S7-300 Advanced Controllers

Central processing units

Compact CPUs

Technical specifications

Article number	6ES7312-5BF04-0AB0 CPU312C, 10DI/6DO, 64 KB	6ES7313-5BG04-0AB0 CPU313C, 24DI/16DO/ 5AI/2AO, 128 KB	6ES7313-6BG04-0AB0 CPU313C-2 PTP, 16DI/16DO, 128 KB	6ES7313-6CG04-0AB0 CPU313C-2 DP, 16DI/16DO, 128 KB
Ambient conditions				
Ambient temperature during operation				
• min.	0 °C	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C	60 °C
Configuration				
Programming				
Programming language				
- LAD	Yes	Yes	Yes	Yes
- FBD	Yes	Yes	Yes	Yes
- STL	Yes	Yes	Yes	Yes
- SCL	Yes	Yes	Yes	Yes
- CFC	Yes	Yes	Yes	Yes
- GRAPH	Yes	Yes	Yes	Yes
- HiGraph®	Yes	Yes	Yes	Yes
Know-how protection				
• User program protection/password protection	Yes	Yes	Yes	Yes
• Block encryption	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy
Dimensions				
Width	80 mm	120 mm	80 mm	80 mm
Height	125 mm	125 mm	125 mm	125 mm
Depth	130 mm	130 mm	130 mm	130 mm
Weights				
Weight, approx.	410 g	660 g	500 g	500 g

Article number	6ES7314-6BH04-0AB0 CPU314C-2PTP, 24DI/16DO/5AI/2AO, 192 KB	6ES7314-6CH04-0AB0 CPU314C-2DP, 24DI/16DO/5AI/2AO, 192 KB	6ES7314-6EH04-0AB0 CPU314C-2PN/DP, 24DI/16DO/4AI/2AO, 192KB
General information			
Product function			
• Isochronous mode			Yes; For PROFINET only
Engineering with			
• Programming package	STEP 7 as of V5.5 + SP1 or STEP 7 V5.3 + SP2 or higher with HSP 204	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203	STEP 7 V5.5 or higher with HSP 191
Supply voltage			
Rated value (DC)	24 V	24 V	24 V
Memory			
Work memory			
• integrated	192 kbyte	192 kbyte	192 kbyte
• expandable	No	No	No
Load memory			
• Plug-in (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte
CPU processing times			
for bit operations, typ.	0.06 µs	0.06 µs	0.06 µs
for word operations, typ.	0.12 µs	0.12 µs	0.12 µs
for fixed point arithmetic, typ.	0.16 µs	0.16 µs	0.16 µs
for floating point arithmetic, typ.	0.59 µs	0.59 µs	0.59 µs
Counters, timers and their retentivity			
S7 counter			
• Number	256	256	256
IEC counter			
• present	Yes	Yes	Yes
S7 times			
• Number	256	256	256
IEC timer			
• present	Yes	Yes	Yes

SIMATIC S7-300 Advanced Controllers

Central processing units

Compact CPUs

Technical specifications

Article number	6ES7314-6BH04-0AB0 CPU314C-2PTP, 24DI/16DO/5AI/2AO, 192 KB	6ES7314-6CH04-0AB0 CPU314C-2DP, 24DI/16DO/5AI/2AO, 192 KB	6ES7314-6EH04-0AB0 CPU314C-2PN/DP, 24DI/16DO/4AI/2AO, 192KB
Data areas and their retentivity			
Flag			
• Size, max.	256 byte	256 byte	256 byte
Address area			
I/O address area			
• Inputs	1 024 byte	2 048 byte	2 048 byte
• Outputs	1 024 byte	2 048 byte	2 048 byte
Process image			
• Inputs, adjustable	1 024 byte	2 048 byte	2 048 byte
• Outputs, adjustable	1 024 byte	2 048 byte	2 048 byte
Time of day			
Clock			
• Hardware clock (real-time)	Yes	Yes	Yes
Operating hours counter			
• Number	1	1	1
Digital inputs			
integrated channels (DI)	24	24	24
Digital outputs			
integrated channels (DO)	16	16	16
Analog inputs			
integrated channels (AI)	5; 4x current/voltage, 1x resistance	5; 4x current/voltage, 1x resistance	5; 4x current/voltage, 1x resistance
Input ranges			
• Voltage	Yes; $\pm 10\text{ V} / 100\text{ k}\Omega$; 0 V to 10 V / 100 k Ω	Yes; $\pm 10\text{ V} / 100\text{ k}\Omega$; 0 V to 10 V / 100 k Ω	Yes; $\pm 10\text{ V} / 100\text{ k}\Omega$; 0 V to 10 V / 100 k Ω
• Current	Yes; $\pm 20\text{ mA} / 100\text{ }\Omega$; 0 mA to 20 mA / 100 Ω ; 4 mA to 20 mA / 100 Ω	Yes; $\pm 20\text{ mA} / 100\text{ }\Omega$; 0 mA to 20 mA / 100 Ω ; 4 mA to 20 mA / 100 Ω	Yes; $\pm 20\text{ mA} / 100\text{ }\Omega$; 0 mA to 20 mA / 100 Ω ; 4 mA to 20 mA / 100 Ω
• Resistance thermometer	Yes; Pt 100 / 10 M Ω	Yes; Pt 100 / 10 M Ω	Yes; Pt 100 / 10 M Ω
• Resistance	Yes; 0 Ω to 600 Ω / 10 M Ω	Yes; 0 Ω to 600 Ω / 10 M Ω	Yes; 0 Ω to 600 Ω / 10 M Ω
Analog outputs			
integrated channels (AO)	2	2	2
Output ranges, voltage			
• 0 to 10 V	Yes	Yes	Yes
• -10 V to +10 V	Yes	Yes	Yes
Output ranges, current			
• 0 to 20 mA	Yes	Yes	Yes
• -20 mA to +20 mA	Yes	Yes	Yes
• 4 mA to 20 mA	Yes	Yes	Yes
1. Interface			
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Interface types			
• RS 485	Yes	Yes	Yes
Protocols			
• MPI	Yes	Yes	Yes
• PROFIBUS DP master	No	No	Yes
• PROFIBUS DP slave	No	No	Yes
• Point-to-point connection	No	No	No
PROFIBUS DP master			
• Number of DP slaves, max.			124

SIMATIC S7-300 Advanced Controllers

Central processing units

Compact CPUs

Technical specifications

Article number	6ES7314-6BH04-0AB0 CPU314C-2PTP, 24DI/16DO/5AI/2AO, 192 KB	6ES7314-6CH04-0AB0 CPU314C-2DP, 24DI/16DO/5AI/2AO, 192 KB	6ES7314-6EH04-0AB0 CPU314C-2PN/DP, 24DI/16DO/4AI/2AO, 192KB
2. Interface			
Interface type	Integrated RS 422/ 485 interface	Integrated RS 485 interface	PROFINET
Interface types			
• RJ 45 (Ethernet)			Yes
• RS 485	Yes; RS 422 / 485 (X.27)	Yes	
• Number of ports			2
Protocols			
• MPI	No	No	No
• PROFINET IO Controller	No	No	Yes; Also simultaneously with IO-Device functionality
• PROFINET IO Device	No	No	Yes; Also simultaneously with IO Controller functionality
• PROFINET CBA	No	No	Yes
• PROFIBUS DP master	No	Yes	No
• PROFIBUS DP slave	No	Yes	No
PROFIBUS DP master			
• Number of DP slaves, max.		124	
PROFINET IO Controller			
Services			
- Number of connectable IO Devices, max.			128
- Of which IO devices with IRT, max.			64
- Number of IO Devices with IRT and the option "high flexibility"			128
- Number of connectable IO Devices for RT, max.			128
Protocols			
Open IE communication			
• TCP/IP			Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.			8
• ISO-on-TCP (RFC1006)			Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.			8
• UDP			Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.			8
Web server			
• supported			Yes
Communication functions			
PG/OP communication	Yes	Yes	Yes
Data record routing	No	Yes	Yes
Global data communication			
• supported	Yes	Yes	Yes
S7 basic communication			
• supported	Yes	Yes	Yes
S7 communication			
• supported	Yes	Yes	Yes
S5 compatible communication			
• supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
Number of connections			
• overall	12	12	12

SIMATIC S7-300 Advanced Controllers

Central processing units

Compact CPUs

Technical specifications

Article number	6ES7314-6BH04-0AB0 CPU314C-2PTP, 24DI/16DO/5AI/2AO, 192 KB	6ES7314-6CH04-0AB0 CPU314C-2DP, 24DI/16DO/5AI/2AO, 192 KB	6ES7314-6EH04-0AB0 CPU314C-2PN/DP, 24DI/16DO/4AI/2AO, 192KB
Integrated Functions			
Counter			
• Number of counters	4; See "Technological Functions" manual	4; See "Technological Functions" manual	4; See "Technological Functions" manual
• Counting frequency, max.	60 kHz	60 kHz	60 kHz
Frequency measurement	Yes	Yes	Yes
• Number of frequency meters	4; up to 60 kHz (see "Technological Functions" manual)	4; up to 60 kHz (see "Technological Functions" manual)	4; up to 60 kHz (see "Technological Functions" manual)
controlled positioning	Yes	Yes	Yes
integrated function blocks (closed-loop control)	Yes; PID controller (see "Technological Functions" manual)	Yes; PID controller (see "Technological Functions" manual)	Yes; PID controller (see "Technological Functions" manual)
PID controller	Yes	Yes	Yes
Number of pulse outputs	4; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)	4; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)	4; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)
Limit frequency (pulse)	2.5 kHz	2.5 kHz	2.5 kHz
Ambient conditions			
Ambient temperature during operation			
• min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C
Configuration			
Programming			
Programming language			
- LAD	Yes	Yes	Yes
- FBD	Yes	Yes	Yes
- STL	Yes	Yes	Yes
- SCL	Yes	Yes	Yes
- CFC	Yes	Yes	Yes
- GRAPH	Yes	Yes	Yes
- HiGraph®	Yes	Yes	Yes
Know-how protection			
• User program protection/ password protection	Yes	Yes	Yes
• Block encryption	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy
Dimensions			
Width	120 mm	120 mm	120 mm
Height	125 mm	125 mm	125 mm
Depth	130 mm	130 mm	130 mm
Weights			
Weight, approx.	680 g	680 g	730 g

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 compact CPUs

Overview SIPLUS S7-300 CPU 312C



- The compact CPU with integral digital inputs/outputs
- For small applications with increased processing performance requirements
- With technological functions

Micro Memory Card required for operation of CPU.

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.

Overview SIPLUS S7-300 CPU 313C-2 DP



- The compact CPU with integral digital inputs/outputs and PROFIBUS DP master/slave interface
- With technological functions
- For tasks with special functions
- For connecting distributed I/Os

Micro Memory Card required for operation of CPU.

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.

Overview SIPLUS S7-300 CPU 313C



- The compact CPU with integrated digital and analog inputs/outputs
- For plants with high processing performance and response time requirements
- With technological functions

Micro Memory Card required for operation of CPU.

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.

Overview SIPLUS S7-300 CPU 314C-2 PtP



- The compact CPU with integrated digital and analog inputs/outputs as well as second serial interface
- For plants with high processing performance and response time requirements
- With technological functions

SIMATIC Micro Memory Card required for operation of CPU.

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.

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 compact CPUs**Overview SIPLUS S7-300 CPU 314C-2 DP**

- The compact CPU with integrated digital and analog inputs/outputs and PROFIBUS DP master/slave interface
- With technological functions
- For tasks with special functions
- For connecting distributed I/Os

Micro Memory Card required for operation of CPU.

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.

Overview SIPLUS S7-300 CPU 314C-2 PN/DP

- The compact CPU with integrated digital and analog inputs/outputs and technological functions
- High processing performance in binary and floating-point arithmetic
- For connecting distributed I/O via PROFIBUS and PROFINET
- Combined MPI/PROFIBUS DP master/slave interface
- PROFINET interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or non-Siemens PROFINET IO controller
- Component-based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- Integrated web server with the option of creating user-defined web pages
- Isochronous mode on PROFINET

SIMATIC Micro Memory Card required for operation of CPU.

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.

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 compact CPUs

Ordering data

Article No.

Article No.

SIPLUS S7-300 CPU 312C

For industrial applications with extended ambient conditions

Compact CPU, 64 KB work memory, supply voltage 24 V DC, 10 DI/6 DO integrated, integrated functions, MPI; including slot number labels; MMC required

Extended temperature range and exposure to environmental substances

6AG1312-5BF04-7AB0

SIPLUS S7-300 CPU 313C

For industrial applications with extended ambient conditions

Compact CPU, 128 KB work memory, 24 V DC supply voltage, 24 DI/16 DQ, 4 AI/2 AQ integrated, integrated functions, MPI; MMC required

Extended temperature range and exposure to environmental substances

6AG1313-5BG04-7AB0

SIPLUS S7-300 CPU 313C-2 DP

For industrial applications with extended ambient conditions

Compact CPU, 128 KB work memory, supply voltage 24 V DC, 16 DI/16 DO integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required

Extended temperature range and exposure to environmental substances

6AG1313-6CG04-7AB0

SIPLUS S7-300 CPU 314C-2 PIP

For industrial applications with extended ambient conditions

Compact CPU, 192 KB work memory, 24 V DC supply voltage, 24 DI/16 DQ/4 AI/2 AQ integrated, integrated functions, MPI, RS 422/485 interface; MMC required

Extended temperature range and exposure to environmental substances

6AG1314-6BH04-7AB0

SIPLUS S7-300 CPU 314C-2 DP

For industrial applications with extended ambient conditions

Compact CPU, 192 KB work memory, supply voltage 24 V DC, 24 DI/16 DO/4 AI/2 AO integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required

Extended temperature range and exposure to environmental substances

6AG1314-6CH04-7AB0

SIPLUS S7-300 CPU 314C-2 PN/DP

For industrial applications with extended ambient conditions

Compact CPU, 192 KB work memory, 24 V DC supply voltage, 24 DI/16 DQ/4 AI/2 AQ integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; PROFINET IO controller/I-Device interface, MMC required

Extended temperature range and exposure to environmental substances

6AG1314-6EH04-7AB0

Accessories

Mandatory

SIMATIC Micro Memory Card

64 KB

6ES7953-8LF31-0AA0

128 KB

6ES7953-8LG31-0AA0

512 KB

6ES7953-8LJ31-0AA0

2 MB

6ES7953-8LL31-0AA0

4 MB

6ES7953-8LM32-0AA0

8 MB

6ES7953-8LP31-0AA0

Front connector (1 unit)

For compact CPUs

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0
6ES7392-1BM01-1AB0

For communication within the application

PROFIBUS DP RS 485 bus connector

(Extended temperature range and exposure to environmental substances)

With 90° cable outlet, max. transfer rate 12 Mbps

- Without PG interface
- With PG interface

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

With angled cable outlet, max. transfer rate 12 Mbps

- Without PG interface
- With PG interface

6AG1972-0BA42-7XA0
6AG1972-0BB42-7XA0

With insulation displacement terminals, max. transfer rate 12 Mbps

- With PG interface, grounding via control cabinet cover

6AG1972-0BB70-7XA0

(Extended temperature range)

With axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS

6AG1500-0EA02-2AA0

IE FC RJ45 plug 180

(Extended temperature range and exposure to environmental substances)

- 180° cable outlet
- 1 unit

6AG1901-1BB10-7AA0

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 compact CPUs

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Ordering data	Article No.	Article No.
SIPLUS SCALANCE XC-200 Industrial Ethernet switches Industrial Ethernet switches with integrated SNMP access, web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager; incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM Extended temperature range and exposure to environmental substances Switches with PROFINET delivery state • SIPLUS SCALANCE XC206-2 (ST/BFOC) with six RJ45 ports 10/100 Mbps and two ST/BFOC ports 100 Mbps	6AG1206-2BB00-7AC2	<i>For commissioning</i> MPI cable For connection of SIMATIC S7 and PG via MPI; length 5 m 6ES7901-0BF00-0AA0 USB A2 PC adapter For connecting a programming device/PC or Notebook to PROFIBUS or MPI; USB cable included in scope of delivery 6GK1571-0BA00-0AA0 <i>Consumables</i> Front door, elevated design For compact CPUs; for connecting 1.3 mm ² /16 AWG conductors; cabling diagram and labeling strips in petrol 6ES7328-7AA20-0AA0 Power supply connector 10 units, spare part 6ES7391-1AA00-0AA0 Slot number plates 6ES7912-0AA00-0AA0 Labeling strips 10 units, spare part 6ES7392-2XX00-0AA0 Label cover 10 units, spare part 6ES7392-2XY00-0AA0 Labeling sheets for machine inscription For modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units Petrol 6ES7392-2AX10-0AA0 Light beige 6ES7392-2BX10-0AA0 Yellow 6ES7392-2CX10-0AA0 Red 6ES7392-2DX10-0AA0 <i>Documentation</i> SIMATIC Manual Collection Electronic manuals on DVD, multilingual: all manuals for S7-1200/1500/200/300/400, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering software, runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT 6ES7998-8XC01-8YE0 SIMATIC Manual Collection update service for 1 year Current Manual Collection DVD and the three subsequent updates 6ES7998-8XC01-8YE2
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 6XV1830-0EH10		
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 1000 m 6AG1206-2BB00-7AC2 Minimum order quantity 20 m 6XV1840-2AH10		
FO standard cable GP (50/125) Standard cable, splittable, UL approval, sold by the meter: max. delivery unit 1000 m minimum order quantity 20 m 6XV1873-2A		
RS 485 repeater for PROFIBUS (Extended temperature range and exposure to environmental substances) Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure 6AG1972-0AA02-7XA0		
Point-to-point link cable For connection to CPU 31xC-2 PtP 5 m 6ES7902-3AB00-0AA0 10 m 6ES7902-3AC00-0AA0 50 m 6ES7902-3AG00-0AA0		

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 compact CPUs

Technical specifications

Article number	6AG1312-5BF04-7AB0	6AG1313-5BG04-7AB0
Based on	6ES7312-5BF04-0AB0 SIPLUS S7-300 CPU312C	6ES7313-5BG04-0AB0 SIPLUS S7-300 CPU313C
Ambient conditions		
Ambient temperature during operation		
• min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	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	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)
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!

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 compact CPUs

Technical specifications

Article number	6AG1313-6CG04-7AB0	6AG1314-6BH04-7AB0
Based on	6ES7313-6CG04-0AB0 SIPLUS S7-300 CPU313C-2DP	6ES7314-6BH04-0AB0 SIPLUS S7-300 CPU314C-2 PtP
Ambient conditions		
Ambient temperature during operation		
• min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	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	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)
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!

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 compact CPUs

Technical specifications

Article number	6AG1314-6CH04-7AB0	6AG1314-6EH04-7AB0
Based on	6ES7314-6CH04-0AB0 SIPLUS S7-300 CPU314C-2DP	6ES7314-6EH04-0AB0 SIPLUS S7-300 CPU314C-2PN/DP
Ambient conditions		
Ambient temperature during operation		
• min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; @ 60°C for UL/ATEX/FM use
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)
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!

SIMATIC S7-300 Advanced Controllers

Central processing units

Fail-safe CPUs

Overview CPU 315F-2 DP



- Based on the SIMATIC CPU 315-2 DP
- For configuring a fail-safe automation system for plants with increased safety requirements
- Complies with safety requirements to SIL 3 acc. to IEC 61508 and PL e acc. to ISO 13849.1
- Distributed fail-safe I/O modules can be connected through the integral PROFIBUS DP interface (PROFIsafe)
- Fail-safe ET 200M I/O modules can also be centrally connected
- Central and distributed use of standard modules for non safety-oriented applications

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 315F-2 PN/DP



- Based on CPU 315-2 PN/DP
- The CPU with medium-sized program memory and quantity structures for setting up a fail-safe automation system in plants with increased safety requirements
- Complies with safety requirements to SIL 3 acc. to IEC 61508 and PL e acc. to ISO 13849.1
- The fail-safe I/O modules can be locally connected to the integrated PROFINET interface (PROFIsafe) and/or to the integrated PROFIBUS DP interface (PROFIsafe)
- Fail-safe ET 200M I/O modules can also be connected centrally
- Central and distributed use of standard modules for non safety-oriented applications

- Component-based Automation (CBA) on PROFINET
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET interface with 2-port switch
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 317F-2 DP



- The fail-safe CPU with a large program memory and quantity framework for demanding applications
- For configuring a fail-safe automation system for plants with increased safety requirements
- Complies with safety requirements to SIL 3 acc. to IEC 61508 and PL e acc. to ISO 13849.1
- Fail-safe I/O modules can be connected in a distributed configuration to both integral PROFIBUS DP interfaces (PROFIsafe)
- Fail-safe ET 200M I/O modules can also be connected centrally
- Central and distributed use of standard modules for non safety-oriented applications

SIMATIC Micro Memory Card required for operation of CPU.

SIMATIC S7-300 Advanced Controllers

Central processing units

Fail-safe CPUs

Overview CPU 317F-2 PN/DP



- Based on CPU 317-2 PN/DP
- The fail-safe CPU with a large program memory and quantity structures for demanding applications to build a fail-safe automation system for plants with increased safety requirements
- Complies with safety requirements to SIL 3 acc. to IEC 61508 and PL e acc. to ISO 13849.1
- Distributed fail-safe I/O modules can be locally connected via the integrated PROFINET interface (PROFIsafe) and/or via the integrated PROFIBUS DP interface (PROFIsafe)
- Fail-safe ET 200M I/O modules can also be connected centrally
- Central and distributed use of standard modules for non safety-oriented applications
- Component-based Automation (CBA) on PROFINET
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET interface with 2-port switch
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 319F-3 PN/DP



- The fail-safe CPU with high-performance command processing, large program memory and large quantity structure for demanding applications
- For configuring a fail-safe automation system for plants with increased safety requirements
- Complies with safety requirements to SIL 3 acc. to IEC 61508 and PL e acc. to 13849.1
- Distributed fail-safe I/O modules can be locally connected via the integrated PROFINET interface (PROFIsafe) and/or via the integrated PROFIBUS DP interface (PROFIsafe);
- Fail-safe ET 200M I/O modules can also be connected centrally
- Standard modules for non-safety-related applications can be operated centrally and locally
- Distributed intelligence in Component Based Automation (CBA) on PROFINET
- Isochronous mode on PROFIBUS
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)

SIMATIC Micro Memory Card required for operation of CPU.

SIMATIC S7-300 Advanced Controllers

Central processing units

Fail-safe CPUs

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Ordering data	Article No.	Article No.
CPU 315F-2 DP CPU for SIMATIC S7-300F; 384 KB work memory; 24 V DC supply voltage, MPI, PROFIBUS DP master/slave interface; incl. slot number labels; MMC required	6ES7315-6FF04-0AB0	STEP 7 Safety Advanced V18 Task: Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco I/O Requirement: STEP 7 Professional V18 Note: As of TIA Portal V16, the SIMATIC STEP 7 Safety software is an integral component of the SIMATIC STEP 7 product setup. The functionality of SIMATIC STEP 7 Safety is activated by means of the license key supplied in each case. Floating license for 1 user; license key on USB flash drive Floating license for 1 user, license key for download ¹⁾ ; Email address required for delivery
CPU 315F-2 PN/DP CPU for SIMATIC S7-300F; 512 KB work memory; 24 V DC supply voltage, MPI/PROFIBUS DP master/slave interface, Industrial Ethernet/ PROFINET interface; incl. slot number labels; MMC required	6ES7315-2FJ14-0AB0	
CPU 317F-2 DP 1.5 MB work memory, supply voltage 24 V DC, MPI, PROFIBUS DP master/slave interface; MMC required	6ES7317-6FF04-0AB0	
CPU 317F-2 PN/DP 1.5 MB work memory, 24 V DC supply voltage; MPI/PROFIBUS DP master/slave interface; Industrial Ethernet/ PROFINET interface; MMC required	6ES7317-2FK14-0AB0	
CPU 319F-3 PN/DP 2.5 MB work memory, supply voltage 24 V DC, combined MPI/PROFIBUS DP master/slave interface, PROFIBUS DP master/slave interface, Ethernet/PROFINET interface; MMC required	6ES7318-3FL01-0AB0	
S7 Distributed Safety V5.4 SP5 Update 2 programming tool Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP Requirement: Windows 7 SP1 (64-bit) Windows 10 Professional/Enterprise (64-bit) Windows Server 2008 R2 SP1 (64-bit) Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit) STEP 7 from V5.5 SP1; Please also consider the operating systems that have been released for the used STEP 7 version Floating license for 1 user, software and documentation on DVD; license key on USB flash drive Floating license for 1 user, software, documentation and license key for download ¹⁾ ; Email address required for delivery	6ES7833-1FC02-0YA5 6ES7833-1FC02-0YH5	SIMATIC Micro Memory Card 64 KB 128 KB 512 KB 2 MB 4 MB 8 MB MPI cable For connection of SIMATIC S7 and PG via MPI; length 5 m Slot number plates 6ES7912-0AA00-0AA0 SIMATIC Manual Collection 6ES7998-8XC01-8YE0 Electronic manuals on DVD, multilingual: all manuals for S7-1200/1500/200/ 300/400, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering software, runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT SIMATIC Manual Collection update service for 1 year 6ES7998-8XC01-8YE2 Current Manual Collection DVD and the three subsequent updates Power supply connector 6ES7391-1AA00-0AA0 10 units, spare part USB A2 PC adapter 6GK1571-0BA00-0AA0 For connecting a programming device/PC or notebook to PROFIBUS or MPI; USB cable included in scope of delivery
S7 Distributed Safety upgrade From V5.x to V5.4; floating license for 1 user, software and documentation on DVD; license key on USB flash drive	6ES7833-1FC02-0YE5	

¹⁾ Up-to-date information and download availability can be found under
<http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-300 Advanced Controllers

Central processing units

Fail-safe CPUs

Ordering data

Article No.

Article No.

PROFIBUS bus components

PROFIBUS DP RS 485 bus connector

- With 90° cable outlet, max. transfer rate 12 Mbps
 - Without PG interface
 - With PG interface
- With 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbps
 - Without PG interface, 1 unit
 - Without PG interface, 100 units
 - With PG interface, 1 unit
 - With PG interface, 100 units
- With axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS

6ES7972-0BA12-0XA0
6ES7972-0BB12-0XA0

6ES7972-0BA52-0XA0
6ES7972-0BA52-0XB0
6ES7972-0BB52-0XA0
6ES7972-0BB52-0XB0
6GK1500-0EA02

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

6XV1830-0EH10

RS 485 repeater for PROFIBUS

Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure

6ES7972-0AA02-0XA0

PROFINET bus components

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

6XV1840-2AH10

FO standard cable GP (50/125)

Standard cable, splittable, UL approval, sold by the meter

6XV1873-2A

SCALANCE XC206-2 Industrial Ethernet switch

Manageable Layer 2 IE switch; IEC 62443-4-2 certified; 6x 100 Mbps RJ45 ports; 2x 100 Mbps ST/BFOC ports; 1x console port; diagnostics LED; redundant power supply; temperature range -40 °C to +70 °C; Mounting: DIN rail/S7 mounting rail/wall; redundancy functions; Office features (RSTP, VLAN, etc.); PROFINET IO device; Ethernet/IP-compliant C-plug slot.

6GK5206-2BB00-2AC2

CSM 377 compact switch module

Unmanaged switch for connecting SIMATIC S7-300, ET 200M and up to three other stations to Industrial Ethernet with 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module incl. electronic manual on CD-ROM

6GK7377-1AA00-0AA0

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 145

145° cable outlet
1 unit
10 units
50 units

6GK1901-1BB30-0AA0
6GK1901-1BB30-0AB0
6GK1901-1BB30-0AE0

IE FC RJ45 plug 180

180° cable outlet
1 unit
10 units
50 units

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

PROFIBUS/PROFINET bus components

For establishing MPI/PROFIBUS/PROFINET communication

See SiePortal

Technical specifications

Article number	6ES7315-6FF04-0AB0	6ES7315-2FJ14-0AB0	6ES7317-6FF04-0AB0	6ES7317-2FK14-0AB0	6ES7318-3FL01-0AB0
	CPU315F, 384KB	CPU315F-2 PN/DP, 512 KB	CPU317F-2DP, 1.5 MB	CPU317F-2 PN/DP, 1.5 MB	CPU319F-3 PN/DP, 2.5 MB
General information					
Product function					
• Isochronous mode	Yes	Yes; Via PROFIBUS DP or PROFINET interface		Yes; Via PROFIBUS DP or PROFINET interface	Yes; Via 2nd PROFIBUS DP or PROFINET interface
Engineering with					
• Programming package	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.2 + SP1 or higher with HSP 218 + Distributed Safety	STEP 7 V5.5 or higher, Distributed Safety V5.4 SP4	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.2 + SP1 or higher with HSP 202 + Distributed Safety	STEP 7 V5.5 or higher, Distributed Safety V5.4 SP4	STEP 7 V5.5 or higher, Distributed Safety V5.4 SP4
Supply voltage					
Rated value (DC)	24 V	24 V	24 V	24 V	24 V

SIMATIC S7-300 Advanced Controllers

Central processing units

Fail-safe CPUs

Technical specifications

Article number	6ES7315-6FF04-0AB0	6ES7315-2FJ14-0AB0	6ES7317-6FF04-0AB0	6ES7317-2FK14-0AB0	6ES7318-3FL01-0AB0
	CPU315F, 384KB	CPU315F-2 PN/DP, 512 KB	CPU317F-2DP, 1.5 MB	CPU317F-2 PN/DP, 1.5 MB	CPU319F-3 PN/DP, 2.5 MB
Memory					
Work memory					
• integrated	384 kbyte	512 kbyte	1 536 kbyte	1 536 kbyte	2 560 kbyte
• expandable	No	No	No	No	No
Load memory					
• Plug-in (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte	8 Mbyte	8 Mbyte
CPU processing times					
for bit operations, typ.	0.05 µs	0.05 µs	0.025 µs	0.025 µs	0.004 µs
for word operations, typ.	0.09 µs	0.09 µs	0.03 µs	0.03 µs	0.01 µs
for fixed point arithmetic, typ.	0.12 µs	0.12 µs	0.04 µs	0.04 µs	0.01 µs
for floating point arithmetic, typ.	0.45 µs	0.45 µs	0.16 µs	0.16 µs	0.04 µs
Counters, timers and their retentivity					
S7 counter					
• Number	256	256	512	512	2 048
IEC counter					
• present	Yes	Yes	Yes	Yes	Yes
S7 times					
• Number	256	256	512	512	2 048
IEC timer					
• present	Yes	Yes	Yes	Yes	Yes
Data areas and their retentivity					
Flag					
• Size, max.	2 048 byte	2 048 byte	4 096 byte	4 096 byte	8 192 byte
Address area					
I/O address area					
• Inputs	2 048 byte	2 048 byte	8 192 byte	8 192 byte	8 192 byte
• Outputs	2 048 byte	2 048 byte	8 192 byte	8 192 byte	8 192 byte
Process image					
• Inputs, adjustable	2 048 byte	2 048 byte	8 192 byte	8 192 byte	8 192 byte
• Outputs, adjustable	2 048 byte	2 048 byte	8 192 byte	8 192 byte	8 192 byte
Time of day					
Clock					
• Hardware clock (real-time)	Yes	Yes	Yes	Yes	Yes
Operating hours counter					
• Number	1	1	4	4	4
1. Interface					
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Interface types					
• RS 485	Yes	Yes	Yes	Yes	Yes
Protocols					
• MPI	Yes	Yes	Yes	Yes	Yes
• PROFIBUS DP master	No	Yes	Yes	Yes	Yes
• PROFIBUS DP slave	No	Yes	Yes; A DP slave at both interfaces simultaneously is not possible	Yes	Yes; A DP slave at both interfaces simultaneously is not possible
• Point-to-point connection	No	No	No	No	No
PROFIBUS DP master					
• Number of DP slaves, max.		124	124	124	124

SIMATIC S7-300 Advanced Controllers

Central processing units

Fail-safe CPUs

Technical specifications

Article number	6ES7315-6FF04-0AB0	6ES7315-2FJ14-0AB0	6ES7317-6FF04-0AB0	6ES7317-2FK14-0AB0	6ES7318-3FL01-0AB0
	CPU315F, 384KB	CPU315F-2 PN/DP, 512 KB	CPU317F-2DP, 1.5 MB	CPU317F-2 PN/DP, 1.5 MB	CPU319F-3 PN/DP, 2.5 MB
2. Interface					
Interface type	Integrated RS 485 interface	PROFINET	Integrated RS 485 interface	PROFINET	Integrated RS 485 interface
Interface types					
• RJ 45 (Ethernet)		Yes		Yes	
• RS 485	Yes		Yes		Yes
• Number of ports		2		2	
Protocols					
• MPI	No	No	No	No	No
• PROFINET IO Controller		Yes; Also simultaneously with IO-Device functionality		Yes; Also simultaneously with IO-Device functionality	No
• PROFINET IO Device		Yes; Also simultaneously with IO Controller functionality		Yes; Also simultaneously with IO Controller functionality	No
• PROFINET CBA		Yes		Yes	No
• PROFIBUS DP master	Yes	No	Yes	No	Yes
• PROFIBUS DP slave	Yes	No	Yes; A DP slave at both interfaces simultaneously is not possible	No	Yes; A DP slave at both interfaces simultaneously is not possible
PROFIBUS DP master					
• Number of DP slaves, max.	124; Per station		124		124
PROFINET IO Controller					
Services					
- Number of connectable IO Devices, max.		128		128	
- Of which IO devices with IRT, max.		64		64	
- Number of IO Devices with IRT and the option "high flexibility"		128		128	
- Number of connectable IO Devices for RT, max.		128		128	
3. Interface					
Interface type					PROFINET
Interface types					
• RJ 45 (Ethernet)					Yes
• Number of ports					2
Protocols					
• MPI					No
• PROFINET IO Controller					Yes; Also simultaneously with I-Device functionality
• PROFINET IO Device					Yes; Also simultaneously with IO Controller functionality
• PROFINET CBA					Yes
• PROFIBUS DP master					No
• PROFIBUS DP slave					No
PROFINET IO Controller					
Services					
- Number of connectable IO Devices, max.					256
- Of which IO devices with IRT, max.					64
- Number of IO Devices with IRT and the option "high flexibility"					256
- Number of connectable IO Devices for RT, max.					256

SIMATIC S7-300 Advanced Controllers

Central processing units

Fail-safe CPUs

Technical specifications

Article number	6ES7315-6FF04-0AB0	6ES7315-2FJ14-0AB0	6ES7317-6FF04-0AB0	6ES7317-2FK14-0AB0	6ES7318-3FL01-0AB0
	CPU315F, 384KB	CPU315F-2 PN/DP, 512 KB	CPU317F-2DP, 1.5 MB	CPU317F-2 PN/DP, 1.5 MB	CPU319F-3 PN/DP, 2.5 MB
Protocols					
Open IE communication					
• TCP/IP		Yes; via integrated PROFINET interface and loadable FBs		Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.		8		16	32
• ISO-on-TCP (RFC1006)		Yes; via integrated PROFINET interface and loadable FBs		Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.		8		16	32
• UDP		Yes; via integrated PROFINET interface and loadable FBs		Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.		8		16	32
Web server					
• supported		Yes; only read function		Yes	Yes
Communication functions					
PG/OP communication	Yes	Yes	Yes	Yes	Yes
Data record routing	Yes	Yes	Yes	Yes	Yes
Global data communication					
• supported	Yes	Yes	Yes	Yes	Yes
S7 basic communication					
• supported	Yes	Yes	Yes	Yes	Yes
S7 communication					
• supported	Yes	Yes	Yes	Yes	Yes
S5 compatible communication					
• supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
Number of connections					
• overall	16	16	32	32	32
Ambient conditions					
Ambient temperature during operation					
• min.	0 °C	0 °C	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C	60 °C	60 °C
Configuration					
Programming					
Programming language					
- LAD	Yes	Yes	Yes	Yes	Yes
- FBD	Yes	Yes	Yes	Yes	Yes
- STL	Yes	Yes	Yes	Yes	Yes
- SCL	Yes	Yes	Yes	Yes	Yes
- CFC	Yes	Yes	Yes	Yes	Yes
- GRAPH	Yes	Yes	Yes	Yes	Yes
- HiGraph®	Yes	Yes	Yes	Yes	Yes
Know-how protection					
• User program protection/ password protection	Yes	Yes	Yes	Yes	Yes
• Block encryption	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy
Dimensions					
Width	40 mm	40 mm	40 mm	40 mm	120 mm
Height	125 mm	125 mm	125 mm	125 mm	125 mm
Depth	130 mm	130 mm	130 mm	130 mm	130 mm
Weights					
Weight, approx.	290 g	340 g	360 g	340 g	1 250 g

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 fail-safe CPUs

Overview SIPLUS S7-300 CPU 315F-2 DP



- For configuring a fail-safe automation system for plants with increased safety requirements
- Complies with safety requirements up to SIL 3 according to IEC 61508 and up to Cat. 4 according to EN 954-1
- Distributed fail-safe I/O modules can be connected through the integral PROFIBUS DP interface (PROFIsafe)
- Fail-safe ET 200M I/O modules can also be connected centrally
- Central and distributed use of standard modules for non safety-oriented applications

Micro Memory Card required for operation of CPU.

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.

Overview SIPLUS S7-300 CPU 315F-2 PN/DP



- The CPU with medium-sized program memory and quantity structures for setting up a fail-safe automation system in plants with increased safety requirements
- Complies with safety requirements up to SIL 3 according to IEC 61508, PL e in accordance with ISO 13849 and up to Cat. 4 of EN 954-1
- The fail-safe I/O modules can be locally connected to the integrated PROFINET interface (PROFIsafe) and/or to the integrated PROFIBUS DP interface (PROFIsafe)
- Fail-safe ET 200M I/O modules can also be connected centrally
- Central and distributed use of standard modules for non safety-oriented applications
- Component-based Automation (CBA) on PROFINET
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET interface with 2-port switch
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)

Micro Memory Card required for operation of CPU

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.

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 fail-safe CPUs**Overview SIPLUS S7-300 CPU 317F-2 DP**

- The fail-safe CPU with a large program memory and quantity framework for demanding applications
- For configuring a fail-safe automation system for plants with increased safety requirements
- Complies with safety requirements up to SIL 3 according to IEC 61508 and up to Cat. 4 according to EN 954-1
- Fail-safe I/O modules can be connected in a distributed configuration to both integral PROFIBUS DP interfaces (PROFIsafe)
- Fail-safe ET 200M I/O modules can also be connected centrally
- Central and distributed use of standard modules for non safety-oriented applications

Micro Memory Card required for operation of CPU.

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.

Overview SIPLUS S7-300 CPU 317F-2 PN/DP

- The fail-safe CPU with a large program memory and quantity structures for demanding applications to build a fail-safe automation system for plants with increased safety requirements
- Complies with safety requirements up to SIL 3 according to IEC 61508, PL e in accordance with ISO 13849-1 and up to category 4 of EN 954-1
- Distributed fail-safe I/O modules can be locally connected via the integrated PROFINET interface (PROFIsafe) and/or via the integrated PROFIBUS DP interface (PROFIsafe)
- Fail-safe ET 200M I/O modules can also be connected centrally
- Central and distributed use of standard modules for non safety-oriented applications
- Component-based Automation (CBA) on PROFINET
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET interface with 2-port switch
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)

SIMATIC Micro Memory Card required for operation of CPU.

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.

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 fail-safe CPUs

Ordering data

Article No.

Article No.

SIPLUS S7-300 CPU 315F-2 DP

For industrial applications with extended ambient conditions

CPU for SIPLUS S7-300F;
384 KB work memory,
supply voltage 24 V DC, MPI,
PROFIBUS DP master/slave
interface; incl. slot number labels;
MMC required

Extended temperature range and
exposure to environmental
substances

6AG1315-6FF04-2AB0

SIPLUS S7-300 CPU 315F-2 PN/DP

For industrial applications with extended ambient conditions

CPU for SIPLUS S7-300F;
512 KB work memory,
supply voltage 24 V DC,
MPI/PROFIBUS DP master/slave
interface, Industrial Ethernet/
PROFINET interface;
incl. slot number labels

Extended temperature range and
exposure to environmental
substances

6AG1315-2FJ14-2AB0

SIPLUS S7-300 CPU 317F-2 DP

For industrial applications with extended ambient conditions

CPU for SIPLUS S7-300F,
1.5 MB work memory,
supply voltage 24 V DC, MPI,
PROFIBUS DP master/slave
interface; MMC required

Extended temperature range and
exposure to environmental
substances

6AG1317-6FF04-2AB0

SIPLUS S7-300 CPU 317F-2 PN/DP

For industrial applications with extended ambient conditions

CPU for SIPLUS S7-300F,
1.5 MB work memory,
supply voltage 24 V DC,
MPI/PROFIBUS DP master/slave
interface; Industrial Ethernet/
PROFINET interface;
MMC required

Extended temperature range and
exposure to environmental
substances

6AG1317-2FK14-2AB0

Accessories

Mandatory

SIMATIC Micro Memory Card

64 KB

128 KB

512 KB

2 MB

4 MB

8 MB

6ES7953-8LF31-0AA0

6ES7953-8LG31-0AA0

6ES7953-8LJ31-0AA0

6ES7953-8LL31-0AA0

6ES7953-8LM32-0AA0

6ES7953-8LP31-0AA0

For communication within the application

PROFIBUS DP RS 485 bus connector

(Extended temperature range and exposure to environmental substances)

With 90° cable outlet, max. transfer rate 12 Mbps

- Without PG interface
- With PG interface

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

With angled cable outlet, max. transfer rate 12 Mbps

- Without PG interface
- With PG interface

6AG1972-0BA42-7XA0
6AG1972-0BB42-7XA0

(Extended temperature range)

With axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS

6AG1500-0EA02-2AA0

RS 485 repeater for PROFIBUS

(Extended temperature range and exposure to environmental substances)

Transmission rate up to 12 Mbps;
24 V DC; IP20 enclosure

6AG1972-0AA02-7XA0

IE FC RJ45 plug 180

(Extended temperature range and exposure to environmental substances)

180° cable outlet

- 1 unit

6AG1901-1BB10-7AA0

SIPLUS SCALANCE XC-200 Industrial Ethernet switches

Industrial Ethernet switches with integrated SNMP access, web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager; incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM

Extended temperature range and exposure to environmental substances

Switches with PROFINET delivery state

- SIPLUS SCALANCE XC206-2 (ST/BFOC)

with six RJ45 ports 10/100 Mbps and two ST/BFOC ports 100 Mbps

6AG1206-2BB00-7AC2

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

6XV1830-0EH10

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

6XV1840-2AH10

FO standard cable GP (50/125)

6XV1873-2A

Ordering data	Article No.		Article No.
<i>For commissioning</i>		<i>Consumables</i>	
MPI cable	6ES7901-0BF00-0AA0	Power supply connector	6ES7391-1AA00-0AA0
For connection of SIMATIC S7 and PG via MPI; length 5 m		10 units, spare part	
USB A2 PC adapter	6GK1571-0BA00-0AA0	Slot number plates	6ES7912-0AA00-0AA0
For connecting a programming device/PC or Notebook to PROFIBUS or MPI; USB cable included in scope of delivery		<i>Documentation</i>	
S7 Distributed Safety V5.4 SP5 Update 2 programming tool		SIMATIC Manual Collection	6ES7998-8XC01-8YE0
Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP Requirement: Windows 7 SP1 (64-bit) Windows 10 Professional/Enterprise (64-bit) Windows Server 2008 R2 SP1 (64-bit) Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit) STEP 7 from V5.5 SP1; Please also consider the operating systems that have been released for the used STEP 7 version		Electronic manuals on DVD, multilingual: all manuals for S7-1200/1500/200/300/400, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering software, runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT	
Floating license for 1 user; software and documentation on DVD; license key on USB flash drive	6ES7833-1FC02-0YA5	SIMATIC Manual Collection update service for 1 year	6ES7998-8XC01-8YE2
Floating license for 1 user, software, documentation and license key for download ¹⁾ ; Email address required for delivery	6ES7833-1FC02-0YH5	Current Manual Collection DVD and the three subsequent updates	
S7 Distributed Safety upgrade			
From V5.x to V5.4; floating license for 1 user; software and documentation on DVD; license key on USB flash drive	6ES7833-1FC02-0YE5		
STEP 7 Safety Advanced V18			
Task: Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco I/O Requirement: STEP 7 Professional V18 <u>Note:</u> As of TIA Portal V16, the SIMATIC STEP 7 Safety software is an integral component of the SIMATIC STEP 7 product setup. The functionality of SIMATIC STEP 7 Safety is activated by means of the license key supplied in each case			
Floating license for 1 user; license key on USB flash drive	6ES7833-1FA18-0YA5		
Floating license for 1 user, license key for download ¹⁾ , email address required for delivery	6ES7833-1FA18-0YH5		

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 fail-safe CPUs

Technical specifications

Article number	6AG1315-6FF04-2AB0	6AG1315-2FJ14-2AB0
Based on	6ES7315-6FF04-0AB0 SIPLUS S7-300 CPU 315F-2DP	6ES7315-2FJ14-0AB0 SIPLUS S7-300 CPU315F-2PN/DP
Ambient conditions		
Ambient temperature during operation		
• min.	-25 °C	-25 °C; = Tmin
• max.	60 °C	60 °C; = Tmax
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
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!

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 fail-safe CPUs

Technical specifications

Article number	6AG1317-6FF04-2AB0	6AG1317-2FK14-2AB0
Based on	6ES7317-6FF04-0AB0 SIPLUS S7-300 CPU317F-2DP	6ES7317-2FK14-0AB0 SIPLUS S7-300 CPU317F-2PN/DP
Ambient conditions		
Ambient temperature during operation		
• min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax	60 °C; = Tmax
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
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!

SIMATIC S7-300 Advanced Controllers

Central processing units

Technology CPUs

Overview CPU 315T-3 PN/DP



- SIMATIC CPU with integral technology/Motion Control functionality
- With full standard CPU 315-2 PN/DP functionality (except for CBA)
- For cross-industry automation tasks in series machine, special machine and plant construction
- Ideal for synchronized motion, such as coupling to a virtual/real master, gear synchronization, cam disk, path interpolation, or print mark correction
- 3D path interpolation with different kinematics
- Position and pressure-regulated hydraulic axes
- Used as central controller in production lines with central and distributed I/O
- With integrated I/O for high-speed technology functions (e.g. camming, reference point acquisition)
- PROFIBUS DP (DRIVE) interface for isochronous connection of drive components
- PROFINET interface with 2-port switch
- PROFINET I/O controller for the operation of distributed I/O on PROFINET
- One common S7 user program for control and Motion Control tasks (no additional programming language necessary for Motion Control)
- "S7 Technology" option package required (version V4.2 SP3 and higher)

SIMATIC Micro Memory Card (8 MB) required for operation of the CPU.

Overview CPU 317T-3 PN/DP



- SIMATIC CPU with integral technology/Motion Control functionality
- With full standard CPU 317-2 PN/DP functionality (except for CBA)
- For cross-industry automation tasks in series machine, special machine and plant construction
- Ideal for synchronized motion, such as coupling to a virtual/real master, gear synchronization, cam disk, path interpolation, or print mark correction
- 3D path interpolation with different kinematics
- Position and pressure-regulated hydraulic axes
- Used as central controller in production lines with central and distributed I/O
- With integrated I/O for high-speed technology functions (e.g. camming, reference point acquisition)
- PROFIBUS DP (DRIVE) interface for isochronous connection of drive components
- PROFINET interface with 2-port switch
- PROFINET I/O controller for the operation of distributed I/O on PROFINET
- One common S7 user program for control and Motion Control tasks (no additional programming language necessary for Motion Control)
- "S7 Technology" option package required (version V4.2 SP3 and higher)

SIMATIC Micro Memory Card (8 MB) required for operation of the CPU.

SIMATIC S7-300 Advanced Controllers

Central processing units

Technology CPUs

Overview CPU 317TF-3 PN/DP



- Fail-safe SIMATIC CPU 317TF-3 PN/DP with integral technology/Motion Control functionality
- Spare-part-compatible successor to the CPU 317TF-2 DP (Article No. 6ES7317-6TF14-0AB0)
- With full standard CPU 317-2 PN/DP and CPU 317F-2 PN/DP functionality (except for CBA)
- For cross-industry automation tasks in series machine, special machine and plant construction

- Ideal for synchronized motion, such as coupling to a virtual/real master, gear synchronization, cam disk, path interpolation, or print mark correction
- 3D path interpolation with different kinematics
- Position and pressure-regulated hydraulic axes
- Used as central controller in production lines with central and distributed I/O
- With integrated I/O for high-speed technology functions (e.g. camming, reference point acquisition)
- PROFIBUS DP (DRIVE) interface for isochronous connection of drive components
- PROFINET interface with 2-port switch
- PROFINET I/O controller for the operation of distributed I/O on PROFINET
- One common S7 user program for control and Motion Control tasks (no additional programming language necessary for Motion Control)
- "S7 Technology" option package required
- "S7 Distributed Safety" option package required (version V4.2 SP3 and higher)

SIMATIC Micro Memory Card (8 MB) required for operation of the CPU.

5

Ordering data

Article No.

Article No.

CPU 315T-3 PN/DP

384 KB work memory, 24 V DC supply voltage, MPI, PROFIBUS DP master/slave interface, PROFIBUS DP(DRIVE) interface, Ethernet/PROFINET interface with 2-port switch; with technology/Motion Control functions; MMC required

6ES7315-7TJ10-0AB0

CPU 317T-3 PN/DP

1024 KB work memory, supply voltage 24 V DC, MPI, PROFIBUS DP master/slave interface, PROFIBUS DP(DRIVE) interface, Ethernet/PROFINET interface with 2-port switch; with technology/Motion Control functions; MMC required

6ES7317-7TK10-0AB0

CPU 317TF-3 PN/DP

1.5 MB work memory, 24 V DC supply voltage, MPI, PROFIBUS DP master/slave interface, PROFIBUS DP(DRIVE) interface, Ethernet/PROFINET interface with 2-port switch; with technology/Motion Control functions; MMC required

6ES7317-7UL10-0AB0

S7 Technology V4.2

Task:
Option package for configuring and programming technology tasks with SIMATIC S7 CPU 31xT and SIMATIC S7 CPU 317TF

Requirement:
STEP 7 V5.6 and higher

Type of delivery:
On DVD
Incl. documentation for CPU 31xT, CPU 317TF (included on DVD)

Floating license

Floating license for 1 user, license key download without software or documentation¹⁾; email address required for delivery

6ES7864-1CC42-0YA5

6ES7864-1CC42-0XH5

¹⁾ Up-to-date information and download availability can be found under <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-300 Advanced Controllers

Central processing units

Technology CPUs

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Ordering data

Article No.

S7 Distributed Safety V5.4 SP5 Update 2 programming tool

Task:
Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP

Requirement:
Windows 7 SP1 (64-bit), Windows 10 Professional/Enterprise (64-bit), Windows Server 2008 R2 SP1 (64-bit), Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit); STEP 7 from V5.5 SP1; Please also note the operating systems that have been released for the STEP 7 version used

Floating license for 1 user, software and documentation on DVD; license key on USB flash drive

Floating license for 1 user, software, documentation and license key for download¹⁾; Email address required for delivery

6ES7833-1FC02-0YA5

6ES7833-1FC02-0YH5

S7 Distributed Safety upgrade

From V5.x to V5.4; floating license for 1 user, software and documentation on DVD; license key on USB flash drive

6ES7833-1FC02-0YE5

SIMATIC Micro Memory Card

8 MB

6ES7953-8LP31-0AA0

MPI cable

For connection of SIMATIC S7 and PG via MPI; length 5 m

6ES7901-0BF00-0AA0

Front connectors

40-pin, with screw connections

- 1 unit
- 100 units

6ES7392-1AM00-0AA0

6ES7392-1AM00-1AB0

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0

6ES7392-1BM01-1AB0

Slot number plates

6ES7912-0AA00-0AA0

SIMATIC Manual Collection

Electronic manuals on DVD, multilingual:
all manuals for S7-1200/1500/200/300/400, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering software, runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT

6ES7998-8XC01-8YE0

SIMATIC Manual Collection update service for 1 year

Current Manual Collection DVD and the three subsequent updates

6ES7998-8XC01-8YE2

Article No.

Power supply connector

10 units, spare part

6ES7391-1AA00-0AA0

Labeling strips

10 units, spare part

6ES7392-2XX00-0AA0

Label cover

10 units, spare part

6ES7392-2XY00-0AA0

Labeling sheets for machine inscription

For modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units

Petrol

6ES7392-2AX10-0AA0

Light beige

6ES7392-2BX10-0AA0

Yellow

6ES7392-2CX10-0AA0

Red

6ES7392-2DX10-0AA0

USB A2 PC adapter

For connecting a programming device/PC or notebook to PROFIBUS or MPI; USB cable included in scope of delivery

6GK1571-0BA00-0AA0

PROFIBUS bus components

PROFIBUS DP RS 485 bus connector

- With 90° cable outlet, max. transfer rate 12 Mbps
 - Without PG interface
 - With PG interface

6ES7972-0BA12-0XA0

6ES7972-0BB12-0XA0

- With 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbps
 - Without PG interface, 1 unit
 - Without PG interface, 100 units
 - With PG interface, 1 unit
 - With PG interface, 100 units

6ES7972-0BA52-0XA0

6ES7972-0BA52-0XB0

6ES7972-0BB52-0XA0

6ES7972-0BB52-0XB0

6GK1500-0EA02

- With axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS

PROFIBUS FastConnect bus cable

6XV1830-0EH10

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

RS 485 repeater for PROFIBUS

6ES7972-0AA02-0XA0

Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure

¹⁾ Up-to-date information and download availability can be found under <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-300 Advanced Controllers

Central processing units

Technology CPUs

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Ordering data	Article No.	Article No.
PROFINET bus components		
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	6XV1840-2AH10	
FO standard cable GP (50/125) Standard cable, splittable, UL approval, sold by the meter	6XV1873-2A	
SCALANCE XC206-2 Industrial Ethernet switch Manageable Layer 2 IE switch; IEC 62443-4-2 certified; 6x 100 Mbps RJ45 ports; 2x 100 Mbps ST/BFOC ports; 1x console port; diagnostics LED; redundant power supply; temperature range -40 °C to +70 °C; Mounting: DIN rail/S7 mounting rail/wall; redundancy functions; Office features (RSTP, VLAN, etc.); PROFINET IO device; Ethernet/IP-compliant C-plug slot.	6GK5206-2BB00-2AC2	
CSM 377 compact switch module Unmanaged switch for connecting SIMATIC S7-300, ET 200M and up to three other stations to Industrial Ethernet with 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module incl. electronic manual on CD-ROM	6GK7377-1AA00-0AA0	
		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
		PROFIBUS/PROFINET bus components For establishing MPI/PROFIBUS/PROFINET communication
		6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0 See SiePortal

Technical specifications

Article number	6ES7315-7TJ10-0AB0 CPU315T-3 PN/DP, 384KB	6ES7317-7TK10-0AB0 CPU317T-3 PN/DP, 1024KB	6ES7317-7UL10-0AB0 CPU317TF-3 PN/DP, 1.5 MB
General information			
Product function • Isochronous mode	Yes; Via PROFIBUS DP or PROFINET interface	Yes; Via PROFIBUS DP or PROFINET interface	Yes; Via PROFIBUS DP or PROFINET interface
Engineering with • Programming package	STEP 7 V5.5 SP2 or higher and S7-Technology option package V4.2 SP3	STEP 7 V5.5 SP2 or higher and S7-Technology option package V4.2 SP3	STEP 7 V5.5 SP2 or higher; S7-Technology option package V4.2 SP3 or higher, Distributed Safety V5.4 SP5 or higher, S7-F Configuration Pack V5.5 SP10 or higher
Supply voltage			
Rated value (DC)	24 V	24 V	24 V
Memory			
Work memory • integrated • expandable	384 kbyte No	1 024 kbyte No	1 536 kbyte No
Load memory • Plug-in (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte
CPU processing times for bit operations, typ. for word operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ.	0.05 µs 0.09 µs 0.12 µs 0.45 µs	0.025 µs 0.03 µs 0.04 µs 0.16 µs	0.025 µs 0.03 µs 0.04 µs 0.16 µs
Counters, timers and their retentivity			
S7 counter • Number	256	512	512
IEC counter • present	Yes	Yes	Yes

SIMATIC S7-300 Advanced Controllers

Central processing units

Technology CPUs

Technical specifications

Article number	6ES7315-7TJ10-0AB0 CPU315T-3 PN/DP, 384KB	6ES7317-7TK10-0AB0 CPU317T-3 PN/DP, 1024KB	6ES7317-7UL10-0AB0 CPU317TF-3 PN/DP, 1.5 MB
S7 times			
• Number	256	512	512
IEC timer			
• present	Yes	Yes	Yes
Data areas and their retentivity			
Flag			
• Size, max.	2 048 byte	4 096 byte	4 096 byte
Address area			
I/O address area			
• Inputs	2 048 byte	8 192 byte	8 192 byte
• Outputs	2 048 byte	8 192 byte	8 192 byte
Process image			
• Inputs, adjustable	2 048 byte	8 192 byte	8 192 byte
• Outputs, adjustable	2 048 byte	8 192 byte	8 192 byte
Time of day			
Clock			
• Hardware clock (real-time)	Yes	Yes	Yes
Operating hours counter			
• Number	1	4	4
Digital outputs			
Integrated high-speed cams			
• Switching accuracy (+/-)	70 µs	70 µs	70 µs
1. Interface			
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Interface types			
• RS 485	Yes	Yes	Yes
Protocols			
• MPI	Yes	Yes	Yes
• PROFIBUS DP master	Yes	Yes	Yes
• PROFIBUS DP slave	Yes	Yes	Yes
• Point-to-point connection	No	No	No
PROFIBUS DP master			
• Number of DP slaves, max.	124	124	124
2. Interface			
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Interface types			
• RS 485	Yes	Yes	Yes
Protocols			
• MPI	No	No	No
• PROFIBUS DP master	Yes; DP(DRIVE)-Master	Yes; DP(DRIVE)-Master	Yes; DP(DRIVE)-Master
• PROFIBUS DP slave	No	No	No
PROFIBUS DP master			
• Number of DP slaves, max.	64	64	64
3. Interface			
Interface type	PROFINET	PROFINET	PROFINET
Interface types			
• RJ 45 (Ethernet)	Yes	Yes	Yes
• Number of ports	2	2	2
Protocols			
• MPI	No	No	No
• PROFINET IO Controller	Yes; Also simultaneously with IO-Device functionality	Yes; Also simultaneously with IO-Device functionality	Yes; Also simultaneously with IO-Device functionality
• PROFINET IO Device	Yes; Also simultaneously with IO Controller functionality	Yes; Also simultaneously with IO Controller functionality	Yes; Also simultaneously with IO Controller functionality
• PROFIBUS DP master	No	No	No
• PROFIBUS DP slave	No	No	No

SIMATIC S7-300 Advanced Controllers

Central processing units

Technology CPUs

Technical specifications

Article number	6ES7315-7TJ10-0AB0 CPU315T-3 PN/DP, 384KB	6ES7317-7TK10-0AB0 CPU317T-3 PN/DP, 1024KB	6ES7317-7UL10-0AB0 CPU317TF-3 PN/DP, 1.5 MB
PROFINET IO Controller			
Services			
- Number of connectable IO Devices, max.	128	128	128
- Of which IO devices with IRT, max.	64	64	64
- Number of connectable IO Devices for RT, max.	128	128	128
Protocols			
Open IE communication			
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	8	16	16
• ISO-on-TCP (RFC1006)	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	8	16	16
• UDP	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	8	16	16
Web server			
• supported	Yes	Yes	Yes
Communication functions			
PG/OP communication	Yes	Yes	Yes
Data record routing	Yes	Yes	Yes
Global data communication			
• supported	Yes	Yes	Yes
S7 basic communication			
• supported	Yes	Yes	Yes
S7 communication			
• supported	Yes	Yes	Yes
S5 compatible communication			
• supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
Number of connections			
• overall	16	32	32
Ambient conditions			
Ambient temperature during operation			
• min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C
Configuration			
Programming			
Programming language			
- LAD	Yes	Yes	Yes
- FBD	Yes	Yes	Yes
- STL	Yes	Yes	Yes
- SCL	Yes	Yes	Yes
- CFC	Yes	Yes	Yes
- GRAPH	Yes	Yes	Yes
- HiGraph®	Yes	Yes	Yes
Know-how protection			
• User program protection/ password protection	Yes	Yes	Yes
• Block encryption	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy
Dimensions			
Width	120 mm	120 mm	120 mm
Height	125 mm	125 mm	125 mm
Depth	130 mm	130 mm	130 mm
Weights			
Weight, approx.	640 g	640 g	640 g

SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

SM 321 digital input modules

Overview



- Digital inputs
- For connecting standard switches and two-wire proximity switches (BEROs)

Ordering data

SM 321 digital input modules

Incl. labeling strips, bus connector

16 inputs, 24 V DC

16 inputs, 24 V DC, sourcing input

32 inputs, 24 V DC

64 inputs, 24 V DC, sourcing-sinking input

Note:

6ES7392-4...0-0AA0 connecting cable and 6ES7392-1.N00-0AA0 terminal blocks necessary.

16 inputs, 24 to 48 V DC

16 inputs, 48 to 125 V DC

16 inputs, 24 V DC, for isochronous mode

32 inputs, 120 V AC

8 inputs, 120/230 V AC

8 inputs, 120/230 V AC, single root

16 inputs, 120/230 V AC

16 inputs, 24 V DC, for isochronous mode, diagnostics-capable

Front connectors

20-pin, with screw contacts

- 1 unit
- 100 units

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

40-pin, with screw contacts

- 1 unit
- 100 units

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

Article No.

6ES7321-1BH02-0AA0

6ES7321-1BH50-0AA0

6ES7321-1BL00-0AA0

6ES7321-1BP00-0AA0

6ES7321-1CH00-0AA0

6ES7321-1CH20-0AA0

6ES7321-1BH10-0AA0

6ES7321-1EL00-0AA0

6ES7321-1FF01-0AA0

6ES7321-1FF10-0AA0

6ES7321-1FH00-0AA0

6ES7321-7BH01-0AB0

6ES7392-1AJ00-0AA0

6ES7392-1AJ00-1AB0

6ES7392-1BJ00-0AA0

6ES7392-1BJ00-1AB0

6ES7392-1AM00-0AA0

6ES7392-1AM00-1AB0

6ES7392-1BM01-0AA0

6ES7392-1BM01-1AB0

Article No.

S7-300 connecting cable

For 64-channel modules; 2 units

1 m

2.5 m

5 m

Terminal block

For 64-channel modules; 2 units

With screw contacts

With spring-loaded contacts

Front door, elevated design

e.g. for 32-channel modules; for connecting 1.3 mm²/16 AWG conductors; cabling diagram and labeling strips in petrol

SIMATIC TOP connect

See page 5/237

Bus connectors

1 unit (spare part)

Labeling strips

10 units (spare part)

For modules with 20-pin front connector

For modules with 40-pin front connector

Label cover

10 units (spare part)

For modules with 20-pin front connector

For modules with 40-pin front connector

6ES7392-4BB00-0AA0

6ES7392-4BC50-0AA0

6ES7392-4BF00-0AA0

6ES7392-1AN00-0AA0

6ES7392-1BN00-0AA0

6ES7328-0AA00-7AA0

6ES7390-0AA00-0AA0

6ES7392-2XX00-0AA0

6ES7392-2XX10-0AA0

6ES7392-2XY00-0AA0

6ES7392-2XY10-0AA0

SIMATIC S7-300 Advanced Controllers

I/O modules
Digital modules

SM 321 digital input modules

Ordering data

Article No.

Article No.

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

For modules with 40-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

6ES7392-2AX10-0AA0

6ES7392-2BX10-0AA0

6ES7392-2CX10-0AA0

6ES7392-2DX10-0AA0

SIMATIC Manual Collection

Electronic manuals on DVD, multilingual:
all manuals for
S7-1200/1500/200/300/400,
LOGO!, SIMATIC DP, PC, PG,
STEP 7, Engineering software,
runtime SW, SIMATIC HMI,
SIMATIC NET, SIMATIC IDENT

6ES7998-8XC01-8YE0

SIMATIC Manual Collection
update service for 1 year

Current Manual Collection DVD and the three subsequent updates

6ES7998-8XC01-8YE2

Technical specifications

Article number	6ES7321-1BH02-0AA0	6ES7321-1BH50-0AA0	6ES7321-1BL00-0AA0	6ES7321-1BP00-0AA0	6ES7321-1BH10-0AA0
	SM321, 16DI, DC24V	SM321, 16DI, DC24V, Source Input	SM321, 32DI, DC24V	SM321, 64 DI, DC 24V, 3MS, P/M reading	SM321, 16DI, DC24V, 0.05ms Input Delay.
Supply voltage					
Load voltage L+					
• Rated value (DC)	24 V	24 V	24 V	24 V	24 V
Input current					
from backplane bus 5 V DC, max.	10 mA	10 mA	15 mA	100 mA	110 mA
Power loss					
Power loss, typ.	3.5 W	3.5 W	6.5 W	7 W	3.8 W
Digital inputs					
Number of digital inputs	16	16	32	64	16
Input characteristic curve in accordance with IEC 61131, type 1	Yes	Yes	Yes	Yes	Yes
Input voltage					
• Type of input voltage	DC	DC	DC	DC	DC
• Rated value (DC)	24 V	24 V	24 V	24 V	24 V
• for signal "0"	-30 to +5 V	-5 to +30V	-30 to +5 V	-30 to +5 V	-30 to +5 V
• for signal "1"	13 to 30V	-13 to -30V	13 to 30V	13 to 30V	13 to 30V
Input current					
• for signal "1", typ.	7 mA	7 mA	7 mA	4.2 mA	7 mA
Input delay (for rated value of input voltage)					
for standard inputs					
- parameterizable	No	No	No	No	No
- at "0" to "1", min.	1.2 ms	1.2 ms	1.2 ms	1.2 ms	25 µs
- at "0" to "1", max.	4.8 ms	4.8 ms	4.8 ms	4.8 ms	75 µs
Cable length					
• shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m

SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

SM 321 digital input modules

Technical specifications

Article number	6ES7321-1BH02-0AA0	6ES7321-1BH50-0AA0	6ES7321-1BL00-0AA0	6ES7321-1BP00-0AA0	6ES7321-1BH10-0AA0
	SM321, 16DI, DC24V	SM321, 16DI, DC24V, Source Input	SM321, 32DI, DC24V	SM321, 64 DI, DC 24V, 3MS, P/M reading	SM321, 16DI, DC24V, 0.05ms Input Delay.
Encoder					
Connectable encoders					
• 2-wire sensor	Yes	Yes	Yes	No	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA	1.5 mA		1.5 mA
Interrupts/diagnostics/status information					
Alarms	No	No	No	No	No
Diagnostics function	No	No	No	No	No
Alarms					
• Diagnostic alarm	No	No	No	No	No
• Hardware interrupt	No	No	No	No	No
Connection method					
required front connector	20-pin	20-pin	40-pin	Cable: 6ES7392-4Bxx0-0AA0 terminal blocks: 6ES7392-1xN00-0AA0	20-pin
Dimensions					
Width	40 mm	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm	112 mm	120 mm
Weights					
Weight, approx.	200 g	200 g	260 g	230 g	200 g

Article number	6ES7321-7BH01-0AB0	6ES7321-1CH00-0AA0	6ES7321-1CH20-0AA0	6ES7321-1FH00-0AA0
	SM321, 16DI, 24V DC	SM321, 16 DI, AC/DC 24-48V, 1ch/common	SM321, 16DI, DC48-125V	SM321, 16 DI, 120/230V AC
Supply voltage				
Load voltage L+				
• Rated value (DC)	24 V	24 V	48 V	
Load voltage L1				
• Rated value (AC)		24 V		230 V; 120/230 V AC; all load voltages must have the same phase.
Input current				
from load voltage L+ (without load), max.	90 mA			
from backplane bus 5 V DC, max.	130 mA	100 mA	40 mA	29 mA
Encoder supply				
Number of outputs	2			
Output current				
• Rated value	120 mA			
Power loss				
Power loss, typ.	4 W	1.5 W; at 24 V; 2,8 W at 48 V	4.3 W	4.9 W
Digital inputs				
Number of digital inputs	16	16	16	16
Input characteristic curve in accordance with IEC 61131, type 1		Yes	Yes	Yes
Input characteristic curve in accordance with IEC 61131, type 2	Yes			
Input voltage				
• Type of input voltage	DC	AC/DC	DC	AC
• Rated value (DC)	24 V	24 V; DC 24 or 48 V	48 V; 48 V DC to 125 V DC	
• Rated value (AC)		24 V; 24 V AC or 48 V AC (0 ... 63 Hz)		230 V; 120/230 V AC (47 ... 63 Hz)
• for signal "0"	-30 to +5 V	-5V AC to +5V AC	-146 V DC to +15 V DC	0 to 40V
• for signal "1"	13 to 30V	14V AC to 60V AC	30 V DC to 146 V DC	79 to 264V
Input current				
• for signal "1", typ.	7 mA	2.7 mA	3.5 mA	6.5 mA; (120 V, 60 Hz), 16 mA (230 V, 50 Hz)

Technical specifications

Article number	6ES7321-7BH01-0AB0 SM321, 16DI, 24V DC	6ES7321-1CH00-0AA0 SM321, 16 DI, AC/DC 24-48V, 1ch/common	6ES7321-1CH20-0AA0 SM321, 16DI, DC48-125V	6ES7321-1FH00-0AA0 SM321, 16 DI, 120/230V AC
Input delay (for rated value of input voltage) for standard inputs				
- parameterizable	Yes; 0.1 / 0.5 / 3 / 15 / 20 ms	No	No	No
- at "0" to "1", min.		16 ms	0.1 ms	25 ms
- at "0" to "1", max.		16 ms	3.5 ms	25 ms
Cable length				
• shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m
Encoder				
Connectable encoders				
• 2-wire sensor	Yes	Yes	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	2 mA	1 mA	1 mA	2 mA
Interrupts/diagnostics/ status information				
Alarms	Yes	No	No	No
Diagnostics function	Yes; Parameterizable	No	No	No
Alarms				
• Diagnostic alarm	Yes; Parameterizable	No	No	No
• Hardware interrupt	Yes; Parameterizable	No	No	No
Connection method				
required front connector	20-pin	40-pin	20-pin	20-pin
Dimensions				
Width	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm	120 mm
Weights				
Weight, approx.	200 g	260 g	200 g	240 g

Article number	6ES7321-1EL00-0AA0 SM321, 32DI, AC120V	6ES7321-1FF01-0AA0 SM321, 8DI, AC120/230V	6ES7321-1FF10-0AA0 SM321, 8 DI, AC/DC 120/230V, 1ch/common
Supply voltage			
Load voltage L1			
• Rated value (AC)	120 V	230 V; 120/230 V AC	230 V; 120/230 V AC; all load voltages must have the same phase.
Input current			
from backplane bus 5 V DC, max.	16 mA	29 mA	100 mA
Power loss			
Power loss, typ.	4 W	4.9 W	4.9 W
Digital inputs			
Number of digital inputs	32	8	8
Input characteristic curve in accordance with IEC 61131, type 1		Yes	Yes
Input characteristic curve in accordance with IEC 61131, type 2	Yes		
Input voltage			
• Type of input voltage	AC	AC	AC
• Rated value (AC)	120 V; 47 ... 63 Hz	230 V; 120/230 V AC (47 ... 63 Hz)	120 V; 120/230 V AC (47 ... 63 Hz)
• for signal "0"	0 to 20V	0 to 40V	0 to 40V
• for signal "1"	74 to 132V	79 to 264V	79 to 264V
Input current			
• for signal "1", typ.	21 mA	6.5 mA; (120 V); 11 mA (230 V)	7.5 mA; (120 V); 17.3 mA (230 V)
Input delay (for rated value of input voltage) for standard inputs			
- parameterizable	No	No	No
- at "0" to "1", max.	15 ms	25 ms	25 ms
Cable length			
• shielded, max.	1 000 m	1 000 m	1 000 m

SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

SM 321 digital input modules**Technical specifications**

Article number	6ES7321-1EL00-0AA0 SM321, 32DI, AC120V	6ES7321-1FF01-0AA0 SM321, 8DI, AC120/230V	6ES7321-1FF10-0AA0 SM321, 8 DI, AC/DC 120/230V, 1ch/common
Encoder			
Connectable encoders			
2-wire sensor - permissible quiescent current (2-wire sensor), max.	Yes 4 mA	Yes 2 mA	Yes 2 mA
Interrupts/diagnostics/ status information			
Alarms	No	No	No
Diagnostics function	No	No	No
Alarms			
- Diagnostic alarm - Hardware interrupt	No No	No No	No No
Connection method			
required front connector	40-pin	20-pin	40-pin
Dimensions			
Width	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm
Weights			
Weight, approx.	300 g	240 g	240 g

Overview



- Digital outputs
- For connecting solenoid valves, contactors, small-power motors, lamps and motor starters

Ordering data

SM 322 digital output modules

Incl. labeling strips, bus connector

8 outputs, 24 V DC, 2 A

16 outputs, 24 V DC, 0.5 A

16 outputs, 24 V DC, 0.5 A, high speed

32 outputs, 24 V DC, 0.5 A

64 outputs, 24 V DC, 0.3 A

Note:

6ES7392-4...0-0AA0 connecting cable and 6ES7392-1.N00-0AA0 terminal blocks necessary.

64 outputs, 24 V DC, 0.3 A, sinking output

Note:

6ES7392-4...0-0AA0 connecting cable and 6ES7392-1.N00-0AA0 terminal blocks necessary.

8 outputs, 24 V DC, 0.5 A, diagnostics-capable

16 outputs, 24/48 V DC, 0.5 A

8 outputs, 48 to 125 V DC, 1.5 A

8 outputs, 120/230 V AC, 1 A

8 outputs, 120/230 V AC, 2 A

16 outputs, 120/230 V AC, 1 A

32 outputs, 120 V AC, 1 A

8 outputs, relay contacts, 2 A

8 outputs, relay contacts, 5 A

8 outputs, relay contacts, 5 A, with RC filter, overvoltage protection

16 outputs, relay contacts, 8 A

Article No.

6ES7322-1BF01-0AA0

6ES7322-1BH01-0AA0

6ES7322-1BH10-0AA0

6ES7322-1BL00-0AA0

6ES7322-1BP00-0AA0

6ES7322-1BP50-0AA0

6ES7322-8BF00-0AB0

6ES7322-5GH00-0AB0

6ES7322-1CF00-0AA0

6ES7322-1FF01-0AA0

6ES7322-5FF00-0AB0

6ES7322-1FH00-0AA0

6ES7322-1FL00-0AA0

6ES7322-1HF01-0AA0

6ES7322-1HF10-0AA0

6ES7322-5HF00-0AB0

6ES7322-1HH01-0AA0

Article No.

Front connectors

20-pin, with screw contacts

- 1 unit
- 100 units

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

40-pin, with screw contacts

- 1 unit
- 100 units

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

S7-300 connecting cable

For 64-channel modules; 2 units

1 m

2.5 m

5 m

Terminal block

For 64-channel modules; 2 units

With screw contacts

With spring-loaded contacts

Front door, elevated design

e.g. for 32-channel modules;
for connecting 1.3 mm²/16 AWG conductors

SIMATIC TOP connect

Bus connectors

1 unit (spare part)

Set of fuses for SM 322

10 fuses 8 A quick-response,
2 fuse holders;
for 6ES7 322-1FF01-0AA0,
6ES7 322-1FH00-0AA0

10 fuses 6.3 A;
for 6ES7 322-1CF00-0AA0

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

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

6ES7392-1AM00-0AA0
6ES7392-1AM00-1AB0

6ES7392-1BM01-0AA0
6ES7392-1BM01-1AB0

6ES7392-4BB00-0AA0
6ES7392-4BC50-0AA0
6ES7392-4BF00-0AA0

6ES7392-1AN00-0AA0
6ES7392-1BN00-0AA0

6ES7328-0AA00-7AA0

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6ES7390-0AA00-0AA0

6ES7973-1HD00-0AA0

6ES7973-1GC00-0AA0

SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

SM 322 digital output modules

Ordering data

Article No.

Article No.

Labeling strips

10 units (spare part)

For modules with 20-pin front connector

6ES7392-2XX00-0AA0

For modules with 40-pin front connector

6ES7392-2XX10-0AA0

Label cover

10 units (spare part)

For modules with 20-pin front connector

6ES7392-2XY00-0AA0

For modules with 40-pin front connector

6ES7392-2XY10-0AA0

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

For modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units

Petrol

6ES7392-2AX10-0AA0

Light beige

6ES7392-2BX10-0AA0

Yellow

6ES7392-2CX10-0AA0

Red

6ES7392-2DX10-0AA0

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6ES7998-8XC01-8YE0

SIMATIC Manual Collection update service for 1 year

Current Manual Collection DVD and the three subsequent updates

6ES7998-8XC01-8YE2

Technical specifications

Article number	6ES7322-1BH01-0AA0	6ES7322-1BH10-0AA0	6ES7322-1BL00-0AA0	6ES7322-1BP00-0AA0	6ES7322-1BP50-0AA0	6ES7322-8BF00-0AB0
	SM322, 16DO 24V DC, 0.5A	SM322 High Speed, 16DO 24V DC, 0.5A	SM322, 32DO 24V DC, 0.5A	SM322 64DA, DC24V, 0.3A P-write	SM322 64DO, DC24V, 0.3A M-write	SM322, 8DO, 24V DC, 0.5A
Supply voltage						
Load voltage L+						
• Rated value (DC)	24 V	24 V	24 V	24 V	24 V	24 V
Input current						
from load voltage L+ (without load), max.	80 mA	110 mA	160 mA	75 mA	75 mA	90 mA
from backplane bus 5 V DC, max.	80 mA	70 mA	110 mA	100 mA	100 mA	70 mA
Power loss						
Power loss, typ.	4.9 W	5 W	6.6 W	6 W	6 W	5 W
Digital outputs						
Number of digital outputs	16	16	32	64	64	8
Short-circuit protection	Yes; Electronic L+ (-53 V)	Yes; Electronic L+ (-53 V)	Yes; Electronic L+ (-53 V)	Yes; Electronic L+ (-53 V)	Yes; Electronic M+ (45 V)	Yes; Electronic L+ (-45 V)
Limitation of inductive shutdown voltage to						
Switching capacity of the outputs						
• on lamp load, max.	5 W	5 W	5 W	5 W	5 W	5 W
Load resistance range						
• lower limit	48 Ω	48 Ω	48 Ω	80 Ω	80 Ω	48 Ω
• upper limit	4 kΩ	4 kΩ	4 kΩ	10 kΩ	10 kΩ	3 kΩ
Output voltage						
• for signal "1", min.	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.5 V)	M+ (0.5 V)	L+ (-0.8 to -1.6 V)
Output current						
• for signal "1" rated value	0.5 A	0.5 A	0.5 A	0.3 A	0.3 A	0.5 A
• for signal "0" residual current, max.	0.5 mA	0.5 mA	0.5 mA	0.1 mA		0.5 mA

Technical specifications

Article number	6ES7322-1BH01-0AA0	6ES7322-1BH10-0AA0	6ES7322-1BL00-0AA0	6ES7322-1BP00-0AA0	6ES7322-1BP50-0AA0	6ES7322-8BF00-0AB0
	SM322, 16DO 24V DC, 0.5A	SM322 High Speed, 16DO 24V DC, 0.5A	SM322, 32DO 24V DC, 0.5A	SM322 64DA, DC24V, 0.3A P-write	SM322 64DO, DC24V, 0.3A M-write	SM322, 8DO, 24V DC, 0.5A
Switching frequency						
• with resistive load, max.	100 Hz	1 000 Hz	100 Hz	100 Hz	100 Hz	100 Hz
• with inductive load, max.	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz	2 Hz
• on lamp load, max.	10 Hz	10 Hz	10 Hz	10 Hz	10 Hz	10 Hz
Total current of the outputs (per group)						
horizontal installation						
- up to 40 °C, max.	4 A	4 A	4 A	1.6 A	1.6 A	4 A
- up to 60 °C, max.	3 A	3 A	3 A	1.2 A	1.2 A	3 A
vertical installation						
- up to 40 °C, max.	2 A	2 A	2 A	1.6 A	1.6 A	4 A
Cable length						
• shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
Interrupts/diagnostics/ status information						
Alarms	No	No	No	No	No	
Diagnostics function	No	No	No	No	No	Yes; Parameterizable
Alarms						
• Diagnostic alarm	No	No	No	No	No	Yes; Parameterizable
Connection method						
required front connector	20-pin	20-pin	40-pin	Cable: 6ES7392-4Bxx0-0AA0 terminal blocks: 6ES7392-1xN00-0AA0	Cable: 6ES7392-4Bxx0-0AA0 terminal blocks: 6ES7392-1xN00-0AA0	20-pin
Dimensions						
Width	40 mm	40 mm	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm	112 mm	112 mm	120 mm
Weights						
Weight, approx.	190 g	200 g	260 g	230 g	230 g	210 g
Article number	6ES7322-5GH00-0AB0	6ES7322-1CF00-0AA0	6ES7322-1BF01-0AA0	6ES7322-1FF01-0AA0	6ES7322-5FF00-0AB0	6ES7322-1FH00-0AA0
	SM322, 16DO, AC/DC24-48V, 0.5A	SM322, 8DO, 48-125V DC, 1.5A	SM322, 8DO, 24V DC, 2A	SM322, 8DO, 120/230V AC, 1A	SM322, 8DO, AC120/230V, 2A	SM322, 16DO, 120/230V AC, 1A
Supply voltage						
Load voltage L+						
• Rated value (DC)	24 V; 24 / 48	48 V; 48 V DC to 125 V DC	24 V			
Load voltage L1						
• Rated value (AC)				230 V; 120/230 V AC	230 V; 120/230 V AC	230 V; 120/230 V AC
Input current						
from supply voltage L+, max.	200 mA					
from load voltage L+ (without load), max.		2 mA	60 mA			
from load voltage L1 (without load), max.				2 mA	2 mA	2 mA
from backplane bus 5 V DC, max.	100 mA	100 mA	40 mA	100 mA	100 mA	200 mA
Power loss						
Power loss, typ.	2.8 W	7.2 W	6.8 W	8.6 W	8.6 W	8.6 W
Digital outputs						
Number of digital outputs	16	8	8	8	8	16
Short-circuit protection	No; to be provided externally	Yes; Electronic	Yes; Electronic	Yes; Fuse 8 A, 250 V; per group	Yes; to be provided externally; fuse 3.15 A / 250 V, quick response	Yes; Fuse 8 A, 250 V; per group
Limitation of inductive shutdown voltage to		M (-1 V)	L+ (-48 V)			

SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

SM 322 digital output modules

Technical specifications

Article number	6ES7322-5GH00-0AB0	6ES7322-1CF00-0AA0	6ES7322-1BF01-0AA0	6ES7322-1FF01-0AA0	6ES7322-5FF00-0AB0	6ES7322-1FH00-0AA0
	SM322, 16DO, AC/DC24-48V, 0.5A	SM322, 8DO, 48-125V DC, 1.5A	SM322, 8DO, 24V DC, 2A	SM322, 8DO, 120/230V AC, 1A	SM322, 8DO, AC120/230V, 2A	SM322, 16DO, 120/230V AC, 1A
Switching capacity of the outputs						
• on lamp load, max.	2.5 W	15 W; 15 W (48 V) or 40 W (125 V)	10 W	50 W	50 W	50 W
Load resistance range						
• lower limit			12 Ω			
• upper limit			4 kΩ			
Output voltage						
• for signal "1", min.	L+ (-0.25 V)	L+ (-1.2 V)	L+ (-0.8 V)	L1 (-1.5 V)	L1 (-8.5 V)	
Output current						
• for signal "1" rated value	0.5 A	1.5 A	2 A	2 A	2 A	1 A
• for signal "0" residual current, max.	10 μA	0.5 mA	0.5 mA	2 mA	2 mA	2 mA
Switching frequency						
• with resistive load, max.	10 Hz	25 Hz	100 Hz	10 Hz	10 Hz	10 Hz
• with inductive load, max.	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz
• on lamp load, max.	0.5 Hz	10 Hz	10 Hz	1 Hz	1 Hz	1 Hz
Total current of the outputs (per group)						
horizontal installation						
- up to 40 °C, max.	0.5 A; 8 A per module	6 A	4 A	4 A	8 A	4 A
- up to 50 °C, max.		4 A				
- up to 60 °C, max.	0.5 A; 8 A per module	3 A	4 A	2 A	4 A	2 A
vertical installation						
- up to 40 °C, max.	0.5 A; 8 A per module	4 A	4 A	2 A	4 A	2 A
Cable length						
• shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
Interrupts/diagnostics/status information						
Alarms		No	No	No		
Diagnostics function	Yes; Parameterizable	No	No	Yes; Fuse blown or load voltage missing	Yes; Parameterizable	Yes; Fuse blown or load voltage missing
Alarms						
• Diagnostic alarm	Yes; Parameterizable	No	No	No	Yes; Parameterizable	No
Connection method						
required front connector	40-pin	20-pin	20-pin	20-pin	40-pin	20-pin
Dimensions						
Width	40 mm	40 mm	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm	120 mm	120 mm	120 mm
Weights						
Weight, approx.	260 g	250 g	190 g	275 g	275 g	275 g

Article number	6ES7322-1FL00-0AA0	6ES7322-1HF01-0AA0	6ES7322-1HF10-0AA0	6ES7322-5HF00-0AB0	6ES7322-1HH01-0AA0
	SM322, 32DO, 120/230V AC, 1A	SM322, 8DA, 24V DC/2A or 230V AC/2A	SM322, 8DA, 24V DC/5A OR 230V AC/5A	SM322, 8DO Relay, 24VDC, 120-230V AC, 5A	SM322, 16DO Relay
Supply voltage					
Load voltage L+					
• Rated value (DC)		24 V	120 V	24 V	120 V
Load voltage L1					
• Rated value (AC)	120 V; 120/230 V AC		230 V	230 V	230 V
Input current					
from supply voltage L+, max.		160 mA	125 mA	160 mA	250 mA
from load voltage L1 (without load), max.	10 mA				
from backplane bus 5 V DC, max.	190 mA	40 mA	40 mA	100 mA	100 mA

Technical specifications

Article number	6ES7322-1FL00-0AA0	6ES7322-1HF01-0AA0	6ES7322-1HF10-0AA0	6ES7322-5HF00-0AB0	6ES7322-1HH01-0AA0
	SM322, 32DO, 120/230V AC, 1A	SM322, 8DA, 24V DC/2A or 230V AC/2A	SM322, 8DA, 24V DC/5A OR 230V AC/5A	SM322, 8DO Relay, 24VDC, 120-230V AC, 5A	SM322, 16DO Relay
Power loss					
Power loss, typ.	25 W	3.2 W	3.2 W	3.5 W	4.5 W
Digital outputs					
Number of digital outputs	32	8; Relays	8; Relays	8; Relays	16; Relays
Short-circuit protection	No	No	No; to be provided externally	No; to be provided externally	No
Switching capacity of the outputs					
• on lamp load, max.	50 W	50 W	1 500 W; 230 V AC	1 500 W; 230 V AC	50 W; 230 V AC
Output voltage					
• for signal "1", min.	L1 (-0.8 V)				
Output current					
• for signal "1" rated value	1 A	2 A	5 A	5 A	2 A
• for signal "0" residual current, max.	2 mA				
Switching frequency					
• with resistive load, max.	10 Hz	2 Hz	2 Hz	2 Hz	1 Hz
• with inductive load, max.	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz
• on lamp load, max.	1 Hz	2 Hz	2 Hz	2 Hz	1 Hz
• mechanical, max.		10 Hz	10 Hz	10 Hz	10 Hz
Total current of the outputs (per group)					
horizontal installation					
- up to 40 °C, max.	4 A				
- up to 60 °C, max.	3 A		5 A	5 A	8 A
vertical installation					
- up to 40 °C, max.	4 A		5 A	5 A	8 A
Relay outputs					
• Rated supply voltage of relay coil L+ (DC)		24 V; 110 mA	24 V		24 V
• Contact connection (internal)		Yes; SIOV-CU4032 K275G	No	Yes; 330 Ohm, 0.1uF	No
• Number of operating cycles, max.		300 000; 230 V AC; 100 000; 120 V AC; 200 000; 24 V DC; 300 000 (at 2 A)	300 000; 300 000 (24 V DC, at 2 A); 200 000 (120 V AC, at 3 A); 100 000 (230 V AC, at 3 A)	100 000; 100 000 (24 V DC, at 5 A); 100 000 (230 V AC, at 5 A)	100 000; 50 000 (24 V DC, at 2 A); 700 000 (120 V AC, at 2 A); 100 000 (230 V AC, at 2 A)
Switching capacity of contacts					
- with inductive load, max.		2 A; 2 A (230 V AC), 2 A (24 V DC)	3 A; 3 A (230 V DC), 2 A (24 V AC)	5 A; 5 A (230 V DC), 5 A (24 V AC)	2 A; 2 A (230 V AC), 2 A (24 V DC)
- with resistive load, max.		2 A	8 A; 8 A (230 V DC), 5 A (24 V AC)	5 A; 5 A (230 V DC), 5 A (24 V AC)	2 A; 2 A (230 V AC), 2 A (24 V DC)
- Thermal continuous current, max.		3 A	8 A	5 A	2 A
Cable length					
• shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
Interrupts/diagnostics/status information					
Alarms	No	No	No	Yes	No
Diagnostics function	Yes; Fuse blown or load voltage missing	No	No	Yes; Parameterizable	No
Alarms					
• Diagnostic alarm	No	No	No	Yes; Parameterizable	No
Connection method					
required front connector	20-pin	20-pin	40-pin	40-pin	20-pin
Dimensions					
Width	80 mm	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm	125 mm
Depth	117 mm	120 mm	120 mm	120 mm	120 mm
Weights					
Weight, approx.	500 g	190 g	320 g	320 g	250 g

SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

SM 323/SM 327 digital input/output modules

Overview



- Digital inputs and outputs
- For connection of switches, 2-wire proximity switches (BEROs), solenoid valves, contactors, low-power motors, lamps and motor starters

Ordering data

SM 323 digital input/output modules

incl. labeling strips, bus connector

8 inputs, 8 outputs

6ES7323-1BH01-0AA0

16 inputs, 16 outputs

6ES7323-1BL00-0AA0

SM 327 digital input/output modules

incl. labeling strips, bus connector

8 inputs, 8 inputs or outputs
(can be configured)

6ES7327-1BH00-0AB0

Front connector

20-pin, with screw contacts

- 1 unit
- 100 units

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

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

40-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AM00-0AA0
6ES7392-1AM00-1AB0

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0
6ES7392-1BM01-1AB0

Front door, elevated design

6ES7328-0AA00-7AA0

e.g. for 32 channel modules;
enables connection of
1.3 mm²/16 AWG wires

SIMATIC TOP connect

See page 5/237

Bus connectors

1 unit (spare part)

6ES7390-0AA00-0AA0

Labeling strips

10 units (spare part)

for modules with 20-pin front
connector

6ES7392-2XX00-0AA0

for modules with 40-pin front
connector

6ES7392-2XX10-0AA0

Article No.

Label cover

10 units (spare part)

for modules with 20-pin front
connector

6ES7392-2XY00-0AA0

for modules with 40-pin front
connector

6ES7392-2XY10-0AA0

Labeling sheets for machine inscription

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

for modules with 40-pin front
connector, DIN A4, for printing with
laser printer; 10 units

petrol

6ES7392-2AX10-0AA0

light-beige

6ES7392-2BX10-0AA0

yellow

6ES7392-2CX10-0AA0

red

6ES7392-2DX10-0AA0

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6ES7998-8XC01-8YE0

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Current "Manual Collection" DVD
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6ES7998-8XC01-8YE2

Technical specifications

Article number	6ES7323-1BH01-0AA0 SM323, 8DI/8DO, DC24V, 0.5A	6ES7323-1BL00-0AA0 SM323, 16DI/DO, DC24V, 0.5A	6ES7327-1BH00-0AB0 SM327, 8DI/8DX, DC24V, 0.5A
Supply voltage			
Load voltage L+			
• Rated value (DC)	24 V	24 V	24 V
Input current			
from load voltage L+ (without load), max.	40 mA	80 mA	20 mA
from backplane bus 5 V DC, max.	40 mA	80 mA	60 mA
Power loss			
Power loss, typ.	3.5 W	6.5 W	3 W
Digital inputs			
Number of digital inputs	8	16	8; 8 hard-wired, 8 others individually parameterizable
Input characteristic curve in accordance with IEC 61131, type 1	Yes	Yes	Yes
Input voltage			
• Type of input voltage	DC	DC	DC
• Rated value (DC)	24 V	24 V	24 V
• for signal "0"	-30 to +5 V	-30 to +5 V	-30 to +5 V
• for signal "1"	13 to 30V	13 to 30V	+15 to +30 V
Input current			
• for signal "1", typ.	7 mA	7 mA	6 mA
Input delay (for rated value of input voltage) for standard inputs			
- at "0" to "1", min.	1.2 ms	1.2 ms	1.2 ms
- at "0" to "1", max.	4.8 ms	4.8 ms	4.8 ms
Cable length			
• shielded, max.	1 000 m	1 000 m	1 000 m
Digital outputs			
Number of digital outputs	8	16	8; can also be parameterized individually as DI
Short-circuit protection	Yes	Yes	Yes
Limitation of inductive shutdown voltage to	L+ (-53 V)	L+ (-48 V)	L+ (-54 V)
Switching capacity of the outputs			
• on lamp load, max.	5 W	5 W	5 W
Load resistance range			
• lower limit	48 Ω	48 Ω	48 Ω
• upper limit	4 kΩ	4 kΩ	4 kΩ
Output voltage			
• for signal "1", min.	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-1.5 V)
Output current			
• for signal "1" rated value	0.5 A	0.5 A	0.5 A
• for signal "0" residual current, max.	0.5 mA	0.5 mA	0.5 mA
Switching frequency			
• with resistive load, max.	100 Hz	100 Hz	100 Hz
• with inductive load, max.	0.5 Hz	0.5 Hz	0.5 Hz
• on lamp load, max.	10 Hz	100 Hz	10 Hz
Total current of the outputs (per group)			
horizontal installation			
- up to 40 °C, max.	4 A	4 A	4 A
- up to 60 °C, max.	4 A	3 A	3 A
vertical installation			
- up to 40 °C, max.	4 A	2 A	2 A
Cable length			
• shielded, max.	1 000 m	1 000 m	1 000 m

SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

SM 323/SM 327 digital input/output modules**Technical specifications**

Article number	6ES7323-1BH01-0AA0 SM323, 8DI/8DO, DC24V, 0.5A	6ES7323-1BL00-0AA0 SM323, 16DI/DO, DC24V, 0.5A	6ES7327-1BH00-0AB0 SM327, 8DI/8DX, DC24V, 0.5A
Encoder			
Connectable encoders			
• 2-wire sensor	Yes	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	2 mA	1.5 mA	1.5 mA
Interrupts/diagnostics/ status information			
Alarms	No	No	No
Diagnostics function	No	No	No
Connection method			
required front connector	20-pin	40-pin	20-pin
Dimensions			
Width	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm
Weights			
Weight, approx.	220 g	260 g	200 g

Overview



- Digital inputs
- For connection of switches and 2-wire proximity switches (BEROs)

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.

Article No.

SIPLUS S7-300 SM 321 digital input modules

For industrial applications with extended ambient conditions

Extended temperature range and exposure to environmental substances

- 16 inputs, 24 V DC
- 32 inputs, 24 V DC
- 16 inputs, 48 to 120 V DC
- 8 inputs, 120/230 V AC
- 8 inputs, 120/230 V AC, single root
- 16 inputs, 120/230 V AC
- 16 inputs, 24 V DC, diagnostics-capable

Exposure to environmental substances

- 16 inputs, NAMUR, optional redundancy

For rolling stock railway applications

Conforms to EN 50155

- 16 inputs, 24 V DC
- 32 inputs, 24 V DC
- 16 inputs, 48 to 120 V DC
- 8 inputs, 120/230 V AC
- 16 inputs, 24 V DC, diagnostics-capable

Accessories

Mandatory

Front connector

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

- 6AG1321-1BH02-2AA0
- 6AG1321-1BL00-2AA0
- 6AG1321-1CH20-2AA0
- 6AG1321-1FF01-2AA0
- 6AG1321-1FF10-7AA0
- 6AG1321-1FH00-7AA0
- 6AG1321-7BH01-2AB0

- 6AG1321-7TH00-4AB0

- 6AG1321-1BH02-2AA0
- 6AG1321-1BL00-2AA0
- 6AG1321-1CH20-2AA0
- 6AG1321-1FF01-2AA0
- 6AG1321-7BH01-2AB0

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

- 6ES7392-1BM01-0AA0
- 6ES7392-1BM01-1AB0

*Consumables***Front door, elevated design**

E.g. for 32-channel modules; for connecting 1.3 mm²/16 AWG conductors; cabling diagram and labeling strips in petrol

Bus connectors

1 unit (spare part)

Labeling strips

10 units (spare part)

For modules with 20-pin front connector

For modules with 40-pin front connector

Label cover

10 units (spare part)

For modules with 20-pin front connector

For modules with 40-pin front connector

*Documentation***SIMATIC Manual Collection**

Electronic manuals on DVD, multilingual:
all manuals for S7-1200/1500/200/300/400, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering software, runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT

SIMATIC Manual Collection update service for 1 year

Current Manual Collection DVD and the three subsequent updates

- 6ES7328-0AA00-7AA0

- 6ES7390-0AA00-0AA0

- 6ES7392-2XX00-0AA0

- 6ES7392-2XX10-0AA0

- 6ES7392-2XY00-0AA0

- 6ES7392-2XY10-0AA0

- 6ES7998-8XC01-8YE0

- 6ES7998-8XC01-8YE2

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 digital modules

SIPLUS S7-300 SM 321

Technical specifications

Article number	6AG1321-1BH02-2AA0	6AG1321-1BL00-2AA0	6AG1321-1CH20-2AA0	6AG1321-1FF01-2AA0	6AG1321-1FF10-7AA0
Based on	6ES7321-1BH02-0AA0 SIPLUS S7-300 SM321 16DI/ DC 24 V	6ES7321-1BL00-0AA0 SIPLUS S7-300 SM 321 32DI/ DC 24 V	6ES7321-1CH20-0AA0 SIPLUS S7-300 SM 321 16DI/ DC 48-125 V	6ES7321-1FF01-0AA0 SIPLUS S7-300 SM 321 8DI 120/220 VAC	6ES7321-1FF10-0AA0 SIPLUS S7-300 SM 321 8DI
Ambient conditions					
Ambient temperature during operation					
• min.	-40 °C; = Tmin	-40 °C; = Tmin	-25 °C; = Tmin	-40 °C; = Tmin	-25 °C
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies	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	5 000 m	2 000 m	2 000 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)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (- 1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (- 1 000 m ... +2 000 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)
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	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); *	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; *	Yes; Class 3S4 incl. sand, dust; *
Use on land craft, rail vehicles and special-purpose vehicles					
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request		
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *		
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *		

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 digital modules

SIPLUS S7-300 SM 321**Technical specifications**

Article number	6AG1321-1BH02-2AA0	6AG1321-1BL00-2AA0	6AG1321-1CH20-2AA0	6AG1321-1FF01-2AA0	6AG1321-1FF10-7AA0
Based on	6ES7321-1BH02-0AA0	6ES7321-1BL00-0AA0	6ES7321-1CH20-0AA0	6ES7321-1FF01-0AA0	6ES7321-1FF10-0AA0
	SIPLUS S7-300 SM321 16DI/ DC 24 V	SIPLUS S7-300 SM 321 32DI/ DC 24 V	SIPLUS S7-300 SM 321 16DI/ DC 48-125 V	SIPLUS S7-300 SM 321 8DI 120/220 VAC	SIPLUS S7-300 SM 321 8DI
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	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); *	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; *	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)	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)	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!	* The supplied plug covers must remain in place over the unused interfaces during operation!

Article number	6AG1321-1FH00-7AA0	6AG1321-7BH01-2AB0	6AG1321-7TH00-4AB0
Based on	6ES7321-1FH00-0AA0	6ES7321-7BH01-0AB0	6ES7321-7TH00-0AB0
	SIPLUS S7-300 SM321 16DI	SIPLUS S7-300 SM 321 16DI/24VDC	SIPLUS PCS 7 SM321 16DI
Ambient conditions			
Ambient temperature during operation			
• min.	-40 °C; = Tmin	-25 °C; = Tmin	0 °C
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	60 °C
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	5 000 m	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)	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)

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 digital modules

SIPLUS S7-300 SM 321

Technical specifications

Article number	6AG1321-1FH00-7AA0	6AG1321-7BH01-2AB0	6AG1321-7TH00-4AB0
Based on	6ES7321-1FH00-0AA0	6ES7321-7BH01-0AB0	6ES7321-7TH00-0AB0
	SIPLUS S7-300 SM321 16DI	SIPLUS S7-300 SM 321 16DI/24VDC	SIPLUS PCS 7 SM321 16DI
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
- 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); *
- 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, *
Use on land craft, rail vehicles and special-purpose vehicles			
- to biologically active substances according to EN 60721-3-5		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	
- to chemically active substances according to EN 60721-3-5		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	
- to mechanically active substances according to EN 60721-3-5		Yes; Class 5S3 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
- 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); *
- 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; *
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)
- 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)
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!

Overview

- Digital outputs
- For connecting solenoid valves, contactors, small-power motors, lamps and motor starters

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.****Article No.****SIPLUS S7-300 SM 322 digital output modules**

For industrial applications with extended ambient conditions

Extended temperature range and exposure to environmental substances

- 8 outputs, 24 V DC, 2 A
- 16 outputs, 24 V DC, 0.5 A
- 32 outputs, 24 V DC, 0.5 A
- 8 outputs, 48 to 125 V DC, 1.5 A
- 8 outputs, 120/230 V AC, 1 A
- 16 outputs, 120/230 V AC, 1 A
- 8 outputs, relay contacts, 5 A
- 16 outputs, relay contacts, 8 A
- 8 outputs, 24 V DC, 0.5 A, diagnostics-capable

Exposure to environmental substances

- 8 outputs, 120/230 V AC, 2 A
- 8 outputs, relay contacts, 5 A, with RC filter, overvoltage protection

For rolling stock railway applications

Conforms to EN 50155

- 16 outputs, 24 V DC, 0.5 A, high speed
- 32 outputs, 24 V DC, 0.5 A
- 8 outputs, relay contacts, 5 A
- 16 outputs, relay contacts, 8 A
- 8 outputs, 24 V DC, 0.5 A, diagnostics-capable

Accessories

Mandatory

Front connector

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

- 6AG1322-1BF01-2XB0**
- 6AG1322-1BH01-2AA0**
- 6AG1322-1BL00-2AA0**
- 6AG1322-1CF00-7AA0**
- 6AG1322-1FF01-7AA0**
- 6AG1322-1FH00-7AA0**
- 6AG1322-1HF10-2AA0**
- 6AG1322-1HH01-2AA0**
- 6AG1322-8BF00-2AB0**

- 6AG1322-5FF00-4AB0**
- 6AG1322-5HF00-4AB0**

- 6AG1322-1BH01-2AA0**
- 6AG1322-1BL00-2AA0**
- 6AG1322-1HF10-2AA0**
- 6AG1322-1HH01-2AA0**
- 6AG1322-8BF00-2AB0**

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

- 6ES7392-1BM01-0AA0**
- 6ES7392-1BM01-1AB0**

*Consumables***Front door, elevated design**

E.g. for 32-channel modules; for connecting 1.3 mm²/16 AWG conductors; cabling diagram and labeling strips in petrol

- Bus connectors**
- 1 unit (spare part)

Labeling strips

- 10 units (spare part)
- For modules with 20-pin front connector
- For modules with 40-pin front connector

Label cover

- 10 units (spare part)
- For modules with 20-pin front connector
- For modules with 40-pin front connector

*Documentation***SIMATIC Manual Collection**

Electronic manuals on DVD, multilingual: all manuals for S7-1200/1500/200/300/400, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering software, runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT

SIMATIC Manual Collection update service for 1 year

Current Manual Collection DVD and the three subsequent updates

- 6ES7328-0AA00-7AA0**

- 6ES7390-0AA00-0AA0**

- 6ES7392-2XX00-0AA0**

- 6ES7392-2XX10-0AA0**

- 6ES7392-2XY00-0AA0**

- 6ES7392-2XY10-0AA0**

- 6ES7998-8XC01-8YE0**

- 6ES7998-8XC01-8YE2**

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 digital modules

SIPLUS S7-300 SM 322

Technical specifications

Article number	6AG1322-1BF01-2XB0	6AG1322-8BF00-2AB0	6AG1322-1BH01-2AA0	6AG1322-1BL00-2AA0
Based on	6ES7322-1BF01-0AA0	6ES7322-8BF00-0AB0	6ES7322-1BH01-0AA0	6ES7322-1BL00-0AA0
	SIPLUS S7-300 SM 322 8DO/ DC 24 V	SIPLUS S7-300 SM 322 8DO/ DC 24V	SIPLUS S7-300 SM 322 16DO DC24 V 0.5A	SIPLUS S7-300 SM 322 32DO
Ambient conditions				
Ambient temperature during operation				
• min.	-25 °C	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL use	70 °C; = Tmax; 60 °C @ UL/cUL use	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	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)	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)
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 land craft, rail vehicles and special-purpose vehicles				
- to biologically active substances according to EN 60721-3-5		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5		Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 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; *

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 digital modules

SIPLUS S7-300 SM 322**Technical specifications**

Article number	6AG1322-1BF01-2XB0	6AG1322-8BF00-2AB0	6AG1322-1BH01-2AA0	6AG1322-1BL00-2AA0
Based on	6ES7322-1BF01-0AA0 SIPLUS S7-300 SM 322 8DO/ DC 24 V	6ES7322-8BF00-0AB0 SIPLUS S7-300 SM 322 8DO/ DC 24V	6ES7322-1BH01-0AA0 SIPLUS S7-300 SM 322 16DO DC24 V 0.5A	6ES7322-1BL00-0AA0 SIPLUS S7-300 SM 322 32DO
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!
Article number	6AG1322-1CF00-7AA0	6AG1322-1HF10-2AA0	6AG1322-5HF00-4AB0	6AG1322-1FF01-7AA0
Based on	6ES7322-1CF00-0AA0 SIPLUS S7-300 SM 322 8DO / 48-125 V DC	6ES7322-1HF10-0AA0 SIPLUS S7-300 SM 322 8DO / RLY	6ES7322-5HF00-0AB0 SIPLUS S7-300 SM 322 8DO / RLY	6ES7322-1FF01-0AA0 SIPLUS S7-300 SM322 8DO / 120/230 V AC
Ambient conditions				
Ambient temperature during operation				
• min.	-25 °C	-25 °C; = Tmin	0 °C; = Tmin	-40 °C
• max.	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies	60 °C	60 °C; = Tmax	70 °C; = Tmax; for use on railway vehicles according to EN 50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/UL hazardous use applies
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 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	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 land craft, rail vehicles and special-purpose vehicles				
- to biologically active substances according to EN 60721-3-5		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request		
- to chemically active substances according to EN 60721-3-5		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *		
- to mechanically active substances according to EN 60721-3-5		Yes; Class 5S3 incl. sand, dust, *		

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 digital modules

SIPLUS S7-300 SM 322

Technical specifications

Article number	6AG1322-1CF00-7AA0	6AG1322-1HF10-2AA0	6AG1322-5HF00-4AB0	6AG1322-1FF01-7AA0
Based on	6ES7322-1CF00-0AA0 SIPLUS S7-300 SM 322 8DO / 48-125 V DC	6ES7322-1HF10-0AA0 SIPLUS S7-300 SM 322 8DO / RLY	6ES7322-5HF00-0AB0 SIPLUS S7-300 SM 322 8DO / RLY	6ES7322-1FF01-0AA0 SIPLUS S7-300 SM322 8DO / 120/230 V AC
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!
Article number	6AG1322-5FF00-4AB0	6AG1322-1FH00-7AA0	6AG1322-1HH01-2AA0	
Based on	6ES7322-5FF00-0AB0 SIPLUS S7-300 SM322 8DO	6ES7322-1FH00-0AA0 SIPLUS S7-300 SM322 16DO	6ES7322-1HH01-0AA0 SIPLUS S7-300 SM 322 16DO / RLY	
Ambient conditions				
Ambient temperature during operation				
• min.	0 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin	
• max.	60 °C; = Tmax	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	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	5 000 m	2 000 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)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	

Technical specifications

Article number	6AG1322-5FF00-4AB0	6AG1322-1FH00-7AA0	6AG1322-1HH01-2AA0
Based on	6ES7322-5FF00-0AB0	6ES7322-1FH00-0AA0	6ES7322-1HH01-0AA0
	SIPLUS S7-300 SM322 8DO	SIPLUS S7-300 SM322 16DO	SIPLUS S7-300 SM 322 16DO / RLY
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
- 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); *
- 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, *
Use on land craft, rail vehicles and special-purpose vehicles			
- to biologically active substances according to EN 60721-3-5			Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5			Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5			Yes; Class 5S3 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
- 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); *
- 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; *
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)
- 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)
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!

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 digital modules

SIPLUS S7-300 SM 323

Overview



- Digital inputs and outputs
- For connection of switches, 2-wire proximity switches (BEROs), solenoid valves, contactors, low-power motors, lamps and motor starters

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.

Article No.

SIPLUS S7-300 SM 323 digital input/output module

For industrial applications with extended ambient conditions

Extended temperature range and exposure to environmental substances

8 inputs, 8 outputs

6AG1323-1BH01-2AA0

For rolling stock railway applications

Conforms to EN 50155

8 inputs, 8 outputs

6AG1323-1BH01-2AA0

Accessories

Mandatory

Front connector

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0
6ES7392-1BM01-1AB0

Consumables

Front door, elevated design

E.g. for 32-channel modules; for connecting 1.3 mm²/16 AWG conductors; cabling diagram and labeling strips in petrol

6ES7328-0AA00-7AA0

Bus connectors

1 unit (spare part)

6ES7390-0AA00-0AA0

Labeling strips

10 units (spare part)

For modules with 20-pin front connector

6ES7392-2XX00-0AA0

For modules with 40-pin front connector

6ES7392-2XX10-0AA0

Label cover

10 units (spare part)

For modules with 20-pin front connector

6ES7392-2XY00-0AA0

For modules with 40-pin front connector

6ES7392-2XY10-0AA0

Documentation

SIMATIC Manual Collection

Electronic manuals on DVD, multilingual:
all manuals for S7-1200/1500/200/300/400, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering software, runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT

6ES7998-8XC01-8YE0

SIMATIC Manual Collection update service for 1 year

Current Manual Collection DVD and the three subsequent updates

6ES7998-8XC01-8YE2

Technical specifications

Article number	6AG1323-1BH01-2AA0
Based on	6ES7323-1BH01-0AA0 SIPLUS S7-300 SM 323 8DI / 8DO
Ambient conditions	
Ambient temperature during operation	
• min.	-40 °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, *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *

Article number	6AG1323-1BH01-2AA0
Based on	6ES7323-1BH01-0AA0 SIPLUS S7-300 SM 323 8DI / 8DO
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!

SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

SM 331 analog input modules

Overview



- Analog inputs
- For connection of voltage and current sensors, thermocouples, resistors and resistance thermometers

Ordering data

SM 331 analog input modules

Including labeling strips, bus connector, measuring range modules

- 8 inputs, resolution 13 bits
- 8 inputs, resolution 9/12/14 bits
- 2 inputs, resolution 9/12/14 bits
- 8 inputs, enhanced resolution 16 bits
- 8 inputs, enhanced resolution 16 bits, 4-channel mode
- 8 inputs, resolution 14 bits, for isochronous mode
- 6 inputs, for thermal elements, resolution 16 bits
- 8 inputs, for thermal resistors
- 8 inputs, for thermoelements

Measuring range module for analog inputs

1 module for 2 analog inputs;
2 units (spare part)

Front connector

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

Front door, elevated design

e.g. for 32-channel modules; for connecting 1.3 mm²/16 AWG wires

SIMATIC TOP connect

Article No.

- 6ES7331-1KF02-0AB0
- 6ES7331-7KF02-0AB0
- 6ES7331-7KB02-0AB0
- 6ES7331-7NF00-0AB0
- 6ES7331-7NF10-0AB0
- 6ES7331-7HF01-0AB0
- 6ES7331-7PE10-0AB0
- 6ES7331-7PF01-0AB0
- 6ES7331-7PF11-0AB0
- 6ES7974-0AA00-0AA0

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

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

- 6ES7392-1AM00-0AA0
- 6ES7392-1AM00-1AB0

- 6ES7392-1BM01-0AA0
- 6ES7392-1BM01-1AB0

- 6ES7328-0AA00-7AA0

See page 5/237

Article No.

Bus connectors

1 unit (spare part)

Shield connection element

80 mm wide, with 2 rows for 4 shield connection clamps each

Shield connection clamps

2 units

For 2 cables with 2 mm to 6 mm diameter

For 1 cable with 3 mm to 8 mm diameter

For 1 cable with 4 mm to 13 mm diameter

Label cover

10 units (spare part), for modules with 20-pin front connector

Labeling strips

10 units (spare part), for modules with 20-pin front connector

Labeling sheets for machine labeling

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

Petrol

Light beige

Yellow

Red

For modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units

Petrol

Light beige

Yellow

Red

- 6ES7390-0AA00-0AA0

- 6ES7390-5AA00-0AA0

- 6ES7390-5AB00-0AA0

- 6ES7390-5BA00-0AA0

- 6ES7390-5CA00-0AA0

- 6ES7392-2XY00-0AA0

- 6ES7392-2XX00-0AA0

- 6ES7392-2AX00-0AA0

- 6ES7392-2BX00-0AA0

- 6ES7392-2CX00-0AA0

- 6ES7392-2DX00-0AA0

- 6ES7392-2AX10-0AA0

- 6ES7392-2BX10-0AA0

- 6ES7392-2CX10-0AA0

- 6ES7392-2DX10-0AA0

SIMATIC S7-300 Advanced Controllers

I/O modules
Analog modules

SM 331 analog input modules

Ordering data

Article No.

Article No.

SIMATIC Manual Collection

Electronic manuals on DVD,
multilingual:
all manuals for S7-1200/1500/200/
300/400, LOGO!, SIMATIC DP, PC,
PG, STEP 7, Engineering software,
runtime SW, SIMATIC HMI,
SIMATIC NET, SIMATIC IDENT

6ES7998-8XC01-8YE0

SIMATIC Manual Collection
update service for 1 year

Current Manual Collection DVD and
the three subsequent updates

6ES7998-8XC01-8YE2

Technical specifications

Article number	6ES7331-7KF02-0AB0 SM331, 8AI, 9/12/14bit	6ES7331-7HF01-0AB0 SM331, 8AI, 14bit, 0.052MS/channel	6ES7331-1KF02-0AB0 SM331, 8AI, 13bit	6ES7331-7KB02-0AB0 SM331, 2AI, 9/12/14bit
Supply voltage				
Load voltage L+				
• Rated value (DC)	24 V	24 V		24 V
Input current				
from load voltage L+ (without load), max.	30 mA	50 mA		30 mA
from backplane bus 5 V DC, max.	50 mA	100 mA	90 mA	50 mA
Power loss				
Power loss, typ.	1 W	1.5 W	0.4 W	1 W
Analog inputs				
Number of analog inputs	8	8	8	2
• For resistance measurement	4		8	1
permissible input voltage for voltage input (destruction limit), max.	20 V; continuous; 75 V for max. 1 s (mark to space ratio 1:20)	20 V; 20 V DC permanent, 75 V DC for max. 1 s (duty factor 1:20)	30 V; 12 V continuous, 30 V for max. 1 s	20 V; continuous; 75 V for max. 1 s (mark to space ratio 1:20)
permissible input current for current input (destruction limit), max.	40 mA	40 mA	40 mA	40 mA
Input ranges (rated values), voltages				
• 0 to +10 V	No	No	Yes	No
• 1 V to 5 V	Yes	Yes	Yes	Yes
• 1 V to 10 V	No		No	No
• -1 V to +1 V	Yes	Yes	Yes	Yes
• -10 V to +10 V	Yes	Yes	Yes	Yes
• -2.5 V to +2.5 V	Yes		No	Yes
• -250 mV to +250 mV	Yes		No	Yes
• -5 V to +5 V	Yes	Yes	Yes	Yes
• -50 mV to +50 mV	No		Yes	No
• -500 mV to +500 mV	Yes	Yes	Yes	Yes
• -80 mV to +80 mV	Yes	Yes	No	Yes
Input ranges (rated values), currents				
• 0 to 20 mA	Yes	Yes	Yes	Yes
• -10 mA to +10 mA	Yes		No	Yes
• -20 mA to +20 mA	Yes	Yes	Yes	Yes
• -3.2 mA to +3.2 mA	Yes		No	Yes
• 4 mA to 20 mA	Yes	Yes	Yes	Yes

SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

SM 331 analog input modules

Technical specifications

Article number	6ES7331-7KF02-0AB0 SM331, 8AI, 9/12/14bit	6ES7331-7HF01-0AB0 SM331, 8AI, 14bit, 0.052MS/channel	6ES7331-1KF02-0AB0 SM331, 8AI, 13bit	6ES7331-7KB02-0AB0 SM331, 2AI, 9/12/14bit
Input ranges (rated values), thermocouples				
• Type B	No		No	No
• Type C	No		No	
• Type E	Yes		No	Yes
• Type J	Yes		No	Yes
• Type K	Yes		No	Yes
• Type L	Yes		No	No
• Type N	Yes		No	Yes
• Type R	No		No	No
• Type S	No		No	No
• Type T	No		No	No
• Type U	No		No	No
• Type TXK/TXK(L) to GOST	No		No	No
Input ranges (rated values), resistance thermometer				
• Cu 10	No		No	No
• Ni 100	Yes; Standard		Yes; Standard/climate	Yes
• Ni 1000	No		Yes	No
• LG-Ni 1000	No		Yes; Standard/climate	No
• Ni 120	No		No	No
• Ni 200	No		No	No
• Ni 500	No		No	No
• Pt 100	Yes; Standard		Yes; Standard/climate	Yes
• Pt 1000	No		No	No
• Pt 200	No		No	No
• Pt 500	No		No	No
Input ranges (rated values), resistors				
• 0 to 150 ohms	Yes		No	Yes
• 0 to 300 ohms	Yes		No	Yes
• 0 to 600 ohms	Yes		Yes	Yes
• 0 to 6000 ohms	No		Yes	No
Thermocouple (TC)				
Temperature compensation				
- parameterizable	Yes		No	Yes
- internal temperature compensation	Yes		No	Yes
- external temperature compensation with compensations socket	Yes		No	Yes
- for definable comparison point temperature	Yes			Yes
Characteristic linearization				
• parameterizable	Yes		Yes	Yes
- for thermocouples	Type E, J, K, L, N		No	Type E, J, K, L, N
- for resistance thermometer	Pt100 (standard, climatic range), Ni100 (standard, climatic range)		yes; Pt100 standard/air con.; Ni100 standard/air con.; Ni1000 standard/air con.; LG-Ni1000 standard/air con.	Pt100 (standard, climatic range), Ni100 (standard, climatic range)
Cable length				
• shielded, max.	200 m; 50 m at 80 mV and thermocouples	200 m	200 m; max. 50 m at 50 mV	200 m; 50 m at 80 mV and thermocouples
Analog value generation for the inputs				
Integration and conversion time/resolution per channel				
• Resolution with overrange (bit including sign), max.	15 bit; Unipolar: 9/12/12/14 bit; bipolar: 9 bit + sign/12 bit + sign/ 12 bit + sign/14 bit + sign	14 bit; Unipolar: 14 bit; bipolar: 13 bit + sign	13 bit	15 bit; Unipolar: 9/12/12/14 bit; bipolar: 9 bit + sign/12 bit + sign/ 12 bit + sign/14 bit + sign
• Integration time, parameterizable	Yes; 2,5 / 16,67 / 20 / 100 ms	Yes	Yes; 60 / 50 ms	Yes; 2,5 / 16,67 / 20 / 100 ms
• Basic conversion time (ms)	3 / 17 / 22 / 102 ms	52 µs per channel	66 / 55 ms	3 / 17 / 22 / 102 ms
• Interference voltage suppression for interference frequency f1 in Hz	400 / 60 / 50 / 10 Hz	none / 400 / 60 / 50 Hz	50 / 60 Hz	400 / 60 / 50 / 10 Hz

Technical specifications

Article number	6ES7331-7KF02-0AB0 SM331, 8AI, 9/12/14bit	6ES7331-7HF01-0AB0 SM331, 8AI, 14bit, 0.052MS/channel	6ES7331-1KF02-0AB0 SM331, 8AI, 13bit	6ES7331-7KB02-0AB0 SM331, 2AI, 9/12/14bit
Encoder				
Connection of signal encoders				
• for voltage measurement	Yes		Yes	Yes
• for current measurement as 2-wire transducer	Yes	Yes	Yes; with external supply	Yes
• for current measurement as 4-wire transducer	Yes	Yes	Yes	Yes
• for resistance measurement with two-wire connection	Yes		Yes	Yes
• for resistance measurement with three-wire connection	Yes		Yes	Yes
• for resistance measurement with four-wire connection	Yes		Yes	Yes
Errors/accuracies				
Operational error limit in overall temperature range				
• Voltage, relative to input range, (+/-)	1 %; $\pm 1\%$ (80 mV); $\pm 0.6\%$ (250 mV to 1 000 mV); $\pm 0.8\%$ (2.5 V to 10 V)	0.4 %	0.6 %; $\pm 0.6\%$ (± 5 V, 10 V, 1 to 5 V, 0 to 10 V); $\pm 0.5\%$ (± 50 mV, 500 mV, 1 V)	1 %; $\pm 1\%$ (80 mV); $\pm 0.6\%$ (250 mV to 1 000 mV); $\pm 0.8\%$ (2.5 V to 10 V)
• Current, relative to input range, (+/-)	0.7 %; From 3.2 to 20 mA	0.3 %	0.5 %; ± 20 mA, 0 to 20 mA, 4 to 20 mA	0.7 %; From 3.2 to 20 mA
• Resistance, relative to input range, (+/-)	0.7 %; 150, 300, 600 Ohm		0.5 %; 0 to 6 kohms, 0 to 600 kohms	0.7 %; 150, 300, 600 Ohm
• Resistance thermometer, relative to input range, (+/-)	0.7 %; $\pm 0.7\%$ (Pt100/ Ni100); $\pm 0.8\%$ (Pt100 climate)		1 Kelvin (Pt100, Ni100, climatic; Ni1000, LG-Ni1000, standard; Ni1000, LG-Ni1000, climatic); 1.2 Kelvin (Pt100, Ni100, standard)	0.7 %; $\pm 0.7\%$ (Pt100/ Ni100); $\pm 0.8\%$ (Pt100 climate)
• Thermocouple, relative to input range, (+/-)	1.1 %; Type E, J, K, L, N			1.1 %; Type E, J, K, L, N
Basic error limit (operational limit at 25 °C)				
• Voltage, relative to input range, (+/-)	0.6 %; $\pm 0.4\%$ (250 mV to 1 000 mV); $\pm 0.6\%$ (2.5 mV to 10 mV); $\pm 0.7\%$ (80 mV)	0.25 %	0.4 %; 0.4% (± 5 V, 10 V, 1 to 5 V, 0 to 10 V); 0.3% (± 50 mV, 500 mV, 1 V)	0.6 %; $\pm 0.6\%$ (80 mV, 2.5 V to 10 V); $\pm 0.4\%$ (250 mV to 1 000 mV)
• Current, relative to input range, (+/-)	0.5 %; 3.2 to 20 mA	0.2 %	0.3 %; ± 20 mA, 0 to 20 mA, 4 to 20 mA	0.5 %; 3.2 to 20 mA
• Resistance, relative to input range, (+/-)	0.5 %; 150, 300, 600 Ohm		0.3 %; 0 to 6 kohms, 0 to 600 kohms	0.5 %; 150, 300, 600 Ohm
• Resistance thermometer, relative to input range, (+/-)	0.6 %; $\pm 0.5\%$ (Pt100/ Ni100), $\pm 0.6\%$ (Pt100 climate)		1 Kelvin (Pt100, Ni100, standard); 0.8 Kelvin (Pt100, Ni100, climatic; Ni1000, LG-Ni1000, standard; Ni1000, LG-Ni1000, climatic)	0.6 %; $\pm 0.5\%$ (Pt100/ Ni100), $\pm 0.6\%$ (Pt100 climate)
• Thermocouple, relative to input range, (+/-)	0.7 %; Type E, N, J, K, L			0.7 %; Type E, N, J, K, L
Interrupts/diagnostics/status information				
Diagnostics function	Yes; Parameterizable	Yes	No	Yes; Parameterizable
Alarms				
• Diagnostic alarm	Yes; Parameterizable, channels 0 and 2	Yes; Parameterizable	No	Yes
• Limit value alarm	Yes; Parameterizable	Yes; Parameterizable, channels 0 and 2	No	Yes; Parameterizable, channel 0
Connection method				
required front connector	20-pin	20-pin	40-pin	20-pin
Dimensions				
Width	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm
Depth	117 mm	117 mm	117 mm	120 mm
Weights				
Weight, approx.	250 g	230 g	250 g	250 g

SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

SM 331 analog input modules

Technical specifications

Article number	6ES7331-7PF01-0AB0 SM331, 8AI, resistor, PT100/200/1000	6ES7331-7PF11-0AB0 SM331, 8AI, 16BIT, Thermocouples	6ES7331-7PE10-0AB0 SM331, 6AI, 16bit, Thermocouples	6ES7331-7NF00-0AB0 SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA	6ES7331-7NF10-0AB0 SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA
Supply voltage					
Load voltage L+					
• Rated value (DC)	24 V	24 V	24 V		24 V
Input current					
from load voltage L+ (without load), max.	240 mA	240 mA	150 mA		200 mA
from backplane bus 5 V DC, max.	100 mA	100 mA	100 mA	130 mA	100 mA
Power loss					
Power loss, typ.	4.6 W	3 W	2.2 W	0.6 W	3 W
Analog inputs					
Number of analog inputs	8	8	6	8	8
• For resistance measurement	8				
permissible input voltage for voltage input (destruction limit), max.	75 V; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20)	75 V; 20 V DC permanent, 75 V DC for max. 1 s (duty factor 1:20)	35 V; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20)	50 V; Permanent	75 V; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20)
permissible input current for current input (destruction limit), max.				32 mA	40 mA
Input ranges (rated values), voltages					
• 0 to +10 V	No	No	No	No	No
• 1 V to 5 V	No	No	No	Yes	Yes
• 1 V to 10 V	No	No	No	No	No
• -1 V to +1 V	No	No	Yes	No	No
• -10 V to +10 V	No	No	No	Yes	Yes
• -2.5 V to +2.5 V	No	No	No	No	No
• -250 mV to +250 mV	No	No	Yes	No	No
• -5 V to +5 V	No	No	No	Yes	Yes
• -50 mV to +50 mV	No	No	Yes	No	No
• -500 mV to +500 mV	No	No	Yes	No	No
• -80 mV to +80 mV	No	No	Yes	No	No
Input ranges (rated values), currents					
• 0 to 20 mA	No	No	No	Yes	Yes
• -10 mA to +10 mA	No	No	No	No	No
• -20 mA to +20 mA	No	No	No	Yes	Yes
• -3.2 mA to +3.2 mA	No	No	No	No	No
• 4 mA to 20 mA	No	No	No	Yes	Yes
Input ranges (rated values), thermocouples					
• Type B	No	Yes	Yes	No	No
• Type C	No	Yes	Yes	No	No
• Type E	No	Yes	Yes	No	No
• Type J	No	Yes	Yes	No	No
• Type K	No	Yes	Yes	No	No
• Type L	No	Yes	Yes	No	No
• Type N	No	Yes	Yes	No	No
• Type R	No	Yes	Yes	No	No
• Type S	No	Yes	Yes	No	No
• Type T	No	Yes	Yes	No	No
• Type U	No	Yes	Yes	No	No
• Type TXK/TXK(L) to GOST	No	Yes	Yes	No	No

Technical specifications

Article number	6ES7331-7PF01-0AB0 SM331, 8AI, resistor, PT100/200/1000	6ES7331-7PF11-0AB0 SM331, 8AI, 16BIT, Thermocouples	6ES7331-7PE10-0AB0 SM331, 6AI, 16bit, Thermocouples	6ES7331-7NF00-0AB0 SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA	6ES7331-7NF10-0AB0 SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA
Input ranges (rated values), resistance thermometer					
• Cu 10	Yes	No	No	No	No
• Ni 100	Yes	No	No	No	No
• Ni 1000	Yes	No	No	No	No
• LG-Ni 1000	Yes	No	No	No	No
• Ni 120	Yes	No	No	No	No
• Ni 200	Yes	No	No	No	No
• Ni 500	Yes	No	No	No	No
• Pt 100	Yes	No	No	No	No
• Pt 1000	Yes	No	No	No	No
• Pt 200	Yes	No	No	No	No
• Pt 500	Yes	No	No	No	No
Input ranges (rated values), resistors					
• 0 to 150 ohms	Yes	No	No	No	No
• 0 to 300 ohms	Yes	No	No	No	No
• 0 to 600 ohms	Yes	No	No	No	No
• 0 to 6000 ohms		No	No	No	No
Thermocouple (TC)					
Temperature compensation					
- parameterizable		Yes	Yes		
- internal temperature compensation		Yes	Yes		
- external temperature compensation with Pt100		Yes	Yes		
- external temperature compensation with compensations socket		Yes	Yes		
- for definable comparison point temperature		Yes	Yes		
Characteristic linearization					
• parameterizable	Yes	Yes	Yes		
- for thermocouples		Type B, E, J, K, L, N, R, S, T, U, C	Type B, E, J, K, L, N, R, S, T, U, C, TXK, XK(L)		
- for resistance thermometer	Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10; (standard/climate)		No		
Cable length					
• shielded, max.	200 m	100 m	200 m	200 m	200 m
Analog value generation for the inputs					
Integration and conversion time/resolution per channel					
• Resolution with overrange (bit including sign), max.	16 bit; Two's complement	16 bit; Two's complement	16 bit; Two's complement	16 bit; Unipolar: 15/15/15/15 bit; bipolar: 15 bit + sign/15 bit + sign/15 bit + sign/15 bit + sign	16 bit; Unipolar: 15/15/15/15 bit; bipolar: 15 bit + sign/15 bit + sign/15 bit + sign/15 bit + sign
• Integration time, parameterizable	Yes	Yes	Yes	Yes; 10/ 16.67/ 20/ 100 ms	Yes; 23 / 72 / 83 / 95 ms
• Basic conversion time (ms)	up to 4 channels: 10 ms per module, over 5 channels: 190 ms per module, 8 channels: 80 ms	Up to 4 channels: 10 ms per module, 5 channels upwards: 190 ms per module	30 / 50 / 60 / 300 ms		10 ms (4-channel mode); 95/83/72/23 ms (8-channel mode)
• Integration time (ms)			10/ 16.67/ 20/ 100 ms		
• Interference voltage suppression for interference frequency f1 in Hz	400 / 60 / 50 Hz	400 / 60 / 50 Hz	10 / 50 / 60 / 400 Hz	400 / 60 / 50 / 10 Hz	400 / 60 / 50 Hz, combinations of 400, 60, 50 Hz

SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

SM 331 analog input modules

Technical specifications

Article number	6ES7331-7PF01-0AB0 SM331, 8AI, resistor, PT100/200/1000	6ES7331-7PF11-0AB0 SM331, 8AI, 16BIT, Thermocouples	6ES7331-7PE10-0AB0 SM331, 6AI, 16bit, Thermocouples	6ES7331-7NF00-0AB0 SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA	6ES7331-7NF10-0AB0 SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA
Encoder					
Connection of signal encoders					
- for voltage measurement - for current measurement as 2-wire transducer			Yes	Yes	Yes
for current measurement as 4-wire transducer				Yes	Yes
for resistance measurement with two-wire connection	Yes; without resistance correction				
for resistance measurement with three-wire connection	Yes				
for resistance measurement with four-wire connection	Yes				
Errors/accuracies					
Operational error limit in overall temperature range					
Voltage, relative to input range, (+/-)		±1 K	Operating error at 0 ... 60 °C: ±0.12% @ ±25 mV, ±0.08% @ ±50 mV, ±0.6% @ ±80 mV, ±0.05% @ ±250 mV, ±0.05% @ 500 mV, ±0.05% @ ±1 V	0.1 %; At Ucm = 0 V or ±0.7 % at Ucm = 50 V	0.1 %
Current, relative to input range, (+/-)				0.3 %; At Ucm = 0 V or ±0.9 % at Ucm = 50 V	0.1 %
Resistance, relative to input range, (+/-)	0.1 %				
Resistance thermometer, relative to input range, (+/-)	±1 K				
Thermocouple, relative to input range, (+/-)		Type T: ±0.18%, Type U: ±0.15%, Type E: ±0.12%, Type J: ±0.12%, Type L: ±0.17%, Type K: ±0.15%, Type N: ±0.17%, Type R: ±0.08%, Type S: ±0.10%, Type B: ±0.13%, Type C: ±0.10%, TXK/XK(L): ±1.00% accuracy in the lower range of the characteristic curve	See manual for details		
Basic error limit (operational limit at 25 °C)					
Voltage, relative to input range, (+/-)			See manual for details	0.05 %	0.05 %
Current, relative to input range, (+/-)				0.05 %	0.05 %
Resistance, relative to input range, (+/-)	0.05 %				
Resistance thermometer, relative to input range, (+/-)	±0.5 K				

Technical specifications

Article number	6ES7331-7PF01-0AB0 SM331, 8AI, resistor, PT100/200/1000	6ES7331-7PF11-0AB0 SM331, 8AI, 16BIT, Thermocouples	6ES7331-7PE10-0AB0 SM331, 6AI, 16bit, Thermocouples	6ES7331-7NF00-0AB0 SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA	6ES7331-7NF10-0AB0 SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA
Thermocouple, relative to input range, (+/-)		Type T: $\pm 0.13\%$, Type U: $\pm 0.08\%$, Type E: $\pm 0.05\%$, Type J: $\pm 0.04\%$, Type L: $\pm 0.06\%$, Type K: $\pm 0.04\%$, Type N: $\pm 0.04\%$, Type R: $\pm 0.03\%$, Type S: $\pm 0.03\%$, Type B: $\pm 0.05\%$, Type C: $\pm 0.02\%$, TXK/XK(L): $\pm 0.67\%$ accuracy in the lower range of the characteristic curve	See manual for details		
Interrupts/diagnostics/status information					
Diagnostics function	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable
Alarms					
Diagnostic alarm	Yes; Parameterizable per group	Yes; Parameterizable per group	Yes; channel by channel	Yes; Parameterizable	Yes; Parameterizable
Limit value alarm	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable, channels 0 and 2	Yes; Parameterizable all channels (end of cycle interrupt is also supported across modules)
Hardware interrupt	Yes; Parameterizable, channels 0 to 7	Yes; Parameterizable, channels 0 to 7	Yes; Parameterizable		Yes; Parameterizable, channels 0 to 7 (on exceeding limit value), at end of cycle
Connection method					
required front connector	40-pin	40-pin	40-pin	40-pin	40-pin
Dimensions					
Width	40 mm	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm	117 mm	117 mm
Weights					
Weight, approx.	272 g	272 g	272 g	272 g	272 g

SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

SM 332 analog output modules

Overview



- Analog outputs
- For the connection of analog actuators

Ordering data

SM 332 analog output modules

Incl. labeling strips, bus connector

4 outputs, 11/12 bits

4 outputs, 16 bits

2 outputs, 11/12 bits

8 outputs, 11/12 bits

Article No.

6ES7332-5HD01-0AB0

6ES7332-7ND02-0AB0

6ES7332-5HB01-0AB0

6ES7332-5HF00-0AB0

Front connector

20-pin, with screw contacts

- 1 unit
- 100 units

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

40-pin, with screw contacts

- 1 unit
- 100 units

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1AJ00-0AA0

6ES7392-1AJ00-1AB0

6ES7392-1BJ00-0AA0

6ES7392-1BJ00-1AB0

6ES7392-1AM00-0AA0

6ES7392-1AM00-1AB0

Front door, elevated design

e.g. for 32-channel modules; for connecting 1.3 mm²/16 AWG wires

6ES7328-0AA00-7AA0

SIMATIC TOP connect

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Bus connectors

1 unit (spare part)

6ES7390-0AA00-0AA0

Shield connection element

80 mm wide, with 2 rows for 4 shield connection clamps each

6ES7390-5AA00-0AA0

Shield connection clamps

2 units

For 2 cables with 2 mm to 6 mm diameter

6ES7390-5AB00-0AA0

For 1 cable with 3 mm to 8 mm diameter

6ES7390-5BA00-0AA0

For 1 cable with 4 mm to 13 mm diameter

6ES7390-5CA00-0AA0

Label cover

10 units (spare part), for modules with 20-pin front connector

Article No.

6ES7392-2XY00-0AA0

Labeling strips

10 units (spare part), for modules with 20-pin front connector

6ES7392-2XX00-0AA0

Labeling sheets for machine labeling

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

For modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units

Petrol

6ES7392-2AX10-0AA0

Light beige

6ES7392-2BX10-0AA0

Yellow

6ES7392-2CX10-0AA0

Red

6ES7392-2DX10-0AA0

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6ES7998-8XC01-8YE0

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6ES7998-8XC01-8YE2

Technical specifications

Article number	6ES7332-5HB01-0AB0 SM332, 2AA, U/I, 11/12Bit	6ES7332-5HD01-0AB0 SM332, 4AO, U/I, 11/12Bit	6ES7332-5HF00-0AB0 SM332, 8AA, U/I, 11/12Bit	6ES7332-7ND02-0AB0 SM332, 4AA, 0-10V, 0-5V, +/-10V, +/-20mA
Supply voltage				
Load voltage L+				
• Rated value (DC)	24 V	24 V	24 V	24 V
Input current				
from load voltage L+ (without load), max.	135 mA	240 mA	340 mA	290 mA
from backplane bus 5 V DC, max.	60 mA	60 mA	100 mA	120 mA
Power loss				
Power loss, typ.	3 W	3 W	6 W	3 W
Analog outputs				
Number of analog outputs	2	4	8	4; Isochronous mode
Voltage output, short-circuit protection	Yes	Yes	Yes	Yes
Voltage output, short-circuit current, max.	25 mA	25 mA	25 mA	40 mA
Current output, no-load voltage, max.	18 V	18 V	18 V	18 V
Output ranges, voltage				
• 0 to 10 V	Yes	Yes	Yes	Yes
• 1 V to 5 V	Yes	Yes	Yes	Yes
• -10 V to +10 V	Yes	Yes	Yes	Yes
Output ranges, current				
• 0 to 20 mA	Yes	Yes	Yes	Yes
• -20 mA to +20 mA	Yes	Yes	Yes	Yes
• 4 mA to 20 mA	Yes	Yes	Yes	Yes
Load impedance (in rated range of output)				
• with voltage outputs, min.	1 kΩ	1 kΩ	1 kΩ	1 kΩ
• with voltage outputs, capacitive load, max.	1 μF	1 μF	1 μF	1 μF
• with current outputs, max.	500 Ω	500 Ω	500 Ω	500 Ω
• with current outputs, inductive load, max.	10 mH	10 mH	10 mH	1 mH
Cable length				
• shielded, max.	200 m	200 m	200 m	200 m
Analog value generation for the outputs				
Integration and conversion time/resolution per channel				
• Resolution with overrange (bit including sign), max.	12 bit; ±10 V, ±20 mA, 4 mA to 20 mA, 1 V to 5 V: 11 bit + sign; 0 V to 10 V, 0 mA to 20 mA: 12 bit	12 bit; ±10 V, ±20 mA, 4 mA to 20 mA, 1 V to 5 V: 11 bit + sign; 0 V to 10 V, 0 mA to 20 mA: 12 bit	12 bit; ±10 V, ±20 mA, 4 mA to 20 mA, 1 V to 5 V: 11 bit + sign; 0 V to 10 V, 0 mA to 20 mA: 12 bit	16 bit
• Conversion time (per channel)	0.8 ms	0.8 ms	0.8 ms	200 μs; in isochronous mode 640 μs
Settling time				
• for resistive load	0.2 ms	0.2 ms	0.2 ms	0.2 ms
• for capacitive load	3.3 ms	3.3 ms	3.3 ms	3.3 ms
• for inductive load	0.5 ms; 0.5 ms (1 mH); 3.3 ms (10 mH)	0.5 ms; 0.5 ms (1 mH); 3.3 ms (10 mH)	0.5 ms; 0.5 ms (1 mH); 3.3 ms (10 mH)	0.5 ms

SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

SM 332 analog output modules**Technical specifications**

Article number	6ES7332-5HB01-0AB0 SM332, 2AA, U/I, 11/12Bit	6ES7332-5HD01-0AB0 SM332, 4AO, U/I, 11/12Bit	6ES7332-5HF00-0AB0 SM332, 8AA, U/I, 11/12Bit	6ES7332-7ND02-0AB0 SM332, 4AA, 0-10V, 0-5V, +/-10V,+/-20mA
Errors/accuracies				
Operational error limit in overall temperature range				
• Voltage, relative to output range, (+/-)	0.5 %	0.5 %	0.5 %	0.12 %
• Current, relative to output range, (+/-)	0.6 %	0.6 %	0.6 %	0.18 %
Basic error limit (operational limit at 25 °C)				
• Voltage, relative to output range, (+/-)	0.4 %	0.4 %	0.4 %	0.02 %
• Current, relative to output range, (+/-)	0.5 %	0.5 %	0.5 %	0.02 %
Interrupts/diagnostics/status information				
Diagnostics function	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable
Alarms				
• Diagnostic alarm	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable
Connection method				
required front connector	20-pin	20-pin	40-pin	20-pin
Dimensions				
Width	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm
Depth	117 mm	117 mm	117 mm	117 mm
Weights				
Weight, approx.	220 g	220 g	272 g	220 g

Overview



- Analog inputs and outputs
- For the connection of analog sensors and actuators

5

Ordering data

Article No.

Article No.

SM 334 analog input/output modules

Incl. labeling strips, bus connector

4 inputs, 2 outputs

6ES7334-0CE01-0AA0

4 inputs, 2 outputs, resistance measurement, Pt 100

6ES7334-0KE00-0AB0

Front connector

20-pin, with screw contacts

- 1 unit
- 100 units

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

20-pin, with spring-loaded terminals

- 1 unit
- 100 units

6ES7392-1BJ00-0AA0
6ES7392-1BJ00-1AB0**Front door, elevated design**

6ES7328-0AA00-7AA0

e.g. for 32-channel modules; for connecting 1.3 mm²/16 AWG wires**SIMATIC TOP connect**

See page 5/237

Bus connectors

6ES7390-0AA00-0AA0

1 unit (spare part)

Shield connection element

6ES7390-5AA00-0AA0

80 mm wide, with 2 rows for 4 shield connection clamps each

Shield connection clamps

2 units

For 2 cables with 2 mm to 6 mm diameter

6ES7390-5AB00-0AA0

For 1 cable with 3 mm to 8 mm diameter

6ES7390-5BA00-0AA0

For 1 cable with 4 mm to 13 mm diameter

6ES7390-5CA00-0AA0

Label cover

10 units (spare part), for modules with 20-pin front connector

6ES7392-2XY00-0AA0

Labeling strips

10 units (spare part), for modules with 20-pin front connector

6ES7392-2XX00-0AA0

Labeling sheets for machine labeling

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

SIMATIC Manual Collection

6ES7998-8XC01-8YE0

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6ES7998-8XC01-8YE2

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SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

SM 334 analog input/output modules

Technical specifications

Article number	6ES7334-0CE01-0AA0 SM334, 4AI, 2AO, non isolated	6ES7334-0KE00-0AB0 SM334, 4AI/2AO, 0-10V f.PT100
Supply voltage		
Load voltage L+		
• Rated value (DC)	24 V	24 V
Input current		
from supply and load voltage L+ (without load), max.	110 mA	80 mA
from backplane bus 5 V DC, max.	55 mA	60 mA
Power loss		
Power loss, typ.	3 W	2 W
Analog inputs		
Number of analog inputs	4	4
• For voltage measurement	4	2
• For resistance measurement		4
permissible input voltage for voltage input (destruction limit), max.	20 V	20 V; continuous; 75 V for max. 1 s (mark to space ratio 1:20)
permissible input current for current input (destruction limit), max.	40 mA	
Cycle time (all channels) max.	5 ms	85 ms
Input ranges (rated values), voltages		
• 0 to +10 V	Yes	Yes
Input ranges (rated values), currents		
• 0 to 20 mA	Yes	
Input ranges (rated values), resistance thermometer		
• Pt 100		Yes; only climatic range
Input ranges (rated values), resistors		
• 0 to 10000 ohms		Yes
Characteristic linearization		
• parameterizable		Yes
- for resistance thermometer		Pt100 (climate)
Cable length		
• shielded, max.	200 m	100 m
Analog outputs		
Number of analog outputs	2	2
Voltage output, short-circuit protection	Yes	Yes
Voltage output, short-circuit current, max.	11 mA	30 mA
Current output, no-load voltage, max.	15 V	
Output ranges, voltage		
• 0 to 10 V	Yes	Yes
Output ranges, current		
• 0 to 20 mA	Yes	
Load impedance (in rated range of output)		
• with voltage outputs, min.	5 kΩ	2.5 kΩ
• with voltage outputs, capacitive load, max.	1 μF	1 μF
• with current outputs, max.	300 Ω	
• with current outputs, inductive load, max.	1 mH	
Cable length		
• shielded, max.	200 m	100 m

Technical specifications

Article number	6ES7334-0CE01-0AA0 SM334, 4AI, 2AO, non isolated	6ES7334-0KE00-0AB0 SM334, 4AI/2AO, 0-10V f.PT100
Analog value generation for the inputs		
Integration and conversion time/resolution per channel		
• Resolution with overrange (bit including sign), max.	8 bit	12 bit
• Integration time, parameterizable	No	Yes
• Integration time (ms)		16,67 / 20 ms
• Interference voltage suppression for interference frequency f1 in Hz		50 / 60 Hz
Analog value generation for the outputs		
Integration and conversion time/resolution per channel		
• Resolution with overrange (bit including sign), max.	8 bit	12 bit
• Conversion time (per channel)	500 µs	500 µs
Settling time		
• for resistive load	0.3 ms	0.8 ms
• for capacitive load	3 ms	0.8 ms
• for inductive load	0.3 ms	
Encoder		
Connection of signal encoders		
• for voltage measurement	Yes	Yes
• for current measurement as 2-wire transducer	No	
• for current measurement as 4-wire transducer	Yes	
• for resistance measurement with two-wire connection		Yes
• for resistance measurement with three-wire connection		Yes
• for resistance measurement with four-wire connection		Yes
Errors/accuracies		
Operational error limit in overall temperature range		
• Voltage, relative to input range, (+/-)	0.9 %	0.7 %; 0 to 10V
• Current, relative to input range, (+/-)	0.8 %	
• Resistance, relative to input range, (+/-)		3.5 %; 10 kOhm
• Resistance thermometer, relative to input range, (+/-)		1 %
• Voltage, relative to output range, (+/-)	0.6 %	1 %
• Current, relative to output range, (+/-)	1 %	
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to input range, (+/-)	0.7 %	0.5 %; 0 to 10V
• Current, relative to input range, (+/-)	0.6 %	
• Resistance, relative to input range, (+/-)		2.8 %; 10 kOhm
• Resistance thermometer, relative to input range, (+/-)		0.8 %
• Voltage, relative to output range, (+/-)	0.5 %	0.85 %
• Current, relative to output range, (+/-)	0.5 %	

SIMATIC S7-300 Advanced Controllers

I/O modules
Analog modules

SM 334 analog input/output modules

Technical specifications

Article number	6ES7334-0CE01-0AA0 SM334, 4AI, 2AO, non isolated	6ES7334-0KE00-0AB0 SM334, 4AI/2AO, 0-10V f.PT100
Interrupts/diagnostics/ status information		
Alarms	No	No
Diagnostics function	No	No
connection method		
required front connector	20-pin	20-pin
Dimensions		
Width	40 mm	40 mm
Height	125 mm	125 mm
Depth	117 mm	117 mm
Weights		
Weight, approx.	285 g	200 g

Overview



- Analog inputs
- For connecting voltage sensors and current sensors, thermocouples, resistors and resistance thermometers

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.

Article No.

**SIPLUS S7-300 SM 331
analog input modules**

*For industrial applications with
extended ambient conditions*

Extended temperature range and
exposure to environmental
substances

8 inputs, 13-bit resolution

6AG1331-1KF02-7AB0

2 inputs, 9/12/14-bit resolution

6AG1331-7KB02-2AB0

8 inputs, 9/12/14-bit resolution

6AG1331-7KF02-2AB0

8 inputs, enhanced 16-bit resolution

6AG1331-7NF00-2AB0

8 inputs, enhanced 16-bit
resolution, 4-channel mode

6AG1331-7NF10-2AB0

Exposure to environmental
substances

8 inputs, for thermal resistors

6AG1331-7PF01-4AB0

8 inputs, for thermocouples

6AG1331-7PF11-4AB0

*For rolling stock railway
applications*

Conforms to EN 50155

8 inputs, 9/12/14-bit resolution

6AG1331-7KF02-2AB0

8 inputs, enhanced 16-bit resolution

6AG1331-7NF00-2AB0

Accessories

Mandatory

Front connector

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0
6ES7392-1BM01-1AB0

Consumables

Front door, elevated design

E.g. for 32-channel modules;
for connecting 1.3 mm²/16 AWG
conductors; cabling diagram and
labeling strips in petrol

6ES7328-0AA00-7AA0

Bus connectors

1 unit (spare part)

6ES7390-0AA00-0AA0

Labeling strips

10 units (spare part)

For modules with 20-pin front
connector

6ES7392-2XX00-0AA0

For modules with 40-pin front
connector

6ES7392-2XX10-0AA0

Label cover

10 units (spare part)

For modules with 20-pin front
connector

6ES7392-2XY00-0AA0

For modules with 40-pin front
connector

6ES7392-2XY10-0AA0

Documentation

SIMATIC Manual Collection

Electronic manuals on DVD,
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SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 analog modules

SIPLUS S7-300 SM 331

Technical specifications

Article number	6AG1331-1KF02-7AB0	6AG1331-7KB02-2AB0	6AG1331-7KF02-2AB0
Based on	6ES7331-1KF02-0AB0	6ES7331-7KB02-0AB0	6ES7331-7KF02-0AB0
	SIPLUS S7-300 SM331 8AI	SIPLUS S7-300 SM 331 2AI	SIPLUS S7-300 SM331 8AI
Ambient conditions			
Ambient temperature during operation			
- min. - max.	-25 °C 70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	-25 °C; = Tmin 70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	-25 °C; = Tmin 70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies
Altitude during operation relating to sea level			
- Installation altitude above sea level, max. - Ambient air temperature-barometric pressure-altitude	5 000 m Tmin ... Tmax at 1 140 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)
Resistance			
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3 - to chemically active substances according to EN 60721-3-3 - to mechanically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *	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 land craft, rail vehicles and special-purpose vehicles			
- to biologically active substances according to EN 60721-3-5 - to chemically active substances according to EN 60721-3-5 - to mechanically active substances according to EN 60721-3-5			Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); * Yes; Class 5S3 incl. sand, dust; *
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6 - to chemically active substances according to EN 60721-3-6 - to mechanically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6B2 mold 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			
- 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)	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark			
Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 analog modules

SIPLUS S7-300 SM 331**Technical specifications**

Article number	6AG1331-7NF00-2AB0	6AG1331-7NF10-2AB0	6AG1331-7PF01-4AB0	6AG1331-7PF11-4AB0
Based on	6ES7331-7NF00-0AB0	6ES7331-7NF10-0AB0	6ES7331-7PF01-0AB0	6ES7331-7PF11-0AB0
	SIPLUS S7-300 SM331 8AI - 40-pin	SIPLUS S7-300 SM 331 8AI - 40-pin	SIPLUS S7-300 SM 331 8AI - 40-pin	SIPLUS S7-300 SM331 8AI 40-pin
Ambient conditions				
Ambient temperature during operation				
• min.	-25 °C; = Tmin	-25 °C; = Tmin	0 °C; = Tmin	0 °C; = Tmin
• max.	70 °C; = Tmax; for use on railway vehicles according to EN 50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/UL hazardous use applies	60 °C; = Tmax	60 °C; = Tmax	60 °C; = Tmax
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	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)	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)
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 land craft, rail vehicles and special-purpose vehicles				
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 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; *

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 analog modules

SIPLUS S7-300 SM 331**Technical specifications**

Article number	6AG1331-7NF00-2AB0	6AG1331-7NF10-2AB0	6AG1331-7PF01-4AB0	6AG1331-7PF11-4AB0
Based on	6ES7331-7NF00-0AB0	6ES7331-7NF10-0AB0	6ES7331-7PF01-0AB0	6ES7331-7PF11-0AB0
	SIPLUS S7-300 SM331 8AI - 40-pin	SIPLUS S7-300 SM 331 8AI - 40-pin	SIPLUS S7-300 SM 331 8AI - 40-pin	SIPLUS S7-300 SM331 8AI - 40-pin
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



- Analog outputs
- For connection of analog actuators

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.

Article No.

**SIPLUS S7-300 SM 332
analog output modules**

*For industrial applications with
extended ambient conditions*

Extended temperature range and
exposure to environmental
substances

2 outputs, 11/12-bit

6AG1332-5HB01-2AB0

4 outputs, 11/12-bit

6AG1332-5HD01-7AB0

8 outputs, 11/12-bit

6AG1332-5HF00-2AB0

Exposure to environmental
substances

4 outputs, 16-bit; only exposure to
environmental substances

6AG1332-7ND02-4AB0

*For rolling stock railway
applications*

Conforms to EN 50155

2 outputs, 11/12-bit

6AG1332-5HB01-2AB0

Accessories

Mandatory

Front connector

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0
6ES7392-1BM01-1AB0

Consumables

Front door, elevated design

E.g. for 32-channel modules;
for connecting 1.3 mm²/16 AWG
conductors; cabling diagram and
labeling strips in petrol

6ES7328-0AA00-7AA0

Bus connectors

1 unit (spare part)

6ES7390-0AA00-0AA0

Labeling strips

10 units (spare part)

For modules with 20-pin front
connector

6ES7392-2XX00-0AA0

For modules with 40-pin front
connector

6ES7392-2XX10-0AA0

Label cover

10 units (spare part)

For modules with 20-pin front
connector

6ES7392-2XY00-0AA0

For modules with 40-pin front
connector

6ES7392-2XY10-0AA0

Documentation

SIMATIC Manual Collection

Electronic manuals on DVD,
multilingual:
all manuals for
S7-1200/1500/200/300/400,
LOGO!, SIMATIC DP, PC, PG,
STEP 7, Engineering software,
runtime SW, SIMATIC HMI,
SIMATIC NET, SIMATIC IDENT

6ES7998-8XC01-8YE0

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 analog modules

SIPLUS S7-300 SM 332**Technical specifications**

Article number	6AG1332-5HD01-7AB0	6AG1332-7ND02-4AB0	6AG1332-5HB01-2AB0	6AG1332-5HF00-2AB0
Based on	6ES7332-5HD01-0AB0	6ES7332-7ND02-0AB0	6ES7332-5HB01-0AB0	6ES7332-5HF00-0AB0
	SIPLUS S7-300 SM332 4AO U/I	SIPLUS S7-300 SM332 4AO	SIPLUS S7-300 SM332 2AO	SIPLUS S7-300 SM 332 8AO - 40-pin
Ambient conditions				
Ambient temperature during operation				
• min.	-25 °C; = Tmin	0 °C; = Tmin	-25 °C; = Tmin	-25 °C
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	60 °C; = Tmax	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies	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	5 000 m	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)	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)
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 land craft, rail vehicles and special-purpose vehicles				
- to biologically active substances according to EN 60721-3-5			Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	
- to chemically active substances according to EN 60721-3-5			Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	
- to mechanically active substances according to EN 60721-3-5			Yes; Class 5S3 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; *

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 analog modules

SIPLUS S7-300 SM 332**Technical specifications**

Article number	6AG1332-5HD01-7AB0	6AG1332-7ND02-4AB0	6AG1332-5HB01-2AB0	6AG1332-5HF00-2AB0
Based on	6ES7332-5HD01-0AB0 SIPLUS S7-300 SM332 4AO U/I	6ES7332-7ND02-0AB0 SIPLUS S7-300 SM332 4AO	6ES7332-5HB01-0AB0 SIPLUS S7-300 SM332 2AO	6ES7332-5HF00-0AB0 SIPLUS S7-300 SM 332 8AO - 40-pin
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!

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 analog modules

SIPLUS S7-300 SM 334

Overview



- Analog inputs and outputs
- For connection of analog sensors and actuators

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

SIPLUS S7-300 SM 334 analog input/output modules

*For industrial applications with
extended ambient conditions*

Extended temperature range and
exposure to environmental
substances

4 inputs, 2 outputs; resistance test,
Pt 100

Article No.

6AG1334-0KE00-7AB0

Accessories

Mandatory

Front connector

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0
6ES7392-1BM01-1AB0

Consumables

Front door, elevated design

E.g. for 32-channel modules;
for connecting 1.3 mm²/16 AWG
conductors; cabling diagram and
labeling strips in petrol

6ES7328-0AA00-7AA0

Bus connectors

1 unit (spare part)

6ES7390-0AA00-0AA0

Article No.

Labeling strips

10 units (spare part)

For modules with 20-pin front
connector

6ES7392-2XX00-0AA0

For modules with 40-pin front
connector

6ES7392-2XX10-0AA0

Label cover

10 units (spare part)

For modules with 20-pin front
connector

6ES7392-2XY00-0AA0

For modules with 40-pin front
connector

6ES7392-2XY10-0AA0

Documentation

SIMATIC Manual Collection

Electronic manuals on DVD,
multilingual:
all manuals for
S7-1200/1500/200/300/400,
LOGO!, SIMATIC DP, PC, PG,
STEP 7, Engineering software,
runtime SW, SIMATIC HMI,
SIMATIC NET, SIMATIC IDENT

6ES7998-8XC01-8YE0

SIMATIC Manual Collection update service for 1 year

Current Manual Collection DVD and
the three subsequent updates

6ES7998-8XC01-8YE2

Technical specifications

Article number	6AG1334-0KE00-7AB0
Based on	6ES7334-0KE00-0AB0 SIPLUS S7-300 SM334 4AI / 2AO
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	6AG1334-0KE00-7AB0
Based on	6ES7334-0KE00-0AB0 SIPLUS S7-300 SM334 4AI / 2AO
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!

SIMATIC S7-300 Advanced Controllers

I/O modules

F-digital/analog modules

SM 326 F-digital input modules - Safety Integrated

Overview



- Digital inputs for the fail-safe SIMATIC S7 systems
- For connecting:
 - Switches and 2-wire proximity switches
 - Sensors according to NAMUR and mechanical contacts, also for signals from hazardous areas
- With integral safety functions for fail-safe operation
- Can be used in fail-safe operation
 - Centrally: with S7-31xF-2 DP
 - Distributed in ET 200M: with SIMATIC IM 151-7 F-CPU, S7-31xF-2 DP, S7-416F-2 and S7-400F/FH
- In standard operation can be used in the same way as S7-300 modules

Ordering data

Article No.

SM 326 F-digital input module

24 inputs, 24 V DC

6ES7326-1BK02-0AB0

8 inputs, 24 V DC, NAMUR

6ES7326-1RF01-0AB0

S7 Distributed Safety V5.4 SP5 Update 2 programming tool

Task:

Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP

Requirement:

Windows 7 SP1 (64-bit), Windows 10 Professional/Enterprise (64-bit), Windows Server 2008 R2 SP1 (64-bit), Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit); STEP 7 from V5.5 SP1; Please also note the operating systems that have been released for the STEP 7 version used

Floating license for 1 user, software and documentation on DVD; license key on USB flash drive

6ES7833-1FC02-0YA5

Floating license for 1 user, software, documentation and license key for download¹⁾; Email address required for delivery

6ES7833-1FC02-0YH5

S7 Distributed Safety upgrade

From V5.x to V5.4; floating license for 1 user, software and documentation on DVD; license key on USB flash drive

6ES7833-1FC02-0YE5

Article No.

STEP 7 Safety Advanced V18

Task:

Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco I/O

Requirement:

STEP 7 Professional V18

Note:

As of TIA Portal V16, the SIMATIC STEP 7 Safety software is an integral component of the SIMATIC STEP 7 product setup. The functionality of SIMATIC STEP 7 Safety is activated by means of the license key supplied in each case.

Floating license for 1 user; license key on USB flash drive

6ES7833-1FA18-0YA5

Floating license for 1 user, license key for download¹⁾; Email address required for delivery

6ES7833-1FA18-0YH5

¹⁾ Up-to-date information and download availability can be found under <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-300 Advanced Controllers

I/O modules

F-digital/analog modules

SM 326 F-digital input modules - Safety Integrated

5

Ordering data	Article No.	Article No.
DIN rail for active bus modules For max. 5 active 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	6ES7392-2XX20-0AA0
Active bus module BM 1 x 80 for 1 module, 80 mm wide	6ES7195-7HC00-0XA0	
SITOP power supply For ET 200M; 120/230 V AC, 24 V DC, 5 A; Type PS 307-1E	6ES7307-1EA01-0AA0	
Front connectors 40-pin, with screw connections 1 unit 100 units 40-pin, with spring-loaded contacts 1 unit 100 units	6ES7392-1AM00-0AA0 6ES7392-1AM00-1AB0 6ES7392-1BM01-0AA0 6ES7392-1BM01-1AB0	
Front door, higher version, for F-modules For F-modules; for connecting 1.3 mm ² /16 AWG conductors; wiring diagram and labeling strips in yellow	6ES7328-7AA10-0AA0	
		Labeling strips For F-modules (spare part); 10 units Label cover For F-modules (spare part); 10 units LK 393 cable guide For F-modules; L+ and M connections; 5 units SIMATIC Manual Collection Electronic manuals on DVD, multilingual: all manuals for S7-1200/1500/200/300/400, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering software, runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT SIMATIC Manual Collection update service for 1 year Current Manual Collection DVD and the three subsequent updates
		6ES7392-2XY20-0AA0 6ES7393-4AA10-0AA0 6ES7998-8XC01-8YE0 6ES7998-8XC01-8YE2

Technical specifications

Article number	6ES7326-1RF01-0AB0	6ES7326-1BK02-0AB0
	SM326, 8DI, DC24V, failsafe	SM326, F-DI 24 X DC24V, failsafe
Supply voltage		
Rated value (DC)	24 V	24 V
Input current		
from load voltage L+ (without load), max.	160 mA	450 mA
from backplane bus 5 V DC, max.	90 mA	100 mA
Encoder supply		
Number of outputs	8	4; Isolated
Output current		
• Rated value		400 mA
Power loss		
Power loss, typ.	4.5 W	10 W
Digital inputs		
Number of digital inputs	8	24
Input voltage		
• Type of input voltage	DC	DC
• Rated value (DC)		24 V
• for signal "0"		-30 to +5 V
• for signal "1"		+11 to +30V
Input current		
• for signal "1", typ.	2.1 to 7 mA	10 mA
Input delay (for rated value of input voltage) for standard inputs		
- at "0" to "1", max.		3.4 ms
for NAMUR inputs		
- at "0" to "1", max.	1.2 to 3 ms	
- at "1" to "0", max.	1.2 to 3 ms	
Cable length		
• shielded, max.	200 m	200 m

SIMATIC S7-300 Advanced Controllers

I/O modules

F-digital/analog modules

SM 326 F-digital input modules - Safety Integrated

Technical specifications

Article number	6ES7326-1RF01-0AB0 SM326, 8DI, DC24V, failsafe	6ES7326-1BK02-0AB0 SM326, F-DI 24 X DC24V, failsafe
Encoder		
Connectable encoders		
2-wire sensor - permissible quiescent current (2-wire sensor), max.		Yes; if short-circuit test is deactivated 2 mA
Interrupts/diagnostics/ status information		
Diagnostics function		Yes
Alarms		
Diagnostic alarm	Yes; Parameterizable	Yes
Ex(i) characteristics		
Module for Ex(i) protection	Yes	
maximum values for connecting terminals for gas group IIC		
- U_o (no-load voltage), max. - I_o (short-circuit current), max. - P_o (power output), max. - C_o (permissible external capacity), max. - L_o (permissible external inductivity), max. - U_m (voltage at non-intrinsically safe connecting terminals), max.	10 V 13.9 mA 33.1 mW 3 µF 80 mH 60 V DC/30 V AC	
Standards, approvals, certificates		
Highest safety class achievable in safety mode		
- acc. to DIN VDE 0801 - acc. to EN 954 - SIL acc. to IEC 61508	Cat. 4 SIL 2 (single-channel), SIL 3 (two-channel)	AK 6 Cat. 4 SIL 3
Ambient conditions		
Ambient temperature during operation		
max.	60 °C	
connection method		
required front connector	1x 40-pin	40-pin
Dimensions		
Width	80 mm	80 mm
Height	125 mm	125 mm
Depth	120 mm	120 mm
Weights		
Weight, approx.	482 g	442 g

Overview

- Digital outputs for the fail-safe SIMATIC S7 systems
- Two versions (1 x switching to P/P potential, 1 x switching to P/M potential)
- For connecting solenoid valves, DC contactors and indicator lights
- With integral safety functions for fail-safe operation
- Can be used in fail-safe operation
 - Centrally: with S7-31xF DP, S7-31xF PN/DP
 - Distributed in ET 200M: with SIMATIC IM 151-7 F-CPU, S7-31xF-2 DP, S7-41xF-2 and S7-400F/FH

5**Ordering data****Article No.****Article No.****SM 326 F-digital output module**

10 outputs, 24 V DC, 2 A PP;
width 40 mm

6ES7326-2BF10-0AB0

8 outputs, 24 V DC, 2 A PM;
width 80 mm

6ES7326-2BF41-0AB0**S7 Distributed Safety V5.4 SP5
Update 2 programming tool****Task:**

Configuration software for
configuring fail-safe user programs
for SIMATIC S7-300F, S7-400F,
WinAC RTX F, ET 200S, ET 200M,
ET 200iSP, ET 200pro, ET 200eco,
ET 200SP

Requirement:

Windows 7 SP1 (64-bit),
Windows 10 Professional/Enterprise
(64-bit),
Windows Server 2008 R2 SP1
(64-bit),
Windows Server 2012 R2 (64-bit),
Windows Server 2016 (64-bit);
STEP 7 from V5.5 SP1;
Please also note the operating
systems that have been released
for the STEP 7 version used

Floating license for 1 user,
software and documentation on
DVD; license key on USB flash drive

6ES7833-1FC02-0YA5

Floating license for 1 user, software,
documentation and license key for
download¹⁾;
Email address required for delivery

6ES7833-1FC02-0YH5**S7 Distributed Safety upgrade**

From V5.x to V5.4;
floating license for 1 user,
software and documentation
on DVD;
license key on USB flash drive

6ES7833-1FC02-0YE5**STEP 7 Safety Advanced V18****Task:**

Engineering tool for configuring
and programming fail-safe user
programs for
SIMATIC S7-1200 FC, S7-1500F,
S7-1500F Software Controller,
S7-300F, S7-400F, WinAC RTX F,
ET 200SP F Controller and the
fail-safe ET 200SP, ET 200MP,
ET 200S, ET 200M, ET 200iSP,
ET 200pro and ET 200eco I/O

Requirement:

STEP 7 Professional V18

Note:

As of TIA Portal V16, the
SIMATIC STEP 7 Safety software is
an integral component of the
SIMATIC STEP 7 product setup.
The functionality of SIMATIC STEP 7
Safety is activated by means of the
license key supplied in each case.

Floating license for 1 user;
license key on USB flash drive

6ES7833-1FA18-0YA5

Floating license for 1 user,
license key for download¹⁾;
Email address required for delivery

6ES7833-1FA18-0YH5**DIN rail for active bus modules**

For max. 5 active bus modules,
for function "Insertion and removal"

- 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****Active bus modules**

BM 2 x 40 for accepting
2 I/O modules each 40 mm wide

6ES7195-7HB00-0XA0

BM 1 x 80 for accepting
1 I/O module 80 mm wide

6ES7195-7HC00-0XA0

¹⁾ Up-to-date information and download availability can be found under
<http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-300 Advanced Controllers

I/O modules

F-digital/analog modules

SM 326 F-digital output modules - Safety Integrated

5

Ordering data

Article No.

SITOP power supply

For ET 200M; 120/230 V AC,
24 V DC, 5 A; Type PS 307-1E

6ES7307-1EA01-0AA0

Front connectors

40-pin, with screw connections

- 1 unit
- 100 units

6ES7392-1AM00-0AA0

6ES7392-1AM00-1AB0

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0

6ES7392-1BM01-1AB0

Front door, higher version, for F-modules

For F-modules; for connecting
1.3 mm²/16 AWG conductors;
wiring diagram and labeling strips
in yellow

6ES7328-7AA10-0AA0

Labeling strips

For F-modules (spare part), 10 units

6ES7392-2XX20-0AA0

Label cover

For F-modules (spare part), 10 units

6ES7392-2XY20-0AA0

Article No.

LK 393 cable guide

For F-modules;
L+ and M connections, 5 units

6ES7393-4AA10-0AA0

SIMATIC Manual Collection

Electronic manuals on DVD,
multilingual:
all manuals for
S7-1200/1500/200/300/400,
LOGO!, SIMATIC DP, PC, PG,
STEP 7, Engineering software,
runtime SW, SIMATIC HMI,
SIMATIC NET, SIMATIC IDENT

6ES7998-8XC01-8YE0

SIMATIC Manual Collection update service for 1 year

Current Manual Collection DVD and
the three subsequent updates

6ES7998-8XC01-8YE2

Technical specifications

Article number	6ES7326-2BF10-0AB0	6ES7326-2BF41-0AB0
	SM326, F-DO 10 X DC 24V/2A PP, failsafe	SM 326, F-DO 8 X DC 24V/2A PM
Supply voltage		
Rated value (DC)	24 V; 1L+	24 V; 1L+
Load voltage L+		
• Rated value (DC)	24 V; 2L+, 3L+	24 V; 2L+, 3L+
Input current		
from supply voltage 1L+, max.	100 mA	75 mA
from load voltage 2L+ (without load), max.	100 mA	100 mA
from load voltage 3L+ (without load), max.	100 mA	100 mA
from backplane bus 5 V DC, max.	100 mA	100 mA
Power loss		
Power loss, typ.	6 W	12 W
Digital outputs		
Number of digital outputs	10	8
Short-circuit protection	Yes	Yes
Limitation of inductive shutdown voltage to		L+ (-33 V)
Switching capacity of the outputs		
• on lamp load, max.	5 W	5 W
Output voltage		
• for signal "1", min.	L+ (-1.0 V)	L+ (-1.0 V)
Output current		
• for signal "1" rated value	2 A	2 A
• for signal "0" residual current, max.	0.5 mA	0.5 mA
Switching frequency		
• with resistive load, max.	25 Hz	30 Hz
• with inductive load, max.	25 Hz	2 Hz
• on lamp load, max.	10 Hz	10 Hz

Technical specifications

Article number	6ES7326-2BF10-0AB0 SM326, F-DO 10 X DC 24V/2A PP, failsafe	6ES7326-2BF41-0AB0 SM 326, F-DO 8 X DC 24V/2A PM
Total current of the outputs (per group)		
horizontal installation		
- up to 40 °C, max.	10 A	7.5 A
- up to 60 °C, max.	6 A	5 A
vertical installation		
- up to 40 °C, max.	5 A	5 A
Cable length		
• shielded, max.	1 000 m	200 m; 200 m for SIL 3, AK 6, Cat 4
Interrupts/diagnostics/status information		
Alarms		
• Diagnostic alarm	Yes	Yes; Parameterizable
Standards, approvals, certificates		
Highest safety class achievable in safety mode		
• acc. to DIN VDE 0801	AK 5 and 6	
• acc. to EN 954	Cat. 4	Cat. 4
• SIL acc. to IEC 61508	SIL 3	SIL 3
connection method		
required front connector	40-pin	40-pin
Dimensions		
Width	40 mm	80 mm
Height	125 mm	125 mm
Depth	120 mm	120 mm
Weights		
Weight, approx.	330 g	465 g

SIMATIC S7-300 Advanced Controllers

I/O modules

F-digital/analog modules

SM 336 F-analog input modules - Safety Integrated

Overview



- Analog inputs for fail-safe SIMATIC S7 systems
- Can be used in the ET 200M distributed I/O device with IM 153-2 HF as well as centrally with SIMATIC S7-31xF-2 DP
- Properties of the SM 336; F-AI 6 x 0/4 ... 20 mA HART:
 - 6 analog inputs with galvanic isolation between channels and backplane bus
 - Input ranges: 0 mA to 20 mA, 4 mA to 20 mA
 - Short-circuit-proof power supply of 2- or 4-wire transmitters via the module
 - External encoder supply possible
 - Can be used in safety mode
 - HART communication
 - Firmware update using HW Config
 - Identification data

Ordering data

Article No.

SM 336 F-analog input module

6 inputs, 15 bits, 0/4 ... 20 mA HART

6ES7336-4GE00-0AB0

S7 Distributed Safety V5.4 SP5 Update 2 programming tool

Task:

Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP

Requirement:

Windows 7 SP1 (64-bit), Windows 10 Professional/Enterprise (64-bit), Windows Server 2008 R2 SP1 (64-bit), Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit); STEP 7 from V5.5 SP1; Please also note the operating systems that have been released for the STEP 7 version used

Floating license for 1 user, software and documentation on DVD; license key on USB flash drive

6ES7833-1FC02-0YA5

Floating license for 1 user, software, documentation and license key for download¹⁾; Email address required for delivery

6ES7833-1FC02-0YH5

S7 Distributed Safety upgrade

From V5.x to V5.4; floating license for 1 user, software and documentation on DVD; license key on USB flash drive

6ES7833-1FC02-0YE5

Article No.

STEP 7 Safety Advanced V18

Task:

Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco I/O

Requirement:

STEP 7 Professional V18

Note:

As of TIA Portal V16, the SIMATIC STEP 7 Safety software is an integral component of the SIMATIC STEP 7 product setup. The functionality of SIMATIC STEP 7 Safety is activated by means of the license key supplied in each case.

Floating license for 1 user; license key on USB flash drive

6ES7833-1FA18-0YA5

Floating license for 1 user, license key for download¹⁾; Email address required for delivery

6ES7833-1FA18-0YH5

DIN rail for active bus modules

For max. 5 active bus modules for hot swapping function

- Length: 483 mm
- Length: 530 mm
- Length: 620 mm
- Length: 2000 mm

6ES7195-1GA00-0XA0

6ES7195-1GF30-0XA0

6ES7195-1GG30-0XA0

6ES7195-1GC00-0XA0

Active bus module BM 2x40

6ES7195-7HB00-0XA0

Bus module for accepting 2 I/O modules each 40 mm wide

¹⁾ Up-to-date information and download availability can be found under <http://www.siemens.com/tia-online-software-delivery>.

SIMATIC S7-300 Advanced Controllers

I/O modules

F-digital/analog modules

SM 336 F-analog input modules - Safety Integrated

5

Ordering data	Article No.		Article No.
SITOP power supply For ET 200M; 120/230 V AC, 24 V DC, 5 A; Type PS 307-1E	6ES7307-1EA01-0AA0	LK 393 cable guide For F-modules; L+ and M connections, 5 units	6ES7393-4AA10-0AA0
Front connectors 20-pin, with screw contacts • 1 unit • 100 units 20-pin, with spring-loaded contacts • 1 unit • 100 units	6ES7392-1AJ00-0AA0 6ES7392-1AJ00-1AB0 6ES7392-1BJ00-0AA0 6ES7392-1BJ00-1AB0	SIMATIC Manual Collection Electronic manuals on DVD, multilingual: all manuals for S7-1200/1500/200/300/400, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering software, runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT	6ES7998-8XC01-8YE0
Front door, higher version, for F-modules For F-modules; for connecting 1.3 mm ² /16 AWG conductors; wiring diagram and labeling strips in yellow	6ES7328-7AA10-0AA0	SIMATIC Manual Collection update service for 1 year Current Manual Collection DVD and the three subsequent updates	6ES7998-8XC01-8YE2
Labeling strips For F-modules (spare part), 10 units	6ES7392-2XX20-0AA0		
Label cover For F-modules (spare part), 10 units	6ES7392-2XY20-0AA0		

Technical specifications

Article number	6ES7336-4GE00-0AB0	Article number	6ES7336-4GE00-0AB0
	SM 336, f.AI 6 X 0/4 ... 20mA HART		SM 336, f.AI 6 X 0/4 ... 20mA HART
Supply voltage		Errors/accuracies	
Rated value (DC)	24 V	Operational error limit in overall temperature range	
Load voltage L+		• Current, relative to input range, (+/-) 0.2 %; 40 µA	
• Rated value (DC)	24 V	Basic error limit (operational limit at 25 °C)	
Input current		• Current, relative to input range, (+/-) 0.1 %	
From power supply L+, typ.	150 mA	Interrupts/diagnostics/ status information	
from backplane bus 5 V DC, max.	90 mA	Diagnostics function	Yes
Power loss		Alarms	
Power loss, typ.	4.5 W	• Diagnostic alarm	Yes
Analog inputs		Standards, approvals, certificates	
Number of analog inputs	6	Highest safety class achievable in safety mode	
permissible input current for current input (destruction limit), max.	40 mA	• acc. to EN 954	4
Input ranges (rated values), currents		• SIL acc. to IEC 61508	SIL 3
• 0 to 20 mA	Yes	connection method	
• 4 mA to 20 mA	Yes	required front connector	20-pin
Cable length		Dimensions	
• shielded, max.	1 000 m	Width	40 mm
Analog value generation for the inputs		Height	125 mm
Integration and conversion time/resolution per channel		Depth	120 mm
• Resolution with overrange (bit including sign), max.	16 bit; 15 bit + sign	Weights	
• Integration time (ms)	20 ms @ 50 Hz, 16.7 ms @ 60 Hz	Weight, approx.	350 g
• Interference voltage suppression for interference frequency f1 in Hz	f=n x (f1 ±0.5 %)		
Encoder			
Connection of signal encoders			
• for current measurement as 2-wire transducer	Yes		
• for current measurement as 4-wire transducer	Yes		

SIMATIC S7-300 Advanced Controllers

I/O modules

F-digital/analog modules

Safety protector

Overview



- Supports mixed operation of fail-safe signal modules in safety mode and S7-300 standard modules in an ET 200M distributed I/O device for achieving Cat. 4 or SIL 3.
- The safety protector is not required if the safety class or safety category to be achieved is less than SIL 3 or Cat. 4, respectively.

When Cat. 4/SIL 3 is required, the safety protector must be implemented in the following situations:

Application	Safety protector must be used
Central use after CPU 31xF-2 DP or CPU 31xF-2 PN/DP • Only fail-safe modules in the tier • Standard and fail-safe modules in the tier	Yes, behind the CPU Yes, after the last standard module and before the first fail-safe module
Central use after CPU 31xF-2 DP or CPU 31xF-2 PN/DP in an expansion rack • Only fail-safe modules in the tier • Standard and fail-safe modules in the tier	Yes, after the IM 36x Yes, after the last standard module and before the first fail-safe module
Distributed behind the IM 153-2 with copper connection • Only fail-safe modules in the station • Standard and fail-safe modules in the station	Yes, after the IM 153-2 Yes, after the last standard module and before the first fail-safe module
Distributed behind the IM 153-2 with fiber-optic connection • Only fail-safe modules in the station • Standard and fail-safe modules in the station	No Yes, after the last standard module and before the first fail-safe module

Ordering data

Article No.

Safety protector

For simultaneous operation of fail-safe and standard modules in ET 200M

6ES7195-7KF00-0XA0

Bus safety protector

For holding the safety protector in ET 200M

6ES7195-7HG00-0XA0

Technical specifications

Article number	6ES7195-7KF00-0XA0
General information	Safety Protector betw. F- and Std-Mod.
Product type designation	Safety protector
Weights	
Weight, approx.	10 g

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 F-digital/analog modules

SIPLUS S7-300 SM 326 - Safety Integrated**Overview**

- Digital inputs for the fail-safe SIPLUS S7 systems
- For connecting:
 - Switches and 2-wire proximity switches
 - Sensors according to NAMUR and mechanical contacts, also for signals from hazardous areas
- With integral safety functions for fail-safe operation
- Can be used in fail-safe operation
 - Centrally: with S7-31xF-2 DP
 - Distributed in ET 200M: with SIMATIC IM 151-7 F-CPU, S7-31xF-2 DP, S7-416F-2 and S7-400F/FH
- In standard operation can be used in the same way as S7-300 modules

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.

5**Ordering data****Article No.****SIPLUS S7-300 SM 326
F-digital input**

*For industrial applications with
extended ambient conditions*

Extended temperature range and
exposure to media

24 inputs, 24 V DC, fail-safe,
with diagnostics interrupt

6AG1326-1BK02-2AB0

8 inputs, 24 V DC, NAMUR, fail-safe

6AG1326-1RF01-4AB0**Accessories**

Mandatory

Front connector

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0
6ES7392-1BM01-1AB0

*Accessories for hot swapping
function*

Active bus module

BM 1 x 80 for 1 module,
80 mm wide

6AG1195-7HC00-2XA0**Article No.***Consumables***DIN rail for active bus modules**

For max. 5 active 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
**Front door, elevated design,
for F-modules**

For F-modules; for connecting
1.3 mm²/16 AWG wires; wiring
diagram and labels in yellow

6ES7328-7AA10-0AA0**Labeling strips**

For F-modules (spare part); 10 units

6ES7392-2XX20-0AA0**Label cover**

For F-modules (spare part); 10 units

6ES7392-2XY20-0AA0**LK 393 cable guide**

For F-modules;
L+ and M connections; 5 units

6ES7393-4AA10-0AA0

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 F-digital/analog modules

SIPLUS S7-300 SM 326 - Safety Integrated**Ordering data****Article No.****Article No.***Programming tools and documentation***S7 Distributed Safety V5.4 SP5 Update 2 programming tool**Task:

Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP

Requirement:

Windows 7 SP1 (64-bit), Windows 10 Professional/Enterprise (64-bit), Windows Server 2008 R2 SP1 (64-bit), Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit); STEP 7 as of V5.5 SP1; Please also consider the operating systems that have been released for the used STEP 7 version

Floating license for 1 user; software and documentation on DVD; license key on USB flash drive

Floating license for 1 user; software, documentation and license key for download¹⁾; email address required for delivery

S7 Distributed Safety upgrade

From V5.x to V5.4; floating license for 1 user; software and documentation on DVD; license key on USB flash drive

6ES7833-1FC02-0YA5**6ES7833-1FC02-0YH5****6ES7833-1FC02-0YE5****STEP 7 Safety Advanced V17**Task:

Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe I/O ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco

Requirement:

STEP 7 Professional V17

Note:

As of TIA Portal V16, the SIMATIC STEP 7 Safety software is an integral component of the SIMATIC STEP 7 product setup. The functionality of SIMATIC STEP 7 Safety is activated by means of the license key supplied in each case.

Floating license for 1 user; license key on USB flash drive

Floating license for 1 user, license key for download¹⁾; email address required for delivery

6ES7833-1FA17-0YA5**6ES7833-1FA17-0YH5****SIMATIC Manual Collection**

Electronic manuals on DVD, multilingual: all manuals for S7-1200/1500/200/300/400, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering software, runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT

6ES7998-8XC01-8YE0**SIMATIC Manual Collection update service for 1 year**

Current Manual Collection DVD and the three subsequent updates

6ES7998-8XC01-8YE2

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

Technical specifications

Article number	6AG1326-1BK02-2AB0	6AG1326-1RF01-4AB0
Based on	6ES7326-1BK02-0AB0 SIPLUS S7-300 SM326F DI24	6ES7326-1RF01-0AB0 SIPLUS S7-300 SM326F DI8 NAMUR
Ambient conditions		
Ambient temperature during operation		
• min. • max.	-25 °C; = Tmin 60 °C; = Tmax; *+70 °C where forced convection with a minimum air velocity of 0.7 m/s through the modules and rated voltage of 24 V ±5 % are ensured. If in the course of maintenance or automatic diagnosis it is determined that the admissible specified parameters have been exceeded, the modules should be subjected to a proof test (function check) by the manufacturer.	0 °C; = Tmin 60 °C; = Tmax
Altitude during operation relating to sea level		
• Installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude	2 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	2 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
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 - to chemically active substances according to EN 60721-3-3 - to mechanically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6 - to chemically active substances according to EN 60721-3-6 - to mechanically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6B2 mold 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		
- Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark		
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 F-digital/analog modules

SIPLUS S7-300 SM 326 - Safety Integrated

Overview



- Digital outputs for the fail-safe SIMATIC S7 systems
- For connection of solenoid valves, DC contactors and indicator lights
- With integral safety functions for fail-safe operation
- Can be used in fail-safe mode
 - Centrally: with S7-31xF-2 DP
 - Distributed in ET 200M: with SIMATIC IM 151-7 F-CPU, S7-31xF-2 DP, S7-416F-2 and S7-400F/FH

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 S7-300 SM 326 F-digital output module

For industrial applications with extended ambient conditions

Extended temperature range and exposure to environmental substances

10 outputs, 24 V DC, 2 A, fail-safe

6AG1326-2BF10-2AB0

8 outputs, 24 V DC, 2 A, fail-safe, sourcing-sinking output

6AG1326-2BF41-2AB0

Accessories

Mandatory

Front connector

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0

6ES7392-1BM01-1AB0

Accessories for hot swapping function

Active bus module

BM 2 x 40 for accepting 2 I/O modules, each 40 mm wide

6AG1195-7HB00-7XA0

BM 1 x 80 for 1 module, 80 mm wide

6AG1195-7HC00-2XA0

Article No.

Consumables

DIN rail for active bus modules

For max. 5 active 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

Front door, elevated design, for F-modules

For F-modules; for connecting 1.3 mm²/16 AWG conductors; cabling diagram and labeling strips in yellow

6ES7328-7AA10-0AA0

Labeling strips

For F-modules (spare part); 10 units

6ES7392-2XX20-0AA0

Label cover

For F-modules (spare part); 10 units

6ES7392-2XY20-0AA0

LK 393 cable guide

For F-modules; L+ and M connections; 5 units

6ES7393-4AA10-0AA0

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SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 F-digital/analog modules

SIPLUS S7-300 SM 326 - Safety Integrated

Technical specifications

Article number	6AG1326-2BF10-2AB0	6AG1326-2BF41-2AB0
Based on	6ES7326-2BF10-0AB0 SIPLUS S7-300 SM326F 10DO	6ES7326-2BF41-0AB0 SIPLUS S7-300 SM326F 8DO
Ambient conditions		
Ambient temperature during operation		
• min. • max.	-25 °C 60 °C; = T max; *+70 °C when forced convection at a minimum air speed of 0.3 m/s through the modules is ensured. If in the course of maintenance or automatic diagnosis it is determined that the admissible specified parameters have been exceeded, the modules should be subjected to a proof test (function check) by the manufacturer.	-25 °C 60 °C
Altitude during operation relating to sea level		
• Installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude	2 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	2 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
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 - to chemically active substances according to EN 60721-3-3 - to mechanically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6 - to chemically active substances according to EN 60721-3-6 - to mechanically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6B2 mold 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		
- Against chemically active substances acc. to EN 60654-4 - Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark		
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 F-digital/analog modules

SIPLUS S7-300 SM 336 - Safety Integrated**Overview**

- Analog inputs for fail-safe SIPLUS S7 systems
- Applicable in the ET 200M distributed I/O device with IM 153-2 HF as well as centrally with SIPLUS S7-31xF-2 DP
- Properties of the SM 336; F-AI 6 x 0/4 ... 20 mA HART:

- 6 analog inputs with galvanic isolation between channels and backplane bus
- Input ranges: 0 mA to 20 mA, 4 mA to 20 mA
- Short-circuit proof power supply of 2 or 4-wire transmitter via the module
- External encoder supply possible
- Applicable in safety mode
- HART communication
- Firmware update using HW Config
- Identification data
- Temperature range -25 ... +70 °C;
(+70 °C when ensuring a forced convection with a minimal air velocity of 0.3 m/s through the module. If a violation of the permissible, specified parameters is detected during maintenance or by automatic diagnostics, the modules must be proof-tested by the manufacturer. Without this measure the temperature range is -25...60°C)

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 S7-300 SM 336
F-analog input module**

For industrial applications with extended ambient conditions

Extended temperature range and exposure to media

6 inputs, 15 bits,
0/4 ... 20 mA HART

6AG1336-4GE00-2AB0**Accessories**

Mandatory

Front connector

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

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

Accessories for hot swapping function

Active bus module

BM 2 x 40 for accepting
2 I/O modules, each 40 mm wide

6AG1195-7HB00-7XA0

Consumables

DIN rail for active bus modules

For max. 5 active 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

Front door, elevated design, for F-modules

For F-modules; for connecting 1.3 mm²/16 AWG wires; wiring diagram and labels in yellow

6ES7328-7AA10-0AA0**Article No.****Labeling strips**

For F-modules (spare part); 10 units

6ES7392-2XX20-0AA0**Label cover**

For F-modules (spare part); 10 units

6ES7392-2XY20-0AA0**LK 393 cable guide**

For F-modules;
L+ and M connections; 5 units

6ES7393-4AA10-0AA0

Programming tools and documentation

**S7 Distributed Safety V5.4 SP5
Update 2 programming tool**

Task:

Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP

Requirement:

Windows 7 SP1 (64-bit),
Windows 10 Professional/Enterprise (64-bit),
Windows Server 2008 R2 SP1 (64-bit),
Windows Server 2012 R2 (64-bit),
Windows Server 2016 (64-bit);
STEP 7 as of V5.5 SP1;
Please also consider the operating systems that have been released for the used STEP 7 version

Floating license for 1 user;
software and documentation on DVD; license key on USB flash drive

6ES7833-1FC02-0YA5

Floating license for 1 user; software, documentation and license key for download¹⁾;
email address required for delivery

6ES7833-1FC02-0YH5

¹⁾ For up-to-date information and download availability, see:
<http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 F-digital/analog modules

SIPLUS S7-300 SM 336 - Safety Integrated

Ordering data

Article No.

S7 Distributed Safety upgrade

From V5.x to V5.4;
floating license for 1 user;
software and documentation on
DVD; license key on USB flash drive

6ES7833-1FC02-0YE5

STEP 7 Safety Advanced V17

Task:
Engineering tool for configuring
and programming fail-safe user
programs for
SIMATIC S7-1200 FC, S7-1500F,
S7-1500F Software Controller,
S7-300F, S7-400F, WinAC RTX F,
ET 200SP F Controller and the
fail-safe I/O ET 200SP, ET 200MP,
ET 200S, ET 200M, ET 200ISP,
ET 200pro and ET 200eco
Requirement:
STEP 7 Professional V17

Note:

As of TIA Portal V16, the
SIMATIC STEP 7 Safety software
is an integral component of the
SIMATIC STEP 7 product setup.
The functionality of SIMATIC STEP 7
Safety is activated by means of the
license key supplied in each case.

Floating license for 1 user;
license key on USB flash drive

6ES7833-1FA17-0YA5

Floating license for 1 user,
license key for download¹⁾;
email address required for delivery

6ES7833-1FA17-0YH5

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runtime SW, SIMATIC HMI,
SIMATIC NET, SIMATIC IDENT

6ES7998-8XC01-8YE0

SIMATIC Manual Collection update service for 1 year

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the three subsequent updates

6ES7998-8XC01-8YE2

Technical specifications

Article number

6AG1336-4GE00-2AB0

Based on

6ES7336-4GE00-0AB0

SIPLUS S7-300 SM336 F 6AI 15BIT

Ambient conditions

Ambient temperature during operation

- min.
- max.

-25 °C; = Tmin; Startup @ -25 °C
60 °C; = Tmax; *+70 °C when forced
convection at a minimum air speed
of 0.3 m/s through the modules is
ensured. If in the course of
maintenance or automatic diagnosis
it is determined that the admissible
specified parameters have been
exceeded, the modules should be
subjected to a proof test (function
check) by the manufacturer.

Altitude during operation relating to sea level

- Installation altitude above sea level,
max.
- Ambient air temperature-barometric
pressure-altitude

2 000 m
Tmin ... Tmax at
1 140 hPa ... 795 hPa
(-1 000 m ... +2 000 m)

Relative humidity

- With condensation, tested in
accordance with IEC 60068-2-38,
max.

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
- 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); *

Use on ships/at sea

- to biologically active substances
according to EN 60721-3-6
- to chemically active substances
according to EN 60721-3-6
- to mechanically active substances
according to EN 60721-3-6

Yes; Class 6B2 mold and fungal
spores (excluding fauna); Class 6B3
on request
Yes; Class 6C3 (RH < 75 %) incl.
salt spray acc. to EN 60068-2-52
(severity degree 3); *

Usage in industrial process technology

- Against chemically active
substances acc. to EN 60654-4
- Environmental conditions for
process, measuring and control
systems acc. to ANSI/ISA-71.04

Yes; Class 3 (excluding
trichlorethylene)
Yes; Level GX group A/B
(excluding trichlorethylene; harmful
gas concentrations up to the limits of
EN 60721-3-3 class 3C4
permissible); level LC3 (salt spray)
and level LB3 (oil)

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!

¹⁾ For up-to-date information and download availability, see:
<http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 F-digital/analog modules

SIPLUS S7-300 safety protector**Overview**

- Allows combined operation of fail-safe signal modules in safety mode and S7-300 standard modules in an ET 200M.
- The safety protector is not required if the safety class SIL 3 or safety category < Cat. 4 is to be achieved.

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 F safety protector**

For the simultaneous operation of fail-safe and standard modules in the same ET 200M

For industrial applications with extended ambient conditions

Extended temperature range and exposure to media

6AG1195-7KF00-2XA0**Accessories****SIPLUS ET 200M bus safety protector F**

For the simultaneous operation of fail-safe and standard modules in ET 200M for the hot swapping function

Extended temperature range and exposure to media

6AG1195-7HG00-2XA0**Technical specifications**

Article number	6AG1195-7KF00-2XA0
Based on	6ES7195-7KF00-0XA0 SIPLUS S7-300 safety protector
Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	60 °C; = Tmax
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	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
- 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!

SIMATIC S7-300 Advanced Controllers

I/O modules

Ex digital modules

Ex digital input modules

Overview



- Digital inputs for signals from the Ex field
- For the connection of intrinsically safe digital equipment from the Ex field
- 4 DI NAMUR
- 4 digital inputs in 4 channel modules (single-channel isolation)
- Connectable encoder in accordance with EN 60947-5-6 and NAMUR, optionally with wired or unwired mechanical contacts
- Diagnostics and diagnostics alarm programmable

Ordering data

Ex digital input module 4 inputs, isolated, NAMUR	Article No. 6ES7321-7RD00-0AB0
Front connector 20-pin, with screw contacts • 1 unit • 100 units	Article No. 6ES7392-1AJ00-0AA0 6ES7392-1AJ00-1AB0
Front door, elevated design e.g. for 32 channel modules; enables connection of 1.3 mm ² /16 AWG wires	Article No. 6ES7328-0AA00-7AA0
LK 393 cable guide Mandatory for operation in Ex-hazard areas	Article No. 6ES7393-4AA00-0AA0
Labeling strips 10 units (spare part), for modules with 20-pin front connector	Article No. 6ES7392-2XX00-0AA0
Label cover 10 units (spare part), for modules with 20-pin front connector	Article No. 6ES7392-2XY00-0AA0

Article No.

Labeling sheets for machine inscription for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units petrol light-beige yellow red	Article No. 6ES7392-2AX00-0AA0 6ES7392-2BX00-0AA0 6ES7392-2CX00-0AA0 6ES7392-2DX00-0AA0
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: all manuals for S7-1200/1500/200/300/400, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering software, runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT	Article No. 6ES7998-8XC01-8YE0
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	Article No. 6ES7998-8XC01-8YE2

Technical specifications

Article number	6ES7321-7RD00-0AB0 SM321, 4DI, DC24V, HAZARDOUS AREAS
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
Input current	
from load voltage L+ (without load), max.	50 mA
from backplane bus 5 V DC, max.	80 mA
Power loss	
Power loss, typ.	1.1 W
Digital inputs	
Number of digital inputs	4
Number of NAMUR inputs	4
Input voltage	
• Type of input voltage	DC
• Rated value (DC)	8.2 V; from internal power circuit supply
Input current	
• on wire-break, max.	0.1 mA
• on short-circuit, max.	8.5 mA
for NAMUR encoders	
- for signal "0", min.	0.35 mA
- for signal "0", max.	1.2 mA
- for signal "1", min.	2.1 mA
- for signal "1", max.	7 mA
Input delay (for rated value of input voltage)	
• Input frequency (with a time delay of 0.1 ms), max.	2 kHz
for NAMUR inputs	
- parameterizable	Yes; 0.1 / 0.5 / 3 / 15 / 20 ms (plus 0.25 ms preparation time)
Encoder	
Connectable encoders	
• NAMUR encoder	Yes; Two-wire connection
Interrupts/diagnostics/status information	
Diagnostics function	Yes

Article number	6ES7321-7RD00-0AB0 SM321, 4DI, DC24V, HAZARDOUS AREAS
Ex(i) characteristics	
Module for Ex(i) protection	Yes
maximum values for connecting terminals for gas group IIC	
• U _o (no-load voltage), max.	10 V
• I _o (short-circuit current), max.	14.1 mA
• P _o (power output), max.	33.7 mW
• C _o (permissible external capacity), max.	3 µF
• L _o (permissible external inductivity), max.	100 mH
Standards, approvals, certificates	
Use in hazardous areas	
• ATEX marking	ATEX II 3 G (2) GD Ex nA [ib Gb] [ib IIIC Db] IIC T4 Gc
• FM marking	Class II, Division 2, Group A, B, C, D T4
• Test number PTB	Ex-96.D.2094X
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.	230 g

SIMATIC S7-300 Advanced Controllers

I/O modules

Ex digital modules

Ex digital output modules

Overview



- Digital outputs for signals from the Ex field
- For the connection of intrinsically safe digital equipment from the Ex field
- 4 DO 24 V DC/10mA or 4 DO 15 V DC/20 mA
- 4 digital outputs in 4 channel modules (single-channel isolation)
- Diagnostics and diagnostics alarm programmable
- Substitute value behavior programmable

Ordering data

Ex digital output modules

4 outputs, isolated, 24 V DC, 10 mA

4 outputs, isolated, 15 V DC, 20 mA

Front connector

20-pin, with screw contacts

- 1 unit
- 100 units

Front door, elevated design

e.g. for 32 channel modules;
enables connection of
1.3 mm²/16 AWG wires

LK 393 cable guide

Mandatory for operation in
Ex-hazard areas

Labeling strips

10 units (spare part), for modules
with 20-pin front connector

Label cover

10 units (spare part), for modules
with 20-pin front connector

Labeling sheets for machine inscription

for modules with 40-pin front
connector, DIN A4, for printing with
laser printer; 10 units

petrol

light-beige

yellow

red

Article No.

6ES7322-5SD00-0AB0

6ES7322-5RD00-0AB0

6ES7392-1AJ00-0AA0

6ES7392-1AJ00-1AB0

6ES7328-0AA00-7AA0

6ES7393-4AA00-0AA0

6ES7392-2XX00-0AA0

6ES7392-2XY00-0AA0

6ES7392-2AX00-0AA0

6ES7392-2BX00-0AA0

6ES7392-2CX00-0AA0

6ES7392-2DX00-0AA0

Article No.

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SIMATIC IDENT

6ES7998-8XC01-8YE0

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SIMATIC S7-300 Advanced Controllers

I/O modules

Ex digital modules

Ex digital output modules

Technical specifications

Article number	6ES7322-5SD00-0AB0 SM322, 4DO, 24V DC, 10MA, HAZARDOUS AREAS	6ES7322-5RD00-0AB0 SM322, 4DO, 15V DC, 20MA, HAZARDOUS AREAS
Supply voltage		
Load voltage L+		
• Rated value (DC)	24 V	24 V
Input current		
from load voltage L+ (without load), max.	160 mA	160 mA
from backplane bus 5 V DC, max.	85 mA	85 mA
Power loss		
Power loss, typ.	3 W	3 W
Digital outputs		
Number of digital outputs	4	4
Short-circuit protection	Yes; Electronic	Yes; Electronic
Load resistance range		
• upper limit	390 Ω; Two-wire connection	200 Ω; Two-wire connection
Output voltage		
• Rated value (DC)	24 V	15 V
Switching frequency		
• with resistive load, max.	100 Hz	100 Hz
Interrupts/diagnostics/ status information		
Diagnostics function	Yes	Yes
Ex(i) characteristics		
Module for Ex(i) protection	Yes	Yes
maximum values for connecting terminals for gas group IIC		
• U ₀ (no-load voltage), max.	25.2 V	15.75 V
• I ₀ (short-circuit current), max.	70 mA	85 mA
• P ₀ (power output), max.	440 mW	335 mW
• C ₀ (permissible external capacity), max.	90 nF	500 nF
• L ₀ (permissible external inductivity), max.	6.7 mH	5 mH
Standards, approvals, certificates		
Use in hazardous areas		
• ATEX marking	[EEx ib] IIC	[EEx ib] IIC
• FM marking	AIS CL.1, DIV 1, GP A, B, C, D; CL.I, DIV 2, GP A, B, C, D T4	AIS CL.1, DIV 1, GP A, B, C, D; CL.I, DIV 2, GP A, B, C, D T4
• Test number PTB	Ex-96.D.2093X	Ex-96.D.2102X
Ambient conditions		
Ambient temperature during operation		
• max.	60 °C	60 °C
Connection method		
required front connector	20-pin	20-pin
Dimensions		
Width	40 mm	40 mm
Height	125 mm	125 mm
Depth	120 mm	120 mm
Weights		
Weight, approx.	230 g	230 g

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 Ex digital modules

SIPLUS S7-300 Ex digital input modules

Overview



- Digital inputs for signals from the Ex field
- For the connection of intrinsically safe digital equipment from the Ex field
- 4 DI NAMUR
- 4 digital inputs in 4 channel modules (single-channel isolation)
- Connectable encoder in accordance with EN 60947-5-6 and NAMUR, optionally with wired or unwired mechanical contacts
- 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.

Ordering data

Article No.

SIPLUS S7-300 Ex digital input module

Exposure to media

4 inputs, isolated, NAMUR

6AG1321-7RD00-4AB0

Accessories

Mandatory

Front connector

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

Consumables

DIN rail for active bus modules

For max. 5 active 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

Front door, elevated design

E.g. for 32-channel modules; for connecting 1.3 mm²/16 AWG conductors; circuit diagram and nameplates in petrol

6ES7328-0AA00-7AA0

LK 393 cable guide

Mandatory for operation in hazardous areas

6ES7393-4AA00-0AA0

Labeling strips

10 units (spare part), for modules with 20-pin front connector

6ES7392-2XX00-0AA0

Article No.

Label cover

10 units (spare part), for modules with 20-pin front connector

6ES7392-2XY00-0AA0

Labeling sheets for machine inscription

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

Documentation

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LOGO!, SIMATIC DP, PC, PG,
STEP 7, Engineering software,
runtime SW, SIMATIC HMI,
SIMATIC NET, SIMATIC IDENT

6ES7998-8XC01-8YE0

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SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 Ex digital modules

SIPLUS S7-300 Ex digital input modules**Technical specifications**

Article number	6AG1321-7RD00-4AB0 SIPLUS S7-300 SM 321 4DI NAMUR
Ambient conditions	
Ambient temperature during operation	
• min.	0 °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)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

Article number	6AG1321-7RD00-4AB0 SIPLUS S7-300 SM 321 4DI NAMUR
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!

SIMATIC S7-300 Advanced Controllers

I/O modules

Ex analog modules

Ex analog input modules

Overview



- Analog inputs for signals from the Ex field
- For the connection of intrinsically safe analog equipment from the Ex field
- 8 or 4 analog inputs in 4 channel groups (single-channel isolation)
- Measurement type and range can be selected for each channel
- Diagnostics and diagnostics alarm programmable
- Programmable threshold alarm
- HART-compatible inputs (only 6ES7331-7RD00-0AB0)

Ordering data

Article No.

Ex analog input modules

4 inputs, isolated, 0/4 to 20 mA, 15 bit

6ES7331-7RD00-0AB0

8/4 inputs, isolated, for thermocouples and Pt100, Pt200, Ni100

6ES7331-7SF00-0AB0

Front connector

20-pin, with screw contacts

- 1 unit
- 100 units

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

Front door, elevated design

e.g. for 32 channel modules; enables connection of 1.3 mm²/16 AWG wires

6ES7328-0AA00-7AA0

LK 393 cable guide

Mandatory for operation in Ex-hazard areas

6ES7393-4AA00-0AA0

Labeling strips

10 units (spare part), for modules with 20-pin front connector

6ES7392-2XX00-0AA0

Label cover

10 units (spare part), for modules with 20-pin front connector

6ES7392-2XY00-0AA0

Labeling sheets for machine inscription

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

Article No.

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6ES7998-8XC01-8YE0

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6ES7998-8XC01-8YE2

Technical specifications

Article number	6ES7331-7RD00-0AB0 SM331, 4AI, 0/4-20mA, EX AREA	6ES7331-7SF00-0AB0 SM331, 8AI THERMO/4AI PT100, EX AREA
Supply voltage		
Load voltage L+		
• Rated value (DC)	24 V	24 V
Input current		
from load voltage L+ (without load), max.	250 mA	
from backplane bus 5 V DC, max.	60 mA	120 mA
Output voltage		
supply voltage of the transmitters		
• supply voltage / of the transmitters / at DC / rated value	13 V; at 22 mA	
Power loss		
Power loss, typ.	3 W	0.6 W
Analog inputs		
Number of analog inputs	4	8; 8x thermocouples; 4x RTD thermoresistors
permissible input current for current input (destruction limit), max.	40 mA	
Input ranges (rated values), voltages		
• -1 V to +1 V		Yes
• -25 mV to +25 mV		Yes
• -250 mV to +250 mV		Yes
• -50 mV to +50 mV		Yes
• -500 mV to +500 mV		Yes
• -80 mV to +80 mV		Yes
Input ranges (rated values), currents		
• 0 to 20 mA	Yes	
• 4 mA to 20 mA	Yes	
Input ranges (rated values), thermocouples		
• Type B		Yes
• Type E		Yes
• Type J		Yes
• Type K		Yes
• Type L		Yes
• Type N		Yes
• Type R		Yes
• Type S		Yes
• Type T		Yes
• Type U		Yes
Input ranges (rated values), resistance thermometer		
• Ni 100		Yes
• Pt 100		Yes
• Pt 200		Yes
Cable length		
• shielded, max.	200 m	200 m; TC: 50 m
Analog value generation for the inputs		
Integration and conversion time/resolution per channel		
• Resolution with overrange (bit including sign), max.	16 bit; 10 bit to 15 bit + sign	16 bit; 10 bit to 15 bit + sign
• Integration time, parameterizable	Yes; 2.5 to 100 ms	Yes; 2.5 to 100 ms
• Interference voltage suppression for interference frequency f1 in Hz	10 to 400 Hz	10 to 400 Hz
Encoder		
Connection of signal encoders		
• for current measurement as 2-wire transducer	Yes	Yes
• for current measurement as 4-wire transducer	Yes	Yes

SIMATIC S7-300 Advanced Controllers

I/O modules

Ex analog modules

Ex analog input modules

Technical specifications

Article number	6ES7331-7RD00-0AB0 SM331, 4AI, 0/4-20mA, EX AREA	6ES7331-7SF00-0AB0 SM331, 8AI THERMO/4AI PT100, EX AREA
Errors/accuracies		
Operational error limit in overall temperature range		
- Current, relative to input range, (+/-) - Resistance thermometer, relative to input range, (+/-)	0.45 %	0.04 %; 0.09 to 0.04%
Basic error limit (operational limit at 25 °C)		
- Current, relative to input range, (+/-) - Resistance thermometer, relative to input range, (+/-)	0.1 %	0.008 %; 0.018 ... 0.008%
Interrupts/diagnostics/status information		
Diagnostics function	Yes	Yes
Ex(i) characteristics		
Module for Ex(i) protection	Yes	Yes
maximum values for connecting terminals for gas group IIC		
- U_o (no-load voltage), max. - I_o (short-circuit current), max. - P_o (power output), max. - C_o (permissible external capacity), max. - L_o (permissible external inductivity), max.	25.2 V 68.5 mA 431 mW 90 nF 7.5 mH	5.9 V 28.8 mA 41.4 mW 43 µF 40 mH
Standards, approvals, certificates		
Use in hazardous areas		
- ATEX marking - FM marking - Test number PTB	ATEX II 3 G (2) GD Ex nA [ib Gb] [ib IIIC Db] IIC T4 Gc Class I, Division 2, Group A, B, C, D T4 Ex-96.D.2092X	ATEX II 3 G (2) GD Ex nA [ib Gb] [ib IIIC Db] IIC T4 Gc Class I, Division 2, Group A, B, C, D T4 Ex-96.D.2108X
Ambient conditions		
Ambient temperature during operation		
max.	60 °C	60 °C
Connection method		
required front connector	20-pin	20-pin
Dimensions		
Width	40 mm	
Height	125 mm	
Depth	120 mm	
Weights		
Weight, approx.	290 g	210 g

Overview



- Analog outputs for signals from the Ex field
- For the connection of intrinsically safe analog equipment from the Ex field
- 4 analog outputs in 4 channel modules (single-channel isolation)
- Diagnostics and diagnostics alarm programmable

5

Ordering data

Article No.

Article No.

Ex analog output module

4 outputs, isolated, 0/4 to 20 mA

6ES7332-5RD00-0AB0**Front connector**

20-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AJ00-0AA0
6ES7392-1AJ00-1AB0
Front door, elevated designe.g. for 32 channel modules;
enables connection of
1.3 mm²/16 AWG wires**6ES7328-0AA00-7AA0****LK 393 cable guide**Mandatory for operation
in hazardous areas**6ES7393-4AA00-0AA0****Labeling strips**10 units (spare part), for modules
with 20-pin front connector**6ES7392-2XX00-0AA0****Label cover**10 units (spare part), for modules
with 20-pin front connector**6ES7392-2XY00-0AA0****Labeling sheets for machine inscription**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**SIMATIC Manual Collection**Electronic manuals on DVD,
multilingual:
all manuals for
S7-1200/1500/200/300/400,
LOGO!, SIMATIC DP, PC, PG,
STEP 7, Engineering software,
runtime SW, SIMATIC HMI,
SIMATIC NET, SIMATIC IDENT**6ES7998-8XC01-8YE0****SIMATIC Manual Collection
update service for 1 year**Current "Manual Collection" DVD
and the three subsequent updates**6ES7998-8XC01-8YE2**

SIMATIC S7-300 Advanced Controllers

I/O modules

Ex analog modules

Ex analog output modules

Technical specifications

Article number	6ES7332-5RD00-0AB0 SM332, 4AO, 0/4-20MA, EX AREA
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
Input current	
from load voltage L+ (without load), max.	200 mA
from backplane bus 5 V DC, max.	80 mA
Power loss	
Power loss, typ.	4 W
Analog outputs	
Number of analog outputs	4
Voltage output, short-circuit protection	Yes
Voltage output, short-circuit current, max.	70 mA
Current output, no-load voltage, max.	14 V
Output ranges, current	
• 0 to 20 mA	Yes
• 4 mA to 20 mA	Yes
Load impedance (in rated range of output)	
• with current outputs, max.	500 Ω
Cable length	
• shielded, max.	200 m
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	15 bit
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, (+/-)	0.2 %

Article number	6ES7332-5RD00-0AB0 SM332, 4AO, 0/4-20MA, EX AREA
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Ex(i) characteristics	
Module for Ex(i) protection	Yes
maximum values for connecting terminals for gas group IIC	
• U _o (no-load voltage), max.	14 V
• I _o (short-circuit current), max.	70 mA
• P _o (power output), max.	440 mW
• C _o (permissible external capacity), max.	850 nF
• L _o (permissible external inductivity), max.	6.6 mH
Standards, approvals, certificates	
Use in hazardous areas	
• ATEX marking	[Ex ib] IIC
• FM marking	Class I, Division 2, Group A, B, C, D T4
• Test number PTB	Ex-96.D.2026X
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.	280 g

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 Ex analog modules

SIPLUS S7-300 Ex analog input modules**Overview**

- Analog inputs for signals from the Ex field
- For the connection of intrinsically safe analog equipment from the Ex field
- 4 analog inputs in 4 channel groups (single-channel isolation)
- Measurement type and range can be selected for each channel
- Programmable diagnostics and diagnostic interrupt
- Programmable threshold alarm
- HART-compatible inputs (6AG1 331-7RD00-2AB0 only)

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.

5**Ordering data****Article No.****Article No.****SIPLUS S7-300 Ex analog input modules**

Extended temperature range and exposure to media

4 inputs, isolated, 0/4 to 20 mA, 15 bit

Exposure to media

8/4 inputs, isolated, for thermocouples and Pt100, Pt200, Ni100; medial exposure only

Accessories

Mandatory

Front connector

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

Consumables

DIN rail for active bus modules

For max. 5 active bus modules for hot swapping function

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

Front door, elevated design

E.g. for 32-channel modules; for connecting 1.3 mm²/16 AWG conductors; circuit diagram and nameplates in petrol

LK 393 cable guide

Mandatory for operation in hazardous areas

6AG1331-7RD00-2AB0**6AG1331-7SF00-4AB0**
6ES7392-1BJ00-0AA0
6ES7392-1BJ00-1AB0
6ES7195-1GA00-0XA0
6ES7195-1GF30-0XA0
6ES7195-1GG30-0XA0
6ES7195-1GC00-0XA0
6ES7328-0AA00-7AA0**6ES7393-4AA00-0AA0****Labeling strips**

10 units (spare part), for modules with 20-pin front connector

Label cover

10 units (spare part), for modules with 20-pin front connector

Labeling sheets for machine inscription

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

Petrol

Light beige

Yellow

Red

Documentation

SIMATIC Manual Collection

Electronic manuals on DVD, multilingual: all manuals for S7-1200/1500/200/300/400, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering software, runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT

SIMATIC Manual Collection update service for 1 year

Current "Manual Collection" DVD and the three subsequent updates

6ES7392-2XX00-0AA0**6ES7392-2XY00-0AA0****6ES7392-2AX00-0AA0****6ES7392-2BX00-0AA0****6ES7392-2CX00-0AA0****6ES7392-2DX00-0AA0****6ES7998-8XC01-8YE0****6ES7998-8XC01-8YE2**

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 Ex analog modules

SIPLUS S7-300 Ex analog input modules

Technical specifications

Article number	6AG1331-7RD00-2AB0	6AG1331-7SF00-4AB0
Based on	6ES7331-7RD00-0AB0 SIPLUS S7-300 SM331 4AI	6ES7331-7SF00-0AB0 SIPLUS S7-300 SM331 AI 20-pin
Ambient conditions		
Ambient temperature during operation		
• min.	-25 °C; = Tmin	0 °C; = Tmin
• max.	60 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use, 70 °C only 4 wire	60 °C; = Tmax
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)
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



- Single-channel, intelligent counter module for simple counting tasks
- For direct connection of incremental encoders
- Comparison function with 2 definable comparison values
- Integrated digital outputs for output of the response on reaching the comparison value
- Operating modes:
 - Continuous counting
 - Single counting
 - Periodic counting
- Special functions:
 - Set counter
 - Latch counter
- Start/stop counter by gate function

Note:

Incremental encoder and preassembled connecting cables for counter and positioning function are offered under SIMODRIVE Sensor and Motion Connect 500, see under

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

Ordering data

FM 350-1 counter module

With 1 channel, max. 500 kHz;
for incremental encoder

Coding plug -
Range card for analog inputs

Spare part

Front connectors

20-pin, with screw contacts

- 1 unit
- 100 units

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

Bus connectors

1 unit (spare part)

Labeling strips

10 units (spare part)

Labeling sheets for machine
inscription

Slot number label

Spare part

Shield connection element

80 mm wide, with 2 rows of
4 terminals each

Shield connection clamps

2 units

For 2 cables, diameter 2 mm to
6 mm

For 1 cable, diameter 3 mm to 8 mm

For 1 cable, diameter 4 mm to
13 mm

Connectable incremental
encoders 6FX2 001-2...

Article No.

6ES7350-1AH03-0AE0

6ES7974-0AA00-0AA0

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

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

6ES7390-0AA00-0AA0

6ES7392-2XX00-0AA0

See under "Accessories",
page 5/253

6ES7912-0AA00-0AA0

6ES7390-5AA00-0AA0

6ES7390-5AB00-0AA0

6ES7390-5BA00-0AA0

6ES7390-5CA00-0AA0

See in SiePortal under
SIMODRIVE Sensor or
Motion Connect 500
(see also under
<http://www.siemens.com/simatic-technology>)

Article No.

Signal cable

Preassembled for HTL and TTL
encoder, without D-sub connector,
UL/DESINA

Length code:

0 m

100 m

200 m

0 m

10 m

20 m

30 m

40 m

50 m

60 m

70 m

80 m

90 m

0 m

1 m

2 m

3 m

4 m

5 m

6 m

7 m

8 m

9 m

6FX5002-2CA12- 0

1

2

3

A

B

C

D

E

F

G

H

J

K

A

B

C

D

E

F

G

H

J

K

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 350-1 counter module

Technical specifications

Article number	6ES7350-1AH03-0AE0 FM350-1, counter mod. up to 500KHz
Supply voltage	
Auxiliary voltage 1L+, load voltage 2L+	
• Rated value (DC)	24 V
Input current	
from load voltage 1L+ (without load), max.	40 mA
from backplane bus 5 V DC, max.	160 mA
Encoder supply	
5 V encoder supply	
• 5 V	Yes; 5.2 V $\pm 2\%$
• Output current, max.	300 mA
24 V encoder supply	
• 24 V	Yes; 1L+ (-3 V)
• Output current, max.	400 mA
Power loss	
Power loss, typ.	4.5 W
Digital inputs	
Number of digital inputs	3
Functions	1 for gate start, 1 for gate stop, 1 for setting the counter
Input voltage	
• for signal "0"	-28.8 ... +5V
• for signal "1"	+11 to +28.8V
Input current	
• for signal "1", typ.	9 mA
Digital outputs	
Number of digital outputs	2
Short-circuit protection	Yes; Clocked electronically
Limitation of inductive shutdown voltage to	2L+ (-39 V)
Output voltage	
• for signal "0", max.	3 V
• for signal "1", min.	2L+ (-1,5 V)
Output current	
• for signal "1" rated value	0.5 A
• for signal "1" permissible range for 0 to 60 °C, min.	5 mA
• for signal "1" permissible range for 0 to 60 °C, max.	0.6 A

Article number	6ES7350-1AH03-0AE0 FM350-1, counter mod. up to 500KHz
Encoder	
Connectable encoders	
• Incremental encoder (symmetrical)	Yes; With 2 pulse trains offset by 90°
• Incremental encoder (asymmetrical)	Yes
• 24 V initiator	Yes
• 24 V directional element	Yes; 1 pulse train, 1 direction level
Counter	
Number of counter inputs	1; 32 bit or ± 31 bit
Counter input 5 V	
• Type	RS 422
• Terminating resistor	220 Ω
• Differential input voltage	1,3 V
• Counting frequency, max.	500 kHz
Counter input 24 V	
• Input voltage for signal "0"	-28.8 ... +5V
• Input voltage for signal "1"	+11 to +28.8V
• Input current for signal "1", typ.	9 mA
• Counting frequency, max.	200 kHz
• Minimum pulse width	2.5 μ s
Connection method	
required front connector	1x 20-pin
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	250 g

Overview



- 8-channel intelligent counter module for universal counting and measuring
- To directly connect 24 V incremental encoders, direction sensors, initiators or NAMUR encoders
- Check function with preselectable set points (number depends on mode)
- Integrated digital outputs for output of the response on reaching the comparison value
- Operating modes:
 - Continuous/single/periodic counting
 - Frequency/speed measurement
 - Cycle duration measurement
 - Dosing

Note:

Incremental encoder and preassembled connecting cables for counter and positioning function are offered under SIMODRIVE Sensor and Motion Connect 500, see under

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

Ordering data

FM 350-2 counter module With 8 channels, max. 20 kHz; for 24 V incremental encoders and NAMUR encoders; incl. configuration package and electronic documentation on CD	Article No. 6ES7350-2AH01-0AE0
Front connector 40-pin, with screw contacts • 1 unit • 100 units 40-pin, with spring-loaded contacts • 1 unit • 100 units	6ES7392-1AM00-0AA0 6ES7392-1AM00-1AB0 6ES7392-1BM01-0AA0 6ES7392-1BM01-1AB0
Bus connectors 1 unit (spare part)	6ES7390-0AA00-0AA0
Labeling strips 10 units (spare part)	6ES7392-2XX10-0AA0
Labeling sheets for machine inscription	See under "Accessories", page 5/253
Slot number label Spare part	6ES7912-0AA00-0AA0

Shield connection element 80 mm wide, with 2 rows for 4 terminals each	Article No. 6ES7390-5AA00-0AA0
Terminal elements 2 units For 2 cables with 2 mm to 6 mm diameter For 1 cable with 3 mm to 8 mm diameter For 1 cable with 4 mm to 13 mm diameter	6ES7390-5AB00-0AA0 6ES7390-5BA00-0AA0 6ES7390-5CA00-0AA0
Signal cable Pre-assembled for HTL and TTL encoder, without sub D connector, UL/DESINA Length code	6FX5002-2CA12- ■ ■ ■ 0 See FM 350-1, page 5/135

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 350-2 counter module

Technical specifications

Article number	6ES7350-2AH01-0AE0 FM350-2, Counter Mod., 8 Channels, 20KHz
Supply voltage	
Auxiliary voltage 1L+, load voltage 2L+	
• 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
Encoder supply	
NAMUR encoder supply	
• 8.2 V	Yes
• Short-circuit protection	Yes
• Output current, max.	200 mA
Power loss	
Power loss, typ.	10 W
Digital inputs	
Number of digital inputs	8
Number of NAMUR inputs	8
Functions	1 each for gate start/ gate stop
Input voltage	
• for signal "0"	-3 to +5V
• for signal "1"	11 to 30.2 V
Input current	
• for signal "0", max. (permissible quiescent current)	2 mA
• for signal "1", typ.	9 mA
for NAMUR encoders	
- for signal "0", max.	1.2 mA
- for signal "1", min.	2.1 mA
Input delay (for rated value of input voltage)	
• Input frequency, max.	20 kHz
for standard inputs	
- at "0" to "1", max.	50 µs
for NAMUR inputs	
- at "0" to "1", max.	50 µs
Cable length	
• shielded, max.	100 m
Digital outputs	
Number of digital outputs	8
Short-circuit protection	Yes
Limitation of inductive shutdown voltage to	L+ (-40 V)
Output voltage	
• for signal "1", min.	L+ (-0.8 V)
Output current	
• for signal "1" rated value	0.5 A
• for signal "0" residual current, max.	0.5 mA
Switching frequency	
• with resistive load, max.	500 Hz
• with inductive load, max.	0.5 Hz

Article number	6ES7350-2AH01-0AE0 FM350-2, Counter Mod., 8 Channels, 20KHz
Total current of the outputs (per group)	
horizontal installation	
- up to 40 °C, max.	4 A
- up to 60 °C, max.	2 A
all other mounting positions	
- up to 40 °C, max.	2 A
Cable length	
• shielded, max.	600 m
Encoder	
Connectable encoders	
• Incremental encoder (asymmetrical)	Yes
• 24 V initiator	Yes
• 24 V directional element	Yes
• NAMUR encoder	Yes; to DIN 19 234
• 2-wire sensor	Yes
Interrupts/diagnostics/ status information	
Diagnostics function	Yes; Diagnostic information readable
Alarms	
• Diagnostic alarm	Yes; Parameterizable
• Hardware interrupt	Yes; Parameterizable
Counter	
Number of counter inputs	8; 32 bit or ±31 bit
Counter input 24 V	
• Input voltage for signal "0"	-3 to +5V
• Input voltage for signal "1"	11 to 30.2 V
• Input current for signal "1", typ.	9 mA
• Counting frequency, max.	20 kHz; Incremental encoder: 10 kHz
Connection method	
required front connector	1x 40-pin
Dimensions	
Width	80 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	460 g

Overview



- Two-channel positioning module for rapid traverse/creep speed drives
- 4 digital outputs per channel for motor control
- Incremental or synchronous-serial position feedback

Note:

We offer position measuring systems and preassembled connecting cables for counting and positioning functions under SIMODRIVE Sensor or Motion Connect 500, see under

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

Ordering data

Article No.

Signal cables

Preassembled for SSI absolute encoder, UL/DESINA

6FX50 2-2CC11-

Preassembled for TTL encoder 6FX2001-1, UL/DESINA

6FX50 2-2CD01-

Preassembled for TTL encoder 24 V, UL/DESINA

6FX50 2-2CD24-

Not crimped

0

Module end crimped, connector case supplied

1

Motor end crimped, connector case supplied

4

0 m

1

100 m

2

200 m

3

0 m

A

10 m

B

20 m

C

30 m

D

40 m

E

50 m

F

60 m

G

70 m

H

80 m

J

90 m

K

0 m

A

1 m

B

2 m

C

3 m

D

4 m

E

5 m

F

6 m

G

7 m

H

8 m

J

9 m

K

0,0 m

0

0,1 m

1

0,2 m

2

0,3 m

3

0,4 m

4

0,5 m

5

0,6 m

6

0,7 m

7

0,8 m

8

Ordering data

Article No.

FM 351 positioning module

6ES7351-1AH02-0AE0

For rapid traverse and creep speed drives

Front connectors

20-pin, with screw contacts

• 1 unit

6ES7392-1AJ00-0AA0

• 100 units

6ES7392-1AJ00-1AB0

20-pin, with spring-loaded contacts

• 1 unit

6ES7392-1BJ00-0AA0

• 100 units

6ES7392-1BJ00-1AB0

Bus connectors

6ES7390-0AA00-0AA0

1 unit (spare part)

Labeling strips

6ES7392-2XX00-0AA0

10 units (spare part)

Slot number label

6ES7912-0AA00-0AA0

Labeling sheets for machine inscription

See under "Accessories", page 5/253

Spare part

Shield connection element

6ES7390-5AA00-0AA0

80 mm wide, with 2 rows for 4 terminals each

Shield connection clamp

2 units

For 2 cables with 2 mm to 6 mm diameter

6ES7390-5AB00-0AA0

For 1 cable with 3 mm to 8 mm diameter

6ES7390-5BA00-0AA0

For 1 cable with 4 mm to 13 mm diameter

6ES7390-5CA00-0AA0

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 351 positioning module

Technical specifications

Article number	6ES7351-1AH02-0AE0 FM351 positioning Mod. rapid/creep Feed
Supply voltage	
Rated value (DC)	24 V
Load voltage L+	
• Rated value (DC)	24 V
Input current	
Current consumption, max.	350 mA
from backplane bus 5 V DC, max.	150 mA
Encoder supply	
5 V encoder supply	
• 5 V	Yes
• Output current, max.	350 mA
• Cable length, max.	32 m
24 V encoder supply	
• 24 V	Yes
• Output current, max.	400 mA; Per channel
• Cable length, max.	100 m
Power loss	
Power loss, typ.	7.9 W
Digital inputs	
Number of digital inputs	8
Functions	Reference cams, reversing cams, flying actual value setting, start/stop positioning
Input voltage	
• Rated value (DC)	24 V
• for signal "0"	-3 to +5V
• for signal "1"	+11 to +30V
Input current	
• for signal "0", max. (permissible quiescent current)	2 mA
• for signal "1", typ.	6 mA
Digital outputs	
Number of digital outputs	8
Functions	Rapid traverse, creep, run right, run left
Short-circuit protection	Yes
Output voltage	
• Rated value (DC)	24 V
• for signal "1", min.	UP - 0.8 V
Output current	
• for signal "1" permissible range for 0 to 60 °C, min.	5 mA; with UPmax
• for signal "1" permissible range for 0 to 60 °C, max.	600 mA; with UPmax
• for signal "0" residual current, max.	0.5 mA

Article number	6ES7351-1AH02-0AE0 FM351 positioning Mod. rapid/creep Feed
Encoder	
Connectable encoders	
• Incremental encoder (symmetrical)	Yes
• Incremental encoder (asymmetrical)	Yes
• Absolute encoder (SSI)	Yes
• 2-wire sensor	Yes
- permissible quiescent current (2-wire sensor), max.	2 mA; on signal "0", max. 2 mA; on signal "1", max. 6 mA
Encoder signals, incremental encoder (symmetrical)	
• Trace mark signals	A, notA, B, notB
• Zero mark signal	N, notN
• Input voltage	5 V difference signal (phys. RS 422)
• Input frequency, max.	0.5 MHz
Encoder signals, incremental encoder (asymmetrical)	
• Trace mark signals	A, B
• Zero mark signal	N
• Input voltage	24 V
• Input frequency, max.	50 kHz; 50 kHz for 25 m cable length; 25 kHz for 100 m cable length
Encoder signals, absolute encoder (SSI)	
• Input signal	5 V difference signal (phys. RS 422)
• Data signal	DATA, notDATA
• Clock signal	CL, notCL
• Telegram length, parameterizable	13 or 25 bit
• Clock frequency, max.	1.5 MHz
• Gray code	Yes
• Cable length, shielded, max.	200 m; At max. 188 kHz
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C
• max.	60 °C
Connection method	
required front connector	1x 20-pin
Dimensions	
Width	80 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	550 g

Overview



- Very high-speed electronic cam controller
- Low-cost alternative to mechanical cam controllers
- 32 cam tracks, 13 onboard digital outputs for direct output of actions
- Incremental or synchronous-serial position feedback

Note:

We offer position measuring systems and preassembled connecting cables for counting and positioning functions under SIMODRIVE Sensor or Motion Connect 500, see under

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

Ordering data

Article No.

Signal cable

Pre-assembled for SSI absolute encoder, UL/DESINA

6FX50 2-2CC11-

Pre-assembled for TTL encoder 6FX2001-1, UL/DESINA

6FX50 2-2CD01-

Pre-assembled for TTL encoder 24 V, UL/DESINA

6FX50 2-2CD24-

Not crimped

0

Module end crimped, connector case supplied

1

Motor end crimped, connector case supplied

4

0 m

1

100 m

2

200 m

3

0 m

A

10 m

B

20 m

C

30 m

D

40 m

E

50 m

F

60 m

G

70 m

H

80 m

J

90 m

K

0 m

A

1 m

B

2 m

C

3 m

D

4 m

E

5 m

F

6 m

G

7 m

H

8 m

J

9 m

K

0,0 m

0

0,1 m

1

0,2 m

2

0,3 m

3

0,4 m

4

0,5 m

5

0,6 m

6

0,7 m

7

0,8 m

8

Ordering data

Article No.

FM352 electronic cam controller	6ES7352-1AH02-0AE0
Front connectors	
20-pin, with screw contacts	
• 1 unit	6ES7392-1AJ00-0AA0
• 100 units	6ES7392-1AJ00-1AB0
20-pin, with spring-loaded contacts	
• 1 unit	6ES7392-1BJ00-0AA0
• 100 units	6ES7392-1BJ00-1AB0
Bus connectors	6ES7390-0AA00-0AA0
1 unit (spare part)	
Labeling strips	6ES7392-2XX00-0AA0
10 units (spare part)	
Labeling sheets for machine inscription	See under "Accessories", page 5/253
Slot number label	6ES7912-0AA00-0AA0
Spare part	
Shield connection element	6ES7390-5AA00-0AA0
80 mm wide, with 2 rows for 4 terminals each	
Shield connection clamps	
2 units	
For 2 cables with 2 mm to 6 mm diameter	6ES7390-5AB00-0AA0
For 1 cable with 3 mm to 8 mm diameter	6ES7390-5BA00-0AA0
For 1 cable with 4 mm to 13 mm diameter	6ES7390-5CA00-0AA0

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 352 cam controllers

Technical specifications

Article number	6ES7352-1AH02-0AE0 FM352 Electron. Cam-operated Control
Supply voltage	
Rated value (DC)	24 V
Input current	
from load voltage L+ (without load), max.	200 mA
from backplane bus 5 V DC, max.	100 mA
Encoder supply	
5 V encoder supply	
• 5 V	Yes
• Output current, max.	300 mA
• Cable length, max.	32 m
24 V encoder supply	
• 24 V	Yes
• Output current, max.	300 mA
• Cable length, max.	100 m
Power loss	
Power loss, typ.	8.1 W
Digital inputs	
Number of digital inputs	4
Functions	Reference point switch, set floating actual value/length measurement, brake release, enable track output no. 3
Input voltage	
• Rated value (DC)	24 V
• for signal *0	-30 to +5 V
• for signal *1	+11 to +30V
Input current	
• for signal *0, max. (permissible quiescent current)	2 mA
• for signal *1, typ.	9 mA
Digital outputs	
Number of digital outputs	13
Functions	Cam track
Short-circuit protection	Yes
Output voltage	
• Rated value (DC)	24 V
• for signal *1, min.	UP - 0.8 V
Output current	
• for signal *1* permissible range for 0 to 60 °C, min.	5 mA; with UPmax
• for signal *1* permissible range for 0 to 60 °C, max.	600 mA; with UPmax
• for signal *0* residual current, max.	0.5 mA

Article number	6ES7352-1AH02-0AE0 FM352 Electron. Cam-operated Control
Encoder	
Connectable encoders	
• Incremental encoder (symmetrical)	Yes
• Incremental encoder (asymmetrical)	Yes
• Absolute encoder (SSI)	Yes
• 2-wire sensor	Yes
- permissible quiescent current (2-wire sensor), max.	2 mA
Encoder signals, incremental encoder (symmetrical)	
• Trace mark signals	A, notA, B, notB
• Zero mark signal	N, notN
• Input voltage	5 V difference signal (phys. RS 422)
• Input frequency, max.	1 MHz
Encoder signals, incremental encoder (asymmetrical)	
• Trace mark signals	A, B
• Zero mark signal	N
• Input voltage	24 V
• Input frequency, max.	50 kHz; 50 kHz for 25 m cable length; 25 kHz for 100 m cable length
Encoder signals, absolute encoder (SSI)	
• Data signal	DATA, notDATA
• Clock signal	CL, notCL
• Telegram length, parameterizable	13 or 25 bit
• Clock frequency, max.	1 MHz
• Gray code	Yes
• Cable length, shielded, max.	320 m; at max. 125 kHz
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C
• max.	60 °C
connection method	
required front connector	1x 20-pin
Dimensions	
Width	80 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	550 g

Overview



- The FM 352-5 high-speed Boolean processor provides extremely fast binary control and also some of the fastest switching processes ever possible (cycle time: 1 µs).
- Programming is possible with LAD or FBD.
- The available set of statements comprises bit statements (partial statement set of STEP 7), timers, counters, frequency dividers, frequency generators, shift registers.
- 12 integral DI / 8 integral DO.
- 2 versions: sinking or sourcing digital outputs.
- 1 channel for connection of a 24-V incremental encoder, a 5-V incremental encoder (RS422) or an SSI absolute encoder.

Micro Memory Card required for use of the FM 352-5

Note:

We offer position measuring systems and preassembled connecting cables for counting and positioning functions under SIMODRIVE Sensor or Motion Connect 500, see under

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

Ordering data

Article No.

FM 352-5 high-speed Boolean processor

with digital outputs switching to M potential

6ES7352-5AH01-0AE0

with digital outputs switching to P potential

6ES7352-5AH11-0AE0

Micro Memory Card

128 KB

6ES7953-8LG31-0AA0

512 KB

6ES7953-8LJ31-0AA0

2 MB

6ES7953-8LL31-0AA0

Front connector

40-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AM00-0AA0

6ES7392-1AM00-1AB0

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0

6ES7392-1BM01-1AB0

Signal cables

To HTL and TTL encoders, preassembled, without D-sub connector

6FX5002-2CA12- ■ ■ ■ 0

To SSI absolute encoders 6FX2 001-5, preassembled, without D-sub connector

6FX5002-2CC12- ■ ■ ■ ■

Length code:

0 m
100 m
200 m

1
2
3

0 m
10 m
20 m
30 m
40 m
50 m
60 m
70 m
80 m
90 m

A
B
C
D
E
F
G
H
J
K

0 m
1 m
2 m
3 m
4 m
5 m
6 m
7 m
8 m
9 m

A
B
C
D
E
F
G
H
J
K

0,0 m
0,1 m
0,2 m
0,3 m
0,4 m
0,5 m
0,6 m
0,7 m
0,8 m

0
1
2
3
4
5
6
7
8

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 352-5 high-speed Boolean processor

Technical specifications

Article number	6ES7352-5AH01-0AE0 FM 352-5, Boolean Processor 12DI/8DO	6ES7352-5AH11-0AE0 FM 352-5 PNP, Boolean Processor 12DI/8DO
Supply voltage		
Load voltage L+		
• Rated value (DC)	24 V	24 V
Input current		
from load voltage 1L+, max.	150 mA; typ. 60 mA	150 mA; typ. 60 mA
from load voltage 2L+ (without load), max.	200 mA; typ. 60 mA, DI/DO supply	200 mA; typ. 60 mA, DI/DO supply
from load voltage 3L+ (with encoder), max.	600 mA; typ. 80 mA plus encoder supply	600 mA; typ. 80 mA plus encoder supply
from load voltage 3L+ (without load), max.	200 mA; typ. 80 mA	200 mA; typ. 80 mA
from backplane bus 5 V DC, typ.	135 mA	135 mA
Encoder supply		
5 V encoder supply		
• 5 V	Yes	Yes
• Short-circuit protection	Yes; Electronic overload protection; no protection on applying a normal or counter voltage.	Yes; Electronic overload protection; no protection on applying a normal or counter voltage.
• Output current, max.	250 mA	250 mA
24 V encoder supply		
• 24 V	Yes	Yes
• Short-circuit protection	Yes; Overvoltage and overheating protection if overloaded; diagnostics if output reaches temperature limit; no protection on applying a normal or counter voltage	Yes; Overvoltage and overheating protection if overloaded; diagnostics if output reaches temperature limit; no protection on applying a normal or counter voltage
• Output current, max.	400 mA	400 mA
Power loss		
Power loss, typ.	6.5 W	6.5 W
Memory		
Type of memory	RAM	RAM
Memory size	128 kbyte; required for operation, MMC	128 kbyte; required for operation, MMC
Digital inputs		
Number of digital inputs	8; Standard and up to 12 with 24 V DC encoder inputs as digital inputs	8; Standard and up to 12 with 24 V DC encoder inputs as digital inputs
Input voltage		
• Rated value (DC)	24 V	24 V
• for signal "0"	-30 to +5 V	-30 to +5 V
• for signal "1"	+11 to +30V	+11 to +30V
Input current		
• for signal "0", max. (permissible quiescent current)	1.5 mA	1.5 mA
• for signal "1", typ.	3.8 mA	3.8 mA
Input delay (for rated value of input voltage)		
• Input frequency (with a time delay of 0.1 ms), max.	200 kHz	200 kHz
• programmable digital filter delay	None, 5 µs, 10 µs, 15 µs, 20 µs, 50 µs, 1.6 ms	None, 5 µs, 10 µs, 15 µs, 20 µs, 50 µs, 1.6 ms
• Minimum pulse width for program reactions	1 µs, 5 µs, 10 µs, 15 µs, 20 µs, 50 µs, 1.6 ms	1 µs, 5 µs, 10 µs, 15 µs, 20 µs, 50 µs, 1.6 ms
for standard inputs		
- at "0" to "1", max.	3 µs; typ. 1.5 µs	3 µs; typ. 1.5 µs
Cable length		
• shielded, max.	600 m	600 m

Technical specifications

Article number	6ES7352-5AH01-0AE0 FM 352-5, Boolean Processor 12DI/8DO	6ES7352-5AH11-0AE0 FM 352-5 PNP, Boolean Processor 12DI/8DO
Digital outputs		
Number of digital outputs	8	8
Current-sinking	Yes	No
Current-sourcing	No	Yes
Short-circuit protection	Yes; Overvoltage protection, thermal protection	Yes; Overvoltage protection, thermal protection
Limitation of inductive shutdown voltage to	2M -45 V typ., (-40 V to -55 V); comment: no protection against inductive kickback >55 mJ	2M -45 V typ., (-40 V to -55 V); comment: no protection against inductive kickback >55 mJ
Switching capacity of the outputs		
• on lamp load, max.	5 W	5 W
Output voltage		
• Rated value (DC)	24 V	24 V
• for signal "0", max.	28.8 V	28.8 V
• for signal "1", max.	0.5 V	0.5 V
Output current		
• for signal "1" rated value	0.5 A; At 60 °C	0.5 A; At 60 °C
• for signal "1" permissible range for 0 to 60 °C, min.	5 mA	5 mA
• for signal "1" permissible range for 0 to 60 °C, max.	600 mA	600 mA
• for signal "0" residual current, max.	1 mA	1 mA
Switching frequency		
• with resistive load, max.	100 kHz; 20 kHz at 0.5 A; 100 kHz at 0.25 A	100 kHz; 20 kHz at 0.5 A; 100 kHz at 0.25 A
• with inductive load, max.	2 Hz; 2 Hz at 0.5 A with external commutator diodes; 0.5 Hz at 0.5 A without external commutator diodes	2 Hz; 2 Hz at 0.5 A with external commutator diodes; 0.5 Hz at 0.5 A without external commutator diodes
• on lamp load, max.	10 Hz	10 Hz
Cable length		
• shielded, max.	600 m	600 m
Encoder		
Connectable encoders		
• Incremental encoder (symmetrical)	Yes	Yes
• Incremental encoder (asymmetrical)	Yes	Yes
• Absolute encoder (SSI)	Yes	Yes
• 2-wire sensor	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA
Encoder signals, incremental encoder (symmetrical)		
• Trace mark signals	A, notA, B, notB	A, notA, B, notB
• Zero mark signal	N, notN	N, notN
• Input voltage	5 V difference signal (phys. RS 422)	5 V difference signal (phys. RS 422)
• Input frequency, max.	500 kHz	500 kHz
• Cable length, shielded, max.	100 m; 100 m with 24 V supply and 500 kHz; 32 m with 5 V supply and 500 kHz	100 m; 100 m with 24 V supply and 500 kHz; 32 m with 5 V supply and 500 kHz
Encoder signals, incremental encoder (asymmetrical)		
• Trace mark signals	A, B	A, B
• Zero mark signal	N	N
• Input voltage	24 V	24 V
• Input frequency, max.	200 kHz	200 kHz
• Cable length, shielded, max.	50 m; Cable length, HTL incremental encoder, Siemens, type 6FX2001-4: 50 kHz, 25 m shielded, max., 25 kHz, 50 m shielded, max.	50 m; Cable length, HTL incremental encoder, Siemens, type 6FX2001-4: 50 kHz, 25 m shielded, max., 25 kHz, 50 m shielded, max.

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 352-5 high-speed Boolean processor

Technical specifications

Article number	6ES7352-5AH01-0AE0 FM 352-5, Boolean Processor 12DI/8DO	6ES7352-5AH11-0AE0 FM 352-5 PNP, Boolean Processor 12DI/8DO
Encoder signals, absolute encoder (SSI)		
• Data signal	DATA, notDATA	DATA, notDATA
• Clock signal	CK, notCK	CK, notCK
• Telegram length, parameterizable	13 or 25 bit	13 or 25 bit
• Clock frequency, max.	1 MHz; 125 kHz, 250 kHz, 500 kHz or 1 MHz	1 MHz; 125 kHz, 250 kHz, 500 kHz or 1 MHz
• Cable length, shielded, max.	320 m; At 125 kHz	320 m; At 125 kHz
• Monoflop time	settable: 16/32/48/64 µs	settable: 16/32/48/64 µs
• Listening mode	Yes; one or two stations	Yes; one or two stations
• Multiturn	Yes; 25 bit message frame	Yes; 25 bit message frame
Encoder signal evaluation		
• Counting direction, forward	Yes	Yes
• Counting direction, backward	Yes	Yes
Response times		
Input- to output response time	5 V input to 24 V output, 0 filter: 1 to 4 µs (typ.); 24 V input to 24 V output, 0 filter: 2 to 6 µs (typ.)	5 V input to 24 V output, 0 filter: 1 to 4 µs (typ.); 24 V input to 24 V output, 0 filter: 2 to 6 µs (typ.)
Interfaces		
Point-to-point connection		
• Updating times	PLC interface: 1.7 ms	PLC interface: 1.7 ms
Interrupts/diagnostics/ status information		
Alarms		
• Diagnostic alarm	Yes; 1L, 2L, 3L missing; MMC error; output overload (8); encoder supply overload; differential wire break; parameterization error; SSI message frame overflow	Yes; 1L, 2L, 3L missing; MMC error; output overload (8); encoder supply overload; differential wire break; parameterization error; SSI message frame overflow
• Hardware interrupt	Yes; 8 available; for generation by user program	Yes; 8 available; for generation by user program
Counter		
Counting range, description	Counting range (16-bit counters): -32 768 to 32 767 (user-specific within this range); counting range (32-bit counters): -2 147 483 648 to 2 147 483 647 (user-specific within this range)	Counting range (16-bit counters): -32 768 to 32 767 (user-specific within this range); counting range (32-bit counters): -2 147 483 648 to 2 147 483 647 (user-specific within this range)
Counting range, lower limit	-2 147 483 648	-2 147 483 648
Counting range, upper limit	2 147 483 647	2 147 483 647
Counting mode		
• Counting mode, individual	Yes	Yes
• Counting mode, continuous	Yes	Yes
• Counting mode, periodic	Yes	Yes
Ambient conditions		
Ambient temperature during operation		
• min.	0 °C	0 °C
• max.	60 °C	60 °C
Configuration		
Programming		
• Program cycle time (scan)	1 µs	1 µs
Connection method		
required front connector	1x 40-pin	1x 40-pin
Dimensions		
Width	80 mm	80 mm
Height	125 mm	125 mm
Depth	120 mm	120 mm
Weights		
Weight, approx.	434 g; Module weight: approx. 434 g (with 1L connection and without I/O connection or MMC); shipping weight: approx. 500 g (with bus and 1L connection and without I/O connection or MMC)	434 g; Module weight: approx. 434 g (with 1L connection and without I/O connection or MMC); shipping weight: approx. 500 g (with bus and 1L connection and without I/O connection or MMC)

SIMATIC S7-300 Advanced Controllers

I/O modules
Function modules

FM 355 controller module

Overview



- 4-channel closed-loop controller module for universal control tasks
- Can be used for temperature, pressure, flow and level controls
- Convenient online self-optimization for temperature controls
- Predefined controller structures
- 2 control algorithms
- 2 versions:
 - FM 355 C as continuous controller;
 - FM 355 S as step or pulse controller
- With 4 analog outputs (FM 355 C) or 8 digital outputs (FM 355 S) for direct control of the most common actuators
- Continuation of control mode also possible with CPU stop or failure

Ordering data

Article No.

FM 355 C controller module **6ES7355-0VH10-0AE0**

With 4 analog outputs for
4 continuous controllers

FM 355 S controller module **6ES7355-1VH10-0AE0**

With 8 digital outputs for
4 step or pulse controllers

Front connector

20-pin, with screw contacts

- 1 unit
- 100 units

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

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

Bus connectors

1 unit (spare part)

6ES7390-0AA00-0AA0**Labeling strips**

10 units (spare part)

6ES7392-2XX00-0AA0**Labeling sheets for machine inscription**

See under "Accessories",
page 5/253

Slot number label

Spare part

6ES7912-0AA00-0AA0**Shield connection element**

80 mm wide, with 2 rows for
4 terminals each

6ES7390-5AA00-0AA0**Shield connection clamps**

2 units

For 2 cables with 2 mm to 6 mm
diameter

6ES7390-5AB00-0AA0

For 1 cable with 3 mm to 8 mm
diameter

6ES7390-5BA00-0AA0

For 1 cable with 4 mm to 13 mm
diameter

6ES7390-5CA00-0AA0

Technical specifications

Article number	6ES7355-0VH10-0AE0 FM 355 C controller module, 4 chan.	6ES7355-1VH10-0AE0 FM 355 S controller module, 4 chan.
Supply voltage		
Load voltage L+		
• Rated value (DC)	24 V	24 V
Input current		
from load voltage L+ (without load), max.	310 mA; Typ. 260 mA	270 mA; typ. 220 mA
from backplane bus 5 V DC, max.	75 mA; typ. 50 mA	75 mA; typ. 50 mA
Power loss		
Power loss, typ.	6.5 W	5.5 W
Digital inputs		
Number of digital inputs	8	8
Input characteristic curve in accordance with IEC 61131, type 2	Yes	Yes
Input voltage		
• Rated value (DC)	24 V	24 V
• for signal "0"	-3 to +5V	-3 to +5V
• for signal "1"	13 to 30V	13 to 30V
Input current		
• for signal "1", typ.	7 mA	7 mA
Cable length		
• shielded, max.	1 000 m	1 000 m

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 355 controller module

Technical specifications

Article number	6ES7355-0VH10-0AE0 FM 355 C controller module, 4 chan.	6ES7355-1VH10-0AE0 FM 355 S controller module, 4 chan.
Digital outputs		
Number of digital outputs		8
Short-circuit protection		Yes; Electronic
Limitation of inductive shutdown voltage to		L+ (-1.5 V)
Switching capacity of the outputs		
• on lamp load, max.		5 W
Load resistance range		
• lower limit		240 Ω
• upper limit		4 kΩ
Output voltage		
• for signal "1", min.		L+ (-2.5 V)
Output current		
• for signal "1" rated value		100 mA
• for signal "1" permissible range for 0 to 60 °C, min.		5 mA
• for signal "1" permissible range for 0 to 60 °C, max.		150 mA
• for signal "0" residual current, max.		0.5 mA
Switching frequency		
• with resistive load, max.		100 Hz
• with inductive load, max.		0.5 Hz
• on lamp load, max.		100 Hz
Total current of the outputs (per group)		
all mounting positions		
- up to 60 °C, max.		400 mA
Cable length		
• shielded, max.		1 000 m
Analog inputs		
Number of analog inputs	4	4
permissible input voltage for voltage input (destruction limit), max.	30 V	30 V
permissible input current for current input (destruction limit), max.	40 mA	40 mA
Input ranges (rated values), voltages		
• 0 to +10 V	Yes	Yes
• -1.75 V to +11.75 V	Yes	Yes
• -80 mV to +80 mV	Yes	Yes
Input ranges (rated values), currents		
• 0 to 20 mA	Yes	Yes
• 0 to 23.5 mA	Yes	Yes
• -3.5 mA to +23.5 mA	Yes	Yes
• 4 mA to 20 mA	Yes	Yes
Input ranges (rated values), thermocouples		
• Type B	Yes	Yes
• Type J	Yes	Yes
• Type K	Yes	Yes
• Type R	Yes	Yes
• Type S	Yes	Yes
Input ranges (rated values), resistance thermometer		
• Pt 100	Yes	Yes

Technical specifications

Article number	6ES7355-0VH10-0AE0 FM 355 C controller module, 4 chan.	6ES7355-1VH10-0AE0 FM 355 S controller module, 4 chan.
Thermocouple (TC)		
Temperature compensation		
- internal temperature compensation	Yes	Yes
- external temperature compensation with Pt100	Yes	Yes
Characteristic linearization		
• parameterizable	Yes	Yes
- for thermocouples	Type B, J, K, R, S	Type B, J, K, R, S
- for resistance thermometer	Pt100 (standard)	Pt100 (standard)
Cable length		
• shielded, max.	200 m; 50 m at 80 mV and thermocouples	200 m; 50 m at 80 mV and thermocouples
Analog outputs		
Number of analog outputs	4	
Voltage output, short-circuit protection	Yes	
Voltage output, short-circuit current, max.	25 mA	
Current output, no-load voltage, max.	18 V	
Output ranges, voltage		
• 0 to 10 V	Yes	
• -10 V to +10 V	Yes	
Output ranges, current		
• 0 to 20 mA	Yes	
• 4 mA to 20 mA	Yes	
Connection of actuators		
• for voltage output two-wire connection	Yes	
• for current output two-wire connection	Yes	
Load impedance (in rated range of output)		
• with voltage outputs, min.	1 k Ω	
• with voltage outputs, capacitive load, max.	1 μ F	
• with current outputs, max.	500 Ω	
• with current outputs, inductive load, max.	1 mH	
Cable length		
• shielded, max.	200 m; 50 m at 80 mV and thermocouples	
Analog value generation for the inputs		
Integration and conversion time/resolution per channel		
• Resolution with overrange (bit including sign), max.	14 bit; 12 bit or 14 bit, parameterizable	14 bit; 12 bit or 14 bit, parameterizable
Analog value generation for the outputs		
Settling time		
• for resistive load	0.1 ms	
• for capacitive load	3.3 ms	
• for inductive load	0.5 ms	

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 355 controller module

Technical specifications

Article number	6ES7355-0VH10-0AE0 FM 355 C controller module, 4 chan.	6ES7355-1VH10-0AE0 FM 355 S controller module, 4 chan.
Encoder		
Connection of signal encoders		
• for voltage measurement	Yes	Yes
• for current measurement as 4-wire transducer	Yes	Yes
Connectable encoders		
• 2-wire sensor	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA
Errors/accuracies		
Operational error limit in overall temperature range		
• Voltage, relative to input range, (+/-)	0.6 %; ± 0.6 to $\pm 1\%$	0.6 %; ± 0.6 to $\pm 1\%$
• Current, relative to input range, (+/-)	0.6 %; ± 0.6 to $\pm 1\%$	0.6 %; ± 0.6 to $\pm 1\%$
• Resistance thermometer, relative to input range, (+/-)	0.6 %; ± 0.6 to $\pm 1\%$	0.6 %; ± 0.6 to $\pm 1\%$
• Voltage, relative to output range, (+/-)	0.5 %	
• Current, relative to output range, (+/-)	0.6 %	
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to input range, (+/-)	0.4 %; 80 mV: $\pm 0.6\%$; 250 to 1 000 mV: $\pm 0.4\%$; 2.5 to 10 V: $\pm 0.6\%$; 3.2 to 20 mA: $\pm 0.5\%$	0.4 %; 80 mV: $\pm 0.6\%$; 250 to 1 000 mV: $\pm 0.4\%$; 2.5 to 10 V: $\pm 0.6\%$; 3.2 to 20 mA: $\pm 0.5\%$
• Current, relative to input range, (+/-)	0.4 %; ± 0.4 to $\pm 0.6\%$	0.4 %; ± 0.4 to $\pm 0.6\%$
• Resistance thermometer, relative to input range, (+/-)	0.4 %; ± 0.4 to $\pm 0.6\%$	0.4 %; ± 0.4 to $\pm 0.6\%$
• Voltage, relative to output range, (+/-)	0.3 %	
• Current, relative to output range, (+/-)	0.5 %	
Interrupts/diagnostics/status information		
Substitute values connectable	Yes; Parameterizable	Yes; Parameterizable
Integrated Functions		
Control technology		
• Number of closed-loop controllers	4	4
Connection method		
required front connector	2x 20-pin	2x 20-pin
Dimensions		
Width	80 mm	80 mm
Height	125 mm	125 mm
Depth	120 mm	120 mm
Weights		
Weight, approx.	470 g	470 g

Overview



- 4-channel closed-loop controller module specifically for temperature controls
- Including integrated and easy-to-use online self-optimization
- Heating and cooling controllers as well as combined controllers with heating and active cooling function feasible
- Ready-to-use controller structures
- 2 versions:
 - FM 355-2 C as a continuous controller;
 - FM 355-2 S as step or pulse controllers
- With 4 analog outputs (FM 355-2 C) or 8 digital outputs (FM 355-2 S) to directly control the most common final control elements
- Continuation of control mode also possible with CPU stop or failure

Ordering data

Article No.

FM 355-2 C temperature controller module

6ES7355-2CH00-0AE0

With 4 analog outputs for
4 continuous-action controllers

FM 355-2 S temperature controller module

6ES7355-2SH00-0AE0

With 8 digital outputs for
4 step or pulse controllers

Front connector

20-pin, with screw contacts

- 1 unit
- 100 units

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

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

Bus connectors

6ES7390-0AA00-0AA0

1 unit (spare part)

Labeling strips

6ES7392-2XX00-0AA0

10 units (spare part)

Labeling sheets for machine inscription

See under "Accessories",
page 5/253

Slot number label

6ES7912-0AA00-0AA0

Spare part

Shield connection element

6ES7390-5AA00-0AA0

80 mm wide, with 2 rows for
4 terminals each

Shield connection clamps

2 units

For 2 cables with 2 mm to 6 mm
diameter

6ES7390-5AB00-0AA0

For 1 cable with 3 mm to 8 mm
diameter

6ES7390-5BA00-0AA0

For 1 cable with 4 mm to 13 mm
diameter

6ES7390-5CA00-0AA0

Technical specifications

Article number	6ES7355-2CH00-0AE0	6ES7355-2SH00-0AE0
	FM 355-2 C temp. controller module, 4 chan.	FM 355-2 S temp. controller module, 4 chan.
Supply voltage		
Load voltage L+		
• Rated value (DC)	24 V	24 V
Input current		
from load voltage L+ (without load), max.	310 mA; Typ. 260 mA	270 mA; typ. 220 mA
from backplane bus 5 V DC, max.	75 mA; typ. 50 mA	75 mA; typ. 50 mA
Power loss		
Power loss, typ.	6.5 W	5.5 W
Digital inputs		
Number of digital inputs	8	8
Input characteristic curve in accordance with IEC 61131, type 2	Yes	Yes
Input voltage		
• Rated value (DC)	24 V	24 V
• for signal "0"	-3 to +5V	-3 to +5V
• for signal "1"	13 to 30V	13 to 30V
Input current		
• for signal "1", typ.	7 mA	7 mA
Cable length		
• shielded, max.	1 000 m	1 000 m

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 355-2 temperature controller module

Technical specifications

Article number	6ES7355-2CH00-0AE0 FM 355-2 C temp. controller module, 4 chan.	6ES7355-2SH00-0AE0 FM 355-2 S temp. controller module, 4 chan.
Digital outputs		
Number of digital outputs		8
Short-circuit protection		Yes; Electronic
Limitation of inductive shutdown voltage to		L+ (-1.5 V)
Switching capacity of the outputs		
• on lamp load, max.		5 W
Load resistance range		
• lower limit		240 Ω
• upper limit		4 kΩ
Output voltage		
• for signal "1", min.		L+ (-2.5 V)
Output current		
• for signal "1" rated value		0.1 A
• for signal "1" permissible range for 0 to 60 °C, min.		5 mA
• for signal "1" permissible range for 0 to 60 °C, max.		150 mA
• for signal "0" residual current, max.		0.5 mA
Switching frequency		
• with resistive load, max.		100 Hz
• with inductive load, max.		0.5 Hz
• on lamp load, max.		100 Hz
Total current of the outputs (per group)		
all mounting positions		
- up to 60 °C, max.		400 mA
Cable length		
• shielded, max.		1 000 m
Analog inputs		
Number of analog inputs	4	4
permissible input voltage for voltage input (destruction limit), max.	20 V	20 V
permissible input current for current input (destruction limit), max.	40 mA	40 mA
Input ranges (rated values), voltages		
• 0 to +10 V	Yes	Yes
• -1.75 V to +11.75 V	Yes	Yes
Input ranges (rated values), currents		
• 0 to 20 mA	Yes	Yes
• 0 to 23.5 mA	Yes	Yes
• -3.5 mA to +23.5 mA	Yes	Yes
• 4 mA to 20 mA	Yes	Yes
Input ranges (rated values), thermocouples		
• Type B	Yes	Yes
• Type E	Yes	Yes
• Type J	Yes	Yes
• Type K	Yes	Yes
• Type R	Yes	Yes
• Type S	Yes	Yes
Input ranges (rated values), resistance thermometer		
• Pt 100	Yes	Yes

Technical specifications

Article number	6ES7355-2CH00-0AE0 FM 355-2 C temp. controller module, 4 chan.	6ES7355-2SH00-0AE0 FM 355-2 S temp. controller module, 4 chan.
Thermocouple (TC)		
Temperature compensation		
- internal temperature compensation	Yes	Yes
- external temperature compensation with Pt100	Yes	Yes
Characteristic linearization		
• parameterizable	Yes	Yes
- for thermocouples	Type B, E, J, K, R, S	Type B, E, J, K, R, S
- for resistance thermometer	Pt100 (standard)	Pt100 (standard)
Cable length		
• shielded, max.	200 m; 50 m at 80 mV and thermocouples	200 m; 50 m at 80 mV and thermocouples
Analog outputs		
Number of analog outputs	4	
Voltage output, short-circuit protection	Yes	
Voltage output, short-circuit current, max.	25 mA	
Current output, no-load voltage, max.	18 V	
Output ranges, voltage		
• 0 to 10 V	Yes	
• -10 V to +10 V	Yes	
Output ranges, current		
• 0 to 20 mA	Yes	
• 4 mA to 20 mA	Yes	
Connection of actuators		
• for voltage output two-wire connection	Yes	
• for current output two-wire connection	Yes	
Load impedance (in rated range of output)		
• with voltage outputs, min.	1 k Ω	
• with voltage outputs, capacitive load, max.	1 μ F	
• with current outputs, max.	500 Ω	
• with current outputs, inductive load, max.	1 mH	
Cable length		
• shielded, max.	200 m; 50 m at 80 mV and thermocouples	
Analog value generation for the inputs		
Integration and conversion time/resolution per channel		
• Resolution with overrange (bit including sign), max.	14 bit	14 bit
Analog value generation for the outputs		
Settling time		
• for resistive load	0.1 ms	
• for capacitive load	3.3 ms	
• for inductive load	0.5 ms	

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 355-2 temperature controller module**Technical specifications**

Article number	6ES7355-2CH00-0AE0 FM 355-2 C temp. controller module, 4 chan.	6ES7355-2SH00-0AE0 FM 355-2 S temp. controller module, 4 chan.
Encoder		
Connection of signal encoders		
• for voltage measurement	Yes	Yes
• for current measurement as 4-wire transducer	Yes	Yes
Connectable encoders		
• 2-wire sensor	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA
Errors/accuracies		
Operational error limit in overall temperature range		
• Voltage, relative to input range, (+/-)	0.6 %; ± 0.6 to ± 0.7 %	0.06 %; ± 0.06 to ± 0.7 %
• Current, relative to input range, (+/-)	0.6 %; ± 0.6 to ± 0.7 %	0.06 %; ± 0.06 to ± 0.7 %
• Resistance thermometer, relative to input range, (+/-)	0.6 %; ± 0.6 to ± 0.7 %	0.06 %; ± 0.06 to ± 0.7 %
• Voltage, relative to output range, (+/-)	0.5 %	
• Current, relative to output range, (+/-)	0.6 %	
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to input range, (+/-)	0.04 %; ± 0.04 to ± 0.5 %	0.04 %; ± 0.04 to ± 0.5 %
• Current, relative to input range, (+/-)	0.04 %; ± 0.04 to ± 0.5 %	0.04 %; ± 0.04 to ± 0.5 %
• Resistance thermometer, relative to input range, (+/-)	0.04 %; ± 0.04 to ± 0.5 %	0.04 %; ± 0.04 to ± 0.5 %
• Voltage, relative to output range, (+/-)	0.4 %	
• Current, relative to output range, (+/-)	0.5 %	
Interrupts/diagnostics/status information		
Substitute values connectable	Yes; Parameterizable	Yes; Parameterizable
Integrated Functions		
Control technology		
• Number of closed-loop controllers	4	4
Connection method		
required front connector	2x 20-pin	2x 20-pin
Dimensions		
Width	80 mm	80 mm
Height	125 mm	125 mm
Depth	120 mm	120 mm
Weights		
Weight, approx.	470 g	470 g

Overview



- Interface between max. 3 absolute encoders (SSI) and the CPU
- For provision of the displacement encoder values for further processing in STEP 7 programs
- Enables direct response of controller to encoder values in moving systems

Note:

We offer position measuring systems and preassembled connecting cables for counting and positioning functions under SIMODRIVE Sensor or Motion Connect 500, see under

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

Ordering data

Article No.

Signal cable

Pre-assembled for SSI absolute encoder 6FX2001-5, without D-sub connector, UL/DESINA

6FX5002-2CC12-

0 m
100 m
200 m

1
2
3

0 m
10 m
20 m
30 m
40 m
50 m
60 m
70 m
80 m
90 m

A
B
C
D
E
F
G
H
J
K

0 m
1 m
2 m
3 m
4 m
5 m
6 m
7 m
8 m
9 m

A
B
C
D
E
F
G
H
J
K

0,0 m
0,1 m
0,2 m
0,3 m
0,4 m
0,5 m
0,6 m
0,7 m
0,8 m

0
1
2
3
4
5
6
7
8

Ordering data

Article No.

SM 338 POS input module

6ES7338-4BC01-0AB0

For position sensing with
3 SSI encoders

Front connector

20-pin, with screw contacts

- 1 unit
- 100 units

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

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

Front door, elevated design

6ES7328-0AA00-7AA0

e.g. for 32-channel modules;
for connecting 1.3 mm²/16 AWG
conductors

SIMATIC Manual Collection

6ES7998-8XC01-8YE0

Electronic manuals on DVD,
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all manuals for
S7-1200/1500/200/300/400,
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6ES7998-8XC01-8YE2

Current Manual Collection DVD and
the three subsequent updates

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

SM 338 POS input module**Technical specifications**

Article number	6ES7338-4BC01-0AB0 SM 338, f. 3 SSI encoders
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
Input current	
from load voltage L+ (without load), max.	100 mA
from backplane bus 5 V DC, max.	160 mA
Encoder supply	
24 V encoder supply	
• 24 V	Yes; L+ (-0.8 V)
• Output current, max.	900 mA
Power loss	
Power loss, typ.	3 W
Digital inputs	
Input voltage	
• for signal "0"	-3 to +5V
• for signal "1"	11 to 30.2 V
Input current	
• for signal "0", max. (permissible quiescent current)	2 mA
• for signal "1", typ.	9 mA
Input delay (for rated value of input voltage) for standard inputs	
- at "0" to "1", min.	300 µs
Cable length	
• shielded, max.	600 m

Article number	6ES7338-4BC01-0AB0 SM 338, f. 3 SSI encoders
Encoder	
Number of connectable encoders, max.	3
Connectable encoders	
• Absolute encoder (SSI)	Yes
• 2-wire sensor	Yes
Encoder signals, absolute encoder (SSI)	
• Cable length, shielded, max.	320 m; 320 m at 125 kHz; 160 m at 250 kHz; 60 m at 500 kHz; 20 m at 1 MHz
Interrupts/diagnostics/ status information	
Alarms	
• Diagnostic alarm	Yes
Connection method	
required front connector	20-pin
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	235 g

Overview



SIWAREX U is a versatile weighing module for all simple weighing and force measuring tasks. The compact module can be integrated into SIMATIC automation systems without any problems. Complete data access is then possible via the SIMATIC.

5

Ordering data

Article No.

Article No.

SIWAREX U

For SIMATIC S7 and ET 200M,
incl. bus connector,
weight 0.3 kg (0.661 lb)

Single-channel version¹⁾
for connecting one scale

Two-channel version²⁾
for connecting two scales

7MH4950-1AA01

7MH4950-2AA01

SIWATOOL V4 & V7

Service and commissioning
software for SIWAREX weighing
modules

7MH4900-1AK01

**SIWAREX U configuration
package for PCS 7, version 8.0**

Suitable for 7MH4950-xAA01
• Function block for CFC
• Faceplate
• Manual

7MH4950-3AK62

**SIWAREX PCS 7 AddOn Library
for PCS 7 V8.x and V9.0**

• Supports PROFINET

APL faceplates and function
blocks for:

- SIWAREX U
- SIWAREX FTA
- SIWAREX FTC_B (belt scale)
- SIWAREX WP321

Classic faceplate and function
block for:

- SIWAREX FTC_L (Loss-in-weight)

7MH4900-1AK61

SIWATOOL connection cable

From SIWAREX U/CS with serial
PC interface, for 9-pin PC interfaces
(RS 232), length 3 m (9.84 ft)

7MH4607-8CA

Installation material (mandatory)**20-pin front connector with
screw contacts**

Required for each
SIWAREX module

6ES7392-1AJ00-0AA0

Shield connection element

Sufficient for two
SIWAREX U modules

6ES7390-5AA00-0AA0

Shield connection clamp

Content: 2 units (suitable for
cable with diameter 4 ... 13 mm /
0.16 ... 0.51 inch)

Note:

One shield connection clamp is
required for each of the following:

- Scale connection
- RS 485 interface
- RS 232 interface

6ES7390-5CA00-0AA0

S7 DIN rail

- 160 mm (6.30 inch)
- 480 mm (18.90 inch)
- 530 mm (20.87 inch)
- 830 mm (32.68 inch)
- 2 000 mm (78.74 inch)

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

Accessories (optional)**Labeling strips**

(10 units, spare part)

6ES7392-2XX00-0AA0

SIWAREX EB extension box

For extending sensor cables

7MH4710-2AA

**SIWAREX JB junction box,
aluminum housing**

For connecting up to
4 load cells in parallel,
and for connecting multiple
junction boxes

7MH5001-0AA20

¹⁾ Compatible with 7MH4601-1AA01; supply of load cells changed to 6 V DC.

²⁾ Compatible with 7MH4601-1BA01; supply of load cells changed to 6 V DC.

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

SIWAREX U weighing electronics**Ordering data****Article No.****Article No.****SIWAREX JB junction box,
stainless steel housing**

For connecting up to 4 load cells
in parallel

7MH5001-0AA00**SIWAREX JB junction box,
stainless steel housing (ATEX)**

For parallel connection of up to
4 load cells (for zone allocation,
see manual or type-examination
certificate)

7MH5001-0AA01**SIWAREX IS Ex interface**

For intrinsically safe connection
of load cells. With ATEX approval
(not UL/FM). Suitable for SIWAREX
electronic weighing systems.
Compatibility of load cells must be
checked separately.

- With short-circuit current
< 199 mA DC
- With short-circuit current
< 137 mA DC

7MH4710-5BA**7MH4710-5CA****Cable (optional)****Cable Li2Y 1 × 2 × 0.75 ST +
2 × (2 × 0.34 ST) – CY**

For connecting SIWAREX electronic
to junction box (JB), extension box
(EB), digital junction box (DB),
Ex interface (IS) or between two
extension boxes.

For permanent installation.
Occasional bending is possible.

External diameter:
approx. 10.8 mm (0.43 inch)

Permissible ambient temperature
-40 ... +80 °C (-40 ... +176 °F)

Sold by the meter.

- Sheath color: orange
- Sheath color (for hazardous
atmospheres): blue

7MH4702-8AG**7MH4702-8AF****Remote displays (optional)**

The digital remote displays
can be connected directly to
SIWAREX U through a TTY
interface.

The following remote displays
can be used: S102, S302

Siebert Industrieelektronik GmbH
PO Box 1180
D-66565 Eppelborn
Tel.: +49 6806/980-0
Fax: +49 6806/980-999

Internet: <http://www.siebert.com>

Detailed information is available
from the manufacturer.

Technical specifications

SIWAREX U	
Integration in automation systems	
• S7-300 • S7-1500 • S7-400 (H) • PCS 7 (H) • Automation systems from other vendors • Stand-alone (without SIMATIC CPU)	Direct integration Through ET 200M Through ET 200M Through ET 200M Through ET 200M Possible with IM 153-1
Communication interfaces	• SIMATIC S7 (P bus) • RS 232 • TTY
Connection of remote display (via serial TTY interface)	Gross, channel 1, 2 or default value 1, 2
Scale adjustment	Through SIMATIC (P bus) or PC using SIWATOOL U (RS 232)
Measuring properties	
Error limit according to DIN 1319-1 of full-scale value at 20 °C ± 10 K (68 °F ± 10 K)	0.05%
Internal resolution ADC	65 535
Data format weight values	2 bytes (fixed-point)
Number of measurements/second	50
Digital filter	0.05 ... 5 Hz (in 7 steps), mean value filter
Weighing functions	
Weight values	Gross
Limit values	2 (min./max.)
Zero-setting function	Per command
Load cells	Strain gauges in 4-wire or 6-wire system

SIWAREX U	
Load cell powering	
Supply voltage U_s (rated value)	6 V DC ¹⁾
Max. supply current	≤ 150 mA per channel
Permissible load resistance	
• R_{Lmin}	> 40 Ω per channel
• R_{Lmax}	< 4 010 Ω
With Ex(i) interface	
• R_{Lmin}	> 87 Ω per channel
• R_{Lmax}	< 4 010 Ω
Permissible load cell characteristic	Up to 4 mV/V
Max. distance of load cells	• 500 m²⁾ • 150/500 m for gas group IIC • 500 m²⁾ for gas group IIB (see SIWAREX IS Manual)
Intrinsically-safe load cell powering	Optional (Ex interface) with SIWAREX IS
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	150 mA (single-channel) / 240 mA (dual-channel)
Current consumption on backplane bus	≤ 100 mA
Certification	ATEX 95, FM, cUL _{US} Haz. Loc.
IP degree of protection to EN 60529; IEC 60529	IP20
Climatic requirements	
T_{min} (IND) ... T_{max} (IND) (operating temperature)	
• Horizontal installation	0 ... +60 °C (32 ... 140 °F)
• Vertical installation	0 ... +40 °C (32 ... 104 °F)
EMC requirements	According to NAMUR NE21, Part 1; EN 61326
Dimensions	40 × 125 × 130 mm (1.58 × 4.92 × 5.12 inch)

¹⁾ Load cell supply changed to 6 V DC as compared to 7MH4601-1AA01 and 7MH4601-1BA01.

²⁾ Possible up to 1 000 m under certain conditions when using the recommended cable (accessories).

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

SIWAREX FTA weighing electronics

Overview



SIWAREX FTA (Flexible Technology, Automatic Weighing Instrument) is a versatile and flexible weighing module for industrial use. It can be used in both non-automatic and automatic weighing operation, for example the production of mixtures, and for filling, loading, monitoring and bag filling.

It has the corresponding scale approvals and is also suitable for weighing systems requiring official calibration.

The SIWAREX FTA function module is integrated in SIMATIC S7/PCS 7 and uses the features of this modern automation system, such as integrated communication, diagnostics and configuration tools.

Ordering data

SIWAREX FTA

Legal-for-trade electronic weighing systems for automatic scales for S7-300 and ET 200M.
EC type approval 3 × 6000 d
Applications: Dosing, filling, bagging, loading.
Note: Observe approval conditions for applications requiring official calibration. We recommend using our calibration set and contacting our SIWAREX hotline.

Article No.

7MH4900-2AA01

SIPLUS FTA

SIPLUS FTA -10 ... +60 °C with conformal coating based on 7MH4900-2AA01
Legal-for-trade electronic weighing system for automatic scales for S7-300 and ET 200M.
EU type approval 3 × 6000 d
Applications: Dosing, filling, bagging, loading.
Note: Observe approval conditions for applications requiring official calibration. We recommend using our calibration set and contacting our SIWAREX hotline.

Article No.

6AG1900-2AA01-4AA0

SIWAREX FTA Equipment Manual

Available in a range of languages
Free download on the Internet at: <http://www.siemens.com/weighing/documentation>

SIWAREX FTA "Getting Started"

Sample software shows beginners how to program the scales in STEP 7.
Free download on the Internet at: <http://www.siemens.com/weighing/documentation>

SIWATOOL V4 & V7

Service and commissioning software for SIWAREX weighing modules

Article No.

7MH4900-1AK01

Configuration package SIWAREX FTA for SIMATIC PCS 7, Version 8.0 on CD-ROM

- HSP hardware support package for integrating SIWAREX FTA/FTC in STEP 7
- Function block for CFC
- Faceplate
- Manual

Article No.

7MH4900-2AK63

SIWAREX PCS 7 AddOn Library for PCS 7 V8.x and V9.0

- Supports PROFINET
- APL faceplates and function blocks for:
- SIWAREX U
 - SIWAREX FTA
 - SIWAREX FTC_B (belt scale)
 - SIWAREX WP321
- Classic faceplate and function block for:
- SIWAREX FTC_L (Loss-in-weight)

Article No.

7MH4900-1AK61

Calibration set for SIWAREX FTA

For verification of up to 5 scales comprising:

- 3 × inscription foils for ID label
- 1 × protective film
- Guidelines for verification, verification certificates and approvals, editable label, SIWAREX FTA Equipment Manual on CD-ROM

Article No.

7MH4900-2AY10

SIWATOOL connection cable

From SIWAREX FTA with serial PC interface, for 9-pin PC interfaces (RS 232)

- 2 m long (6.56 ft)
- 5 m long (16.40 ft)

Article No.

7MH4702-8CA
7MH4702-8CB

Front connector, 40-pin

Required for each SIWAREX module

- With screw contacts
- With spring-loaded terminals

Article No.

6ES7392-1AM00-0AA0
6ES7392-1BM01-0AA0

Ordering data	Article No.		Article No.
Shield connection element Sufficient for one SIWAREX FTA module	6ES7390-5AA00-0AA0	Ex interface SIWAREX IS For intrinsically safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing systems. Compatibility of load cells must be checked separately. • With short-circuit current < 199 mA DC • With short-circuit current < 137 mA DC	7MH4710-5BA 7MH4710-5CA
Shield connection clamp Content: 2 units (suitable for cable with diameter 4 ... 13 mm / 0.16 ... 0.51 inch) Note: One shield connection clamp is required for each of the following: • Scale connection • RS 485 interface • RS 232 interface	6ES7390-5CA00-0AA0	Cable (optional) Cable Li2Y 1 × 2 × 0.75 ST + 2 × (2 × 0.34 ST) – CY For connecting SIWAREX electronic to junction box (JB), extension box (EB), digital junction box (DB), Ex interface (IS) or between two extension boxes. For permanent installation. Occasional bending is possible. External diameter: approx. 10.8 mm (0.43 inch) Permissible ambient temperature -40 ... +80 °C (-40 ... +176 °F) Sold by the meter. • Sheath color: orange • Sheath color (for hazardous atmospheres): blue	7MH4702-8AG 7MH4702-8AF
S7 DIN rail • 160 mm (6.30 inch) • 480 mm (18.90 inch) • 530 mm (20.87 inch) • 830 mm (32.68 inch) • 2 000 mm (78.74 inch)	6ES7390-1AB60-0AA0 6ES7390-1AE80-0AA0 6ES7390-1AF30-0AA0 6ES7390-1AJ30-0AA0 6ES7390-1BC00-0AA0	Remote displays (optional) The Siebert S102 and S302 remote digital displays can be directly connected to the SIWAREX FTA via an RS 485 interface. Siebert Industrielektronik GmbH PO Box 1180 D-66565 Eppelborn Tel.: +49 6806/980-0 Fax: +49 6806/980-999 Internet: http://www.siebert.com Detailed information is available from the manufacturer.	
MMC memory For data logging up to 32 MB, only for legal-for-trade applications R76, R51 and R107	7MH4900-2AY21		
Accessories			
SIWAREX EB extension box For extending sensor cables.	7MH4710-2AA		
SIWAREX JB junction box, aluminum housing For connecting up to 4 load cells in parallel, and for connecting several junction boxes	7MH5001-0AA20		
SIWAREX JB junction box, stainless steel housing For connecting up to 4 load cells in parallel.	7MH5001-0AA00		
SIWAREX JB junction box, stainless steel housing (ATEX) For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).	7MH5001-0AA01		

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

SIWAREX FTA weighing electronics**Technical specifications**

SIWAREX FTA	
Use in automation systems	
S7-300	Directly or via ET 200M
S7-1500	Through ET 200M
S7-400 (H)	Through ET 200M
PCS 7 (H)	Through ET 200M
Communication interfaces	
S7	Through backplane bus
RS 232	For SIWATOOL or printer connection
RS 485	For remote display or digital load cell
Module parameterization	
	Using SIMATIC S7 Using SIWATOOL FTA software (RS 232)
Measuring properties	
EC type approval as non automatic weighing instrument, trade class III	$3 \times 6\,000\,d \geq 0.5\,\mu\text{V/e}$
Internal resolution	16 million parts
Internal/external updating rate	400/100 Hz
Several parameterizable digital filters	
	Critically damped, Bessel, Butterworth (0.05 ... 20 Hz), mean-value filter
Weighing functions	
Non automatic weighing instrument	OIML R76
Automatic weighing machine	OIML R51, R61, R107
Load cells	
	Strain gauges in 4-wire or 6-wire system
3 characteristic value ranges	1, 2 or 4 mV/V
Load cell powering	
Supply voltage U_s (rated value)	10.3 V DC
Max. supply current	184 mA
Permissible load cell resistance	
• $R_{L\min}$	$> 56\,\Omega$
• $R_{L\max}$	$> 87\,\Omega$ with Ex interface $\leq 4\,010\,\Omega$

SIWAREX FTA	
Max. distance of load cells	
When using the recommended cable:	
Standard	1 000 m (3 280 ft)
In hazardous area ¹⁾	
• For gases of group IIC	300 m (984 ft)
• For gases of group IIB	1000 m (3 280 ft)
Connection to load cells in Ex zone 1	
	Optionally via SIWAREX IS Ex interface
Ex approvals zone 2 and safety	
	ATEX 95, FM, cUL _{US} Haz. Loc.
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	500 mA
Current consumption on backplane bus	Typ. 55 mA
Inputs/outputs	
Digital inputs	7 DI electrically isolated
Digital outputs	8 DO electrically isolated
Counter input	Up to 10 kHz
Analog output	
• Current range	0/4 ... 20 mA
• Updating rate	100 Hz
Approvals	
	EC type approval (CE, OIML R76)
	EU type-examination certificate according to MID (OIML R51, R61, R107)
Degree of protection according to EN 60529; IEC 60529	
	IP20
Climatic requirements	
$T_{\min}(\text{IND}) \dots T_{\max}(\text{IND})$ (operating temperature)	
• Horizontal installation	-10 ... 60 °C (14 ... 140 °F)
• Vertical installation	-10 ... 40 °C (14 ... 104 °F)
EMC requirements	
	EN 61326, EN 45501, NAMUR NE21, Part 1
Dimensions	
	80 × 125 × 130 mm (3.15 × 4.92 × 5.12 inch)
Weight	
	600 g (0.44 lb)

¹⁾ For further details, see Ex interface, type SIWAREX IS.

Overview



The SIWAREX FTC (Flexible Technology for Continuous Weighing) is a versatile and flexible weighing module for belt scales, loss-in-weight feeders and solids flowmeters. It can also be used to record weights and measure force. The SIWAREX FTC function module is integrated in SIMATIC S7/PCS 7 and uses the features of this modern automation system, such as integrated communication, diagnostics and configuration tools.

5

Ordering data

Article No.

Article No.

SIWAREX FTC

Electronic weighing system for S7-300 and ET 200M.

Applications: Belt scales, force measurement, loss-in-weight scales and solids flowmeters

7MH4900-3AA01

SIWAREX FTC_B Equipment Manual for belt scales

Available in a range of languages

Free download on the Internet at: <http://www.siemens.com/weighing/documentation>

SIWAREX FTC_L Equipment Manual for solids flowmeters and loss-in-weight scales

Available in a range of languages

Free download on the Internet at: <http://www.siemens.com/weighing/documentation>

SIWAREX FTC "Getting Started" for belt scales

Sample software shows beginners how to program the scales in STEP 7 for belt scale mode

Free download on the Internet at: <http://www.siemens.com/weighing/documentation>

SIWAREX FTC "Getting Started" for solids flowmeters

Sample software shows beginners how to program the scales in STEP 7 for solids flowmeter mode

Free download on the Internet at: <http://www.siemens.com/weighing/documentation>

SIWAREX FTC "Getting Started" for loss-in-weight scales

Sample software shows beginners how to program the scales in STEP 7 for loss-in-weight scale mode

Free download on the Internet at: <http://www.siemens.com/weighing/documentation>

SIWATOOL V4 & V7

Service and commissioning software for SIWAREX weighing modules

7MH4900-1AK01

SIWAREX PCS 7 AddOn Library for PCS7 V8.x and V9.0

- Supports PROFINET

APL faceplates and function blocks for:

- SIWAREX U
- SIWAREX FTA
- SIWAREX FTC_B (belt scale)
- SIWAREX WP321

7MH4900-1AK61

Classic faceplate and function block for:

- SIWAREX FTC_L (Loss-in-weight)

SIWATOOL connection cable

from SIWAREX FTC with serial PC interface, for 9-pin PC interfaces (RS 232)

- 2 m long (6.56 ft)
- 5 m long (16.40 ft)

7MH4702-8CA
7MH4702-8CB**40-pin front connector with screw contacts**

Required for each SIWAREX module

- With screw contacts
- With spring-loaded terminals

6ES7392-1AM00-0AA0
6ES7392-1BM01-0AA0**Shield connection element**

Sufficient for one SIWAREX FTC module

6ES7390-5AA00-0AA0

Shield connection clamp

Content: 2 units (suitable for cable with diameter 4 ... 13 mm / 0.16 ... 0.51 inch)

Note:

One shield connection clamp is required for each of the following:

- Scale connection
- RS 485 interface
- RS 232 interface

6ES7390-5CA00-0AA0

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

SIWAREX FTC weighing electronics**Ordering data****Article No.****Article No.****S7 DIN rail**

- 160 mm (6.30 inch)
- 480 mm (18.90 inch)
- 530 mm (20.87 inch)
- 830 mm (32.68 inch)
- 2 000 mm (78.74 inch)

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

MMC memory

For data logging up to 32 MB, only for legal-for-trade applications R76, R51 and R107

7MH4900-2AY21**Accessories****SIWAREX EB extension box**

For extending sensor cables.

7MH4710-2AA**SIWAREX JB junction box, aluminum housing**

For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.

7MH5001-0AA20**SIWAREX JB junction box, stainless steel housing**

For connecting up to 4 load cells in parallel.

7MH5001-0AA00**SIWAREX JB junction box, stainless steel housing (ATEX)**

For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).

7MH5001-0AA01**Ex interface SIWAREX IS**

For intrinsically safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing systems. Compatibility of load cells must be checked separately.

- With short-circuit current < 199 mA DC
- With short-circuit current < 137 mA DC

7MH4710-5BA**7MH4710-5CA****Cable (optional)****Cable Li2Y 1 × 2 × 0.75 ST + 2 × (2 × 0.34 ST) – CY**

For connecting SIWAREX electronic to junction box (JB), extension box (EB), digital junction box (DB), Ex interface (IS) or between two extension boxes.

For permanent installation. Occasional bending is possible.

External diameter: approx. 10.8 mm (0.43 inch)

Permissible ambient temperature -40 ... +80 °C (-40 ... +176 °F)

Sold by the meter.

- Sheath color: orange
- For hazardous atmospheres. Sheath color: blue

7MH4702-8AG
7MH4702-8AF

Remote display (optional)

The Siebert S102 and S302 remote digital displays can be directly connected to the SIWAREX FTC via an RS 485 interface. (not suitable for belt scale mode)

Siebert Industrieelektronik GmbH
 PO Box 1180
 D-66565 Eppelborn
 Tel.: +49 6806/980-0
 Fax: +49 6806/980-999

Internet: <http://www.siebert.com>

Detailed information is available from the manufacturer.

Technical specifications

SIWAREX FTC	
Use in automation systems	
S7-300	Directly or via ET 200M
S7-1500	Through ET 200M
S7-400 (H)	Through ET 200M
PCS 7 (H)	Through ET 200M
Communication interfaces	
S7	Through backplane bus
RS 232	For SIWATOOL or printer connection
RS 485	For remote display or digital load cell
Module parameterization	
	Using SIMATIC S7
	Using SIWATOOL FTC software (RS 232)
Measuring properties	
Accuracy according to EN 45501	$3 \times 6\,000\,d \geq 0.5\,\mu\text{V/e}$
Internal resolution	+/- 8 million parts
Internal/external updating rate	400/100 Hz
Several parameterizable digital filters	Critically damped, Bessel, Butterworth (0.05 ... 20 Hz), mean-value filter
Weighing functions	- Non automatic weighing instrument, force measurement - Belt scale - Loss-in-weight scale - Solids flowmeters
Load cells	Strain gauges in 4-wire or 6-wire system
3 characteristic value ranges	1, 2 or 4 mV/V
Load cell powering	
Supply voltage U_s (rated value)	10.3 V DC
Max. supply current	184 mA
Permissible load cell resistance	
• R_{Lmin}	$> 56\,\Omega$
• R_{Lmax}	$> 87\,\Omega$ with Ex interface $\leq 4\,010\,\Omega$

SIWAREX FTC	
Max. distance of load cells	
When using the recommended cable:	
Standard	1 000 m (3 280 ft)
In hazardous area ¹⁾	
• For gases of group IIC	300 m (984 ft)
• For gases of group IIB	1 000 m (3 280 ft)
Connection to load cells in Ex zone 1	Optionally via SIWAREX IS Ex interface
Ex approvals zone 2 and safety	ATEX 95, FM, cUL _{US} Haz. Loc.
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	500 mA
Current consumption on backplane bus	Typ. 55 mA
Inputs/outputs	
Digital inputs	7, electrically isolated
Digital outputs	8, electrically isolated
Counter input	Up to 10 kHz
Analog output	
• Current range	0/4 ... 20 mA
• Updating rate	100 Hz
Degree of protection according to EN 60529; IEC 60529	IP20
Climatic requirements	
$T_{min} (IND) \dots T_{max} (IND)$ (operating temperature)	
• Horizontal installation	-10 ... 60 °C (14 ... 140 °F)
• Vertical installation	-10 ... 40 °C (14 ... 104 °F)
EMC requirements	EN 61326, EN 45501, NAMUR NE21, Part 1
Dimensions	
	80 × 125 × 130 mm (3.15 × 4.92 × 5.12 inch)
Weight	
	600 g (0.44 lb)

¹⁾ For further details, see Ex interface, type SIWAREX IS.

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 function modules

SIPLUS S7-300 FM 350-1

Overview



- Single-channel, intelligent counter module for simple counting tasks
- For direct connection of incremental encoders
- Comparison function with 2 definable comparison values
- Integrated digital outputs for output of the response on reaching the comparison value
- Operating modes:
 - Continuous counting
 - Single counting
 - Periodic counting
- Special functions:
 - Set counter
 - Latch counter
- Start/stop counter by gate function

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 S7-300 FM 350-1 counter module

With 1 channel, max. 500 kHz;
for incremental encoder

*For industrial applications with
extended ambient conditions*

Extended temperature range and
exposure to environmental
substances

6AG1350-1AH03-2AE0

Accessories

Mandatory

Front connector

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

Consumables

Bus connectors

1 unit (spare part)

6ES7390-0AA00-0AA0

Shield connection element

80 mm wide, with 2 rows for
4 shield connection clamps each

6ES7390-5AA00-0AA0

Shield connection clamps

2 units

For 1 cable
with 3 mm to 8 mm diameter

6ES7390-5BA00-0AA0

For 1 cable,
diameter 4 mm to 13 mm

6ES7390-5CA00-0AA0

Article No.

Label cover

10 units (spare part), for modules
with 20-pin front connector

6ES7392-2XY00-0AA0

Labeling strips

10 units (spare part), for modules
with 20-pin front connector

6ES7392-2XX00-0AA0

Slot number plates

6ES7912-0AA00-0AA0

Documentation

SIMATIC Manual Collection

Electronic manuals on DVD,
multilingual:
all manuals for
S7-1200/1500/200/300/400,
LOGO!, SIMATIC DP, PC, PG,
STEP 7, Engineering software,
runtime SW, SIMATIC HMI,
SIMATIC NET, SIMATIC IDENT

6ES7998-8XC01-8YE0

SIMATIC Manual Collection update service for 1 year

Current Manual Collection DVD and
the three subsequent updates

6ES7998-8XC01-8YE2

Technical specifications

Article number	6AG1350-1AH03-2AE0
Based on	6ES7350-1AH03-0AE0 SIPLUS S7-300 FM350-1
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)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	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
- 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	6AG1350-1AH03-2AE0
Based on	6ES7350-1AH03-0AE0 SIPLUS S7-300 FM350-1
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!

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 function modules

SIPLUS S7-300 FM 350-2

Overview



- 8-channel intelligent counter module for universal counting and measuring tasks
- For the direct connection of 24 V incremental encoders, directional encoders, initiators or NAMUR encoders
- Comparison function with predefined comparison values (number depending on operating mode)
- Integrated digital outputs for output of the response on reaching the comparison value
- Operating modes:
 - Continuous / single / periodic counting
 - Frequency and speed control
 - Period measurement
 - Dosing

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.

Article No.

SIPLUS S7-300 FM 350-2 counter module

With 8 channels, max. 20 kHz; for 24 V incremental encoders and NAMUR encoders; includes configuration package and electronic documentation on CD

Exposure to environmental substances

6AG1350-2AH01-4AE0

Accessories

Mandatory

Front connector

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0
6ES7392-1BM01-1AB0

Consumables

Bus connectors

1 unit (spare part)

6ES7390-0AA00-0AA0

Shield connection clamps

2 units

For 2 cables with 2 mm to 6 mm diameter

6ES7390-5AB00-0AA0

For 1 cable with 3 mm to 8 mm diameter

6ES7390-5BA00-0AA0

For 1 cable, diameter 4 mm to 13 mm

6ES7390-5CA00-0AA0

Label cover

10 units (spare part), for modules with 40-pin front connector

6ES7392-2XY10-0AA0

Labeling strips

10 units (spare part), for modules with 40-pin front connector

6ES7392-2XX10-0AA0

Slot number plates

6ES7912-0AA00-0AA0

Documentation

SIMATIC Manual Collection

Electronic manuals on DVD, multilingual:
all manuals for S7-1200/1500/200/300/400, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering software, runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT

6ES7998-8XC01-8YE0

SIMATIC Manual Collection update service for 1 year

Current Manual Collection DVD and the three subsequent updates

6ES7998-8XC01-8YE2

Technical specifications

Article number	6AG1350-2AH01-4AE0
Based on	6ES7350-2AH01-0AE0 SIPLUS S7-300 FM350-2
Ambient conditions	
Ambient temperature during operation	
• min.	0 °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)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	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
- 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	6AG1350-2AH01-4AE0
Based on	6ES7350-2AH01-0AE0 SIPLUS S7-300 FM350-2
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!

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 function modules

SIPLUS SIWAREX U

Overview



SIPLUS SIWAREX U electronic weighing system

SIPLUS SIWAREX U is a flexible weighing module for all simple weighing and force measuring tasks. The compact module can be integrated into SIPLUS automation systems without any problems.

Note:

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

SIPLUS SIWAREX U electronic weighing system

Article No.	6AG1 950-2AA01-4AA0
Article No. based on	7MH4 950-2AA01
Range of ambient temperature	0 ... +60 °C
Conformal coating	Coating of the printed-circuit boards and the electronic components
Technical data	The technical data of the standard product applies except for the ambient conditions.
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning in bedewed state.

For technical documentation on SIPLUS, see:

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

Ordering data

SIPLUS SIWAREX U

Electronic weighing system for SIPLUS S7 and ET 200M, incl. bus connector

Exposure to environmental substances

6AG1950-2AA01-4AA0

Accessories

Mandatory

Front connector

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

Consumables

Bus connectors

1 unit (spare part)

6ES7390-0AA00-0AA0

Shield connection clamps

2 units

For 2 cables with 2 mm to 6 mm diameter

6ES7390-5AB00-0AA0

For 1 cable with 3 mm to 8 mm diameter

6ES7390-5BA00-0AA0

For 1 cable, diameter 4 mm to 13 mm

6ES7390-5CA00-0AA0

Article No.

Labeling strips

10 units (spare part)

6ES7392-2XX00-0AA0

Label cover

10 units (spare part)

6ES7392-2XY00-0AA0

Slot number plates

6ES7912-0AA00-0AA0

SIWAREX JB junction box, aluminum casing

For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes

7MH5001-0AA20

SIWAREX JB junction box, stainless steel housing

For connecting up to 4 load cells in parallel

7MH5001-0AA00

SIWAREX JB junction box, stainless steel housing (ATEX)

For connecting up to 4 load cells in parallel (for zone allocation, see manual or special test certificate).

7MH5001-0AA01

Ex interface, type SIWAREX IS

With ATEX approval, but without UL and FM approvals, for intrinsically safe connection of load cells

Incl. Equipment Manual

Suitable for SIWAREX U, CS, MS, FTA, FTC and CF weighing modules

Approved for use in the EU

- With short-circuit current < 199 mA DC
- With short-circuit current < 137 mA DC

7MH4710-5BA

7MH4710-5CA

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 function modules

SIPLUS SIWAREX U

Ordering data	Article No.		Article No.
Cables (optional)		<i>Configuration software</i>	
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, orange sheath For connecting SIWAREX U, CS, MS, FTA, FTC and CF to the junction box (JB), extension box (EB) or Ex interface (Ex-I) or between two JB's; for fixed laying, occasional bending permitted, 10.8 mm (0.43 inch) outer diameter, for ambient temperature -40 ... +80 °C (-40 ... +176 °F)	7MH4702-8AG	SIWATOOL V4 & V7 Service and commissioning software for SIWAREX weighing modules	7MH4900-1AK01
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, blue sheath For connecting the junction box (JB) or extension box (EB) in a potentially explosive atmosphere to the Ex interface (Ex I), for fixed laying, occasional bending permitted, blue PVC insulating sleeve, approx. 10.8 mm (0.43 inch) outer diameter, for ambient temperature -40 ... +80 °C (-40 ... +176 °F)	7MH4702-8AF	SIWAREX U configuration package for PCS 7, version 8.0 Suitable for 7MH4950-xAA01 • Function block for the CFC chart • Faceplate • Manual	7MH4950-3AK62
		SIWAREX PCS 7 AddOn Library for PCS 7 V8.x and V9.0 • Supports PROFINET • APL faceplates and function blocks for: • Classic faceplate and function block for: - SIWAREX U - SIWAREX FTA - SIWAREX FTC_B (belt scales) - SIWAREX WP321 • Classic faceplate and function block for: - SIWAREX FTC_L (Loss-in-weight)	7MH4900-1AK61
		<i>Documentation</i>	
		SIMATIC Manual Collection Electronic manuals on DVD, multilingual: all manuals for S7-1200/1500/200/300/400, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering software, runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT	6ES7998-8XC01-8YE0
		SIMATIC Manual Collection update service for 1 year Current Manual Collection DVD and the three subsequent updates	6ES7998-8XC01-8YE2

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 function modules

SIPLUS SIWAREX FTA

Overview



SIPLUS SIWAREX FTA (Flexible Technology, Automatic Weighing Instrument) is a versatile and flexible weighing module for industrial use. It can be used in both non-automatic and automatic weighing operation, for example the production of mixtures, and for filling, loading, monitoring and bag filling.

It has the corresponding scale approvals and is also suitable for legal-for-trade weighing systems.

The SIPLUS SIWAREX FTA function module is integrated in SIMATIC S7/PCS7 and uses the features of this modern automation system, such as integrated communication, diagnostics and configuration tools.

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 has been added.

SIPLUS SIWAREX FTA	
Article No.	6AG1900-2AA01-4AA0
Article No. based on	7MH4900-2AA01
Ambient temperature range	-25 ... +70 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical specifications	The technical specifications of the standard product apply, except for the ambient conditions.
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning under condensation conditions.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold, fungal and dry rot spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data

SIPLUS SIWAREX FTA

Weighing electronics with official calibration capability for (automatic) scales for S7-300 and ET 200M EU type approval 3 x 6000 d Application areas: Proportioning, filling, bagging, loading. Notice: Observe approval conditions for applications requiring official calibration. We recommend using our calibration set and contacting our SIWAREX hotline.

Exposure to environmental substances

Accessories

Mandatory

MMC memory

For data recording up to 32 MB, only for R76, R51 and R107 applications with calibration capability

Front connector

- 40-pin
- With screw connections
- With spring-loaded contacts

Article No.

6AG1900-2AA01-4AA0

7MH4900-2AY21

6ES7392-1AM00-0AA0
6ES7392-1BM01-1AB0

Article No.

Consumables

Bus connectors

1 unit (spare part)

Shield connection clamps

2 units; one shield connection clamp each is required for the weighing instrument connection, RS 485 interface and RS 232 interface

For 1 cable, diameter 4 mm to 13 mm

Shield connection element

Sufficient for one SIWAREX FTA module

SIWAREX JB junction box, aluminum casing

For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes

SIWAREX JB junction box, stainless steel housing

For connecting up to 4 load cells in parallel.

SIWAREX JB junction box, stainless steel housing (ATEX)

For parallel connection of up to 4 load cells (for zone allocation, see manual or special test certificate).

6ES7390-0AA00-0AA0

6ES7390-5CA00-0AA0

6ES7390-5AA00-0AA0

7MH5001-0AA20

7MH5001-0AA00

7MH5001-0AA01

Ordering data	Article No.		Article No.
Ex interface, type SIWAREX IS For intrinsically safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing systems. Compatibility of the load cells must be checked separately. • With short-circuit current < 199 mA DC • With short-circuit current < 137 mA DC	7MH4710-5BA 7MH4710-5CA	Calibration set for SIWAREX FTA For verification of up to 5 scales, comprising: • 3 x inscription foil for labeling • 1 x protective film • Guidelines for verification, verification certificates and approvals, adaptable label, SIWAREX FTA Equipment Manual on CD-ROM	7MH4900-2AY10
Cables (optional)		SIWATOOL connection cable From SIWAREX FTA with serial PC interface, for 9-pin PC interfaces (RS 232) • Length 2 m (6.56 ft) • Length 5 m (16.40 ft)	7MH4702-8CA 7MH4702-8CB
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, orange sheath For connecting SIWAREX electronic weighing systems to junction boxes (JB), extension boxes (EB) and Ex interface or between two JB's. For permanent laying. Occasional bending is permitted. Outer diameter: approx. 10.8 mm (0.43 inch) Permissible ambient temperature -40 ... +80 °C (-40 ... +176 °F) Sold by the meter Sheath color: orange For hazardous areas. Sheath color: blue	7MH4702-8AG 7MH4702-8AF	<i>Documentation</i> SIWAREX FTA Equipment Manual Available in a range of languages Free download from the Internet at: http://www.siemens.com/weighing/documentation	
<i>Configuration software</i> SIWATOOL V4 & V7 Service and commissioning software for SIWAREX weighing modules	7MH4900-1AK01	SIWAREX FTA "Getting started" Sample software shows beginners how to program the scales in STEP 7. Free download on the Internet at: http://www.siemens.com/weighing/documentation	
SIWAREX PCS 7 AddOn Library for PCS 7 V8.x and V9.0 • Supports PROFINET APL faceplates and function blocks for: • SIWAREX U • SIWAREX FTA • SIWAREX FTC_B (belt scales) • SIWAREX WP321 Classic faceplate and function block for: • SIWAREX FTC_L (Loss-in-weight)	7MH4900-1AK61	SIMATIC Manual Collection Electronic manuals on DVD, multilingual: all manuals for S7-1200/1500/200/300/400, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering software, runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT	6ES7998-8XC01-8YE0
		SIMATIC Manual Collection update service for 1 year Current Manual Collection DVD and the three subsequent updates	6ES7998-8XC01-8YE2

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 340

Overview



- The economical complete solution for serial communication via point-to-point links.
- 3 versions with different transmission interfaces:
 - RS 232C (V.24)
 - 20 mA (TTY)
 - RS 422/RS 485 (X.27)
- Implemented protocols:
 - ASCII
 - 3964 (R) (not for RS 485)
 - Printer driver
- Simple parameterization via a parameterization tool integrated into STEP 7

Ordering data

Article No.

CP 340 communications module **6ES7340-1AH02-0AE0**

With one RS 232 C (V.24) interface

RS 232 connecting cable

For linking to SIMATIC S7

5 m

6ES7902-1AB00-0AA0

10 m

6ES7902-1AC00-0AA0

15 m

6ES7902-1AD00-0AA0
CP 340 communications module **6ES7340-1BH02-0AE0**

With one 20 mA (TTY) interface

20 mA (TTY) connecting cable

For linking to SIMATIC S7

5 m

6ES7902-2AB00-0AA0

10 m

6ES7902-2AC00-0AA0

50 m

6ES7902-2AG00-0AA0
CP 340 communications module **6ES7340-1CH02-0AE0**

With one RS 422/485 (X.27) interface

RS 422/485 connecting cable

For linking to SIMATIC S7

5 m

6ES7902-3AB00-0AA0

10 m

6ES7902-3AC00-0AA0

50 m

6ES7902-3AG00-0AA0

Technical specifications

Article number	6ES7340-1AH02-0AE0 CP340 w. RS232C interface(V.24)	6ES7340-1BH02-0AE0 CP340 w. 20MA interface(TTY)	6ES7340-1CH02-0AE0 CP340 w. RS422/485 interface
General information			
Product type designation	CP 340	CP 340	CP 340
Supply voltage			
Rated value (DC)			
• 24 V DC	No; Power supply via backplane bus 5V	No; Power supply via backplane bus 5V	No; Power supply via backplane bus 5V
Input current			
from backplane bus 5 V DC, max.	165 mA	190 mA	165 mA
Power loss			
Power loss, typ.	0.6 W	0.85 W	0.6 W
Interfaces			
Interfaces/bus type	RS 232C (V.24)	20 mA (TTY)	RS 422 / 485 (X.27)
Number of interfaces	1; Isolated	1; Isolated	1; Isolated
Transmission rate, min.	2.4 kbit/s	2.4 kbit/s	2.4 kbit/s
Transmission rate, max.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s
Point-to-point connection			
• Cable length, max.	15 m	1 000 m; 100 m active, 1 000 m passive	1 200 m
• supported printers	HP-Deskjet, HP-Laserjet, IBM-Proprinter, user-defined	HP-Deskjet, HP-Laserjet, IBM-Proprinter, user-defined	HP-Deskjet, HP-Laserjet, IBM-Proprinter, user-defined
• Connector type	9-pin sub D connector	9-pin sub D socket	15-pin sub D socket
Integrated protocol driver			
- 3964 (R)	Yes	Yes	Yes
- ASCII	Yes	Yes	Yes
- RK 512	No	No	No
- customer-specific drivers reloadable	No	No	No
Telegram length, max.			
- 3964 (R)	1 024 byte	1 024 byte	1 024 byte
- ASCII	1 024 byte	1 024 byte	1 024 byte

Technical specifications

Article number	6ES7340-1AH02-0AE0 CP340 w. RS232C interface(V.24)	6ES7340-1BH02-0AE0 CP340 w. 20MA interface(TTY)	6ES7340-1CH02-0AE0 CP340 w. RS422/485 interface
Transmission rate, 20 mA (TTY) - with 3964 (R) protocol, max. - with ASCII protocol, max. - with printer driver, max.		19.2 kbit/s 9.6 kbit/s 9.6 kbit/s	
Transmission rate, RS 422/485 - with 3964 (R) protocol, max. - with ASCII protocol, max. - with printer driver, max.			19.2 kbit/s 9.6 kbit/s 9.6 kbit/s
Transmission speed, RS 232 - with 3964 (R) protocol, max. - with ASCII protocol, max. - with printer driver, max.	19.2 kbit/s 9.6 kbit/s 9.6 kbit/s		
Ambient conditions			
Ambient temperature during operation • min. • max.	0 °C 60 °C	0 °C 60 °C	0 °C 60 °C
Ambient temperature during storage/transportation • min. • max.	-40 °C 70 °C	-40 °C 70 °C	-40 °C 70 °C
Software			
Block • FB length in RAM, max.	2 700 byte; Data communication, sending and receiving	2 700 byte; Data communication, sending and receiving	2 700 byte; Data communication, sending and receiving
Connection method Design of electrical connection for supply voltage	Over backplane bus	Over backplane bus	Over backplane bus
Dimensions			
Width	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm
Weights			
Weight, approx.	300 g	300 g	300 g

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 341

Overview



- For quick, high-performance serial data exchange via point-to-point coupling
- 3 versions with different transmission physics:
 - RS 232C (V.24),
 - 20 mA (TTY),
 - RS 422/RS 485 (X.27)
- Implemented protocols: ASCII, 3964 (R), RK 512
- The following protocols can also be loaded: Modbus RTU
- Simple parameter assignment using tool integrated in STEP 7

Ordering data

Article No.

CP 341 communications module **6ES7341-1AH02-0AE0**

With one RS 232 C (V.24) interface

RS 232 connecting cable

For linking to SIMATIC S7

5 m

6ES7902-1AB00-0AA0

10 m

6ES7902-1AC00-0AA0

15 m

6ES7902-1AD00-0AA0

CP 341 communications module **6ES7341-1BH02-0AE0**

With one 20 mA (TTY) interface

20 mA (TTY) connecting cable

For linking to SIMATIC S7

5 m

6ES7902-2AB00-0AA0

10 m

6ES7902-2AC00-0AA0

50 m

6ES7902-2AG00-0AA0

CP 341 communications module **6ES7341-1CH02-0AE0**

With one RS 422/485 (X.27) interface

RS 422/485 connecting cable

For linking to SIMATIC S7

5 m

6ES7902-3AB00-0AA0

10 m

6ES7902-3AC00-0AA0

50 m

6ES7902-3AG00-0AA0

Loadable drivers for CP 341

Modbus master (RTU format)

- Single license
- Single license, without software or documentation

6ES7870-1AA01-0YA0

6ES7870-1AA01-0YA1

Modbus slave (RTU format)

- Single license
- Single license, without software or documentation

6ES7870-1AB01-0YA0

6ES7870-1AB01-0YA1

Technical specifications

Article number	6ES7341-1AH02-0AE0 CP 341 RS232C (V.24)	6ES7341-1BH02-0AE0 CP341 20mA-Interface (TTY)	6ES7341-1CH02-0AE0 CP341 RS422/485-Interface
General information			
Product type designation	CP 341	CP 341	CP 341
Supply voltage			
Rated value (DC)			
• 24 V DC	Yes	Yes	Yes
Input current			
from supply voltage L+, max.	100 mA	100 mA	100 mA
from backplane bus 5 V DC, max.	70 mA	70 mA	70 mA
Power loss			
Power loss, typ.	1.6 W	1.6 W	1.6 W
Interfaces			
Interfaces/bus type	RS 232C (V.24)	20 mA (TTY)	RS 422 / 485 (X.27)
Number of interfaces	1; Isolated	1; Isolated	1; Isolated
Transmission rate, min.	0.3 kbit/s	0.3 kbit/s	0.3 kbit/s
Transmission rate, max.	115.2 kbit/s	19.2 kbit/s	115.2 kbit/s

Technical specifications

Article number	6ES7341-1AH02-0AE0 CP 341 RS232C (V.24)	6ES7341-1BH02-0AE0 CP341 20mA-Interface (TTY)	6ES7341-1CH02-0AE0 CP341 RS422/485-Interface
Point-to-point connection			
• Cable length, max.	15 m	1 000 m	1 200 m
• supported printers	Serial printers	Serial printers	Serial printers
• Connector type	9-pin sub D connector	9-pin sub D socket	15-pin sub D socket
Integrated protocol driver			
- 3964 (R)	Yes	Yes	Yes; not with RS 485
- ASCII	Yes	Yes	Yes
- RK 512	Yes	Yes	Yes; not with RS 485
Telegram length, max.			
- 3964 (R)	4 096 byte	4 096 byte	4 096 byte
- ASCII	4 096 byte	4 096 byte	4 096 byte
- RK 512	4 096 byte	4 096 byte	4 096 byte
Transmission rate, 20 mA (TTY)			
- with 3964 (R) protocol, max.		19.2 kbit/s	
- with ASCII protocol, max.		19.2 kbit/s	
- with printer driver, max.		19.2 kbit/s	
- with RK 512 protocol, max.		19.2 kbit/s	
Transmission rate, RS 422/485			
- with 3964 (R) protocol, max.			115.2 kbit/s
- with ASCII protocol, max.			115.2 kbit/s
- with printer driver, max.			115.2 kbit/s
- with RK 512 protocol, max.			115.2 kbit/s
Transmission speed, RS 232			
- with 3964 (R) protocol, max.	115.2 kbit/s		
- with ASCII protocol, max.	115.2 kbit/s		
- with printer driver, max.	115.2 kbit/s		
- with RK 512 protocol, max.	115.2 kbit/s		
Ambient conditions			
Ambient temperature during operation			
• min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C
Ambient temperature during storage/transportation			
• min.	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C
Software			
Block			
• FB length in RAM, max.	6 100 byte; Data communication, sending and receiving	6 100 byte; Data communication, sending and receiving	6 100 byte; Data communication, sending and receiving
connection method			
Design of electrical connection for supply voltage	3 screw-type terminals: L+, M, GND	3 screw-type terminals: L+, M, GND	3 screw-type terminals: L+, M, GND
Dimensions			
Width	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm
Weights			
Weight, approx.	300 g	300 g	300 g

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

Loadable drivers for CP 441-2 and CP 341

Overview

- Drivers for Modbus protocol with RTU message format; communication as master or slave
- Downloadable onto CP 341 and CP 441-2 (6ES7 441-2AA05-0AE0)

Ordering data

Article No.

Article No.

Modbus Master V3.1

Task:
Communication via
Modbus protocol with RTU format,
SIMATIC S7 as master
Requirement:
CP 341 or CP 441-2;
STEP 7 V4.02 and higher
Type of delivery:
Driver program/documentation,
English, German, French

Single license

6ES7870-1AA01-0YA0

Single license, without software or
documentation

6ES7870-1AA01-0YA1

Modbus Slave V3.1

Task:
Communication via
Modbus protocol with RTU format,
SIMATIC S7 as slave
Requirement:
CP 341 or CP 441-2;
STEP 7 V4.02 and higher
Type of delivery:
Driver program/documentation,
English, German, French

Single license

6ES7870-1AB01-0YA0

Single license, without software
or documentation

6ES7870-1AB01-0YA1

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SIMATIC NET, SIMATIC IDENT

6ES7998-8XC01-8YE0

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6ES7998-8XC01-8YE2

Technical specifications

Parameterization software	Loadable drivers for CP 441-2 and CP 341		Modbus slave
Type of license	Simple license, copy license		- Modbus protocol with RTU format - Master/slave coupling: SIMATIC S7 is slave - Function codes implemented: 01, 02, 03, 04, 05, 06, 08, 15, 16 - No V.24 control and signal line - CRC polynomial: $x^{16} + x^{15} + x^2 + 1$ - Interfaces: TTY (20 mA), V.24 (RS 232C), X.27 (RS 422/485) 2-wire or 4-wire - Communications FB 180, instance DB 180 (use of a multi-instance) - Conversion of the Modbus data address to S7 data areas. Data areas which can be processed: DB, bit memories, outputs, inputs, timers, counters - Character delay time 3.5 characters or multiple thereof - Transmission rate 300 bit/s up to 76800 bit/s (TTY up to 19200 bit/s) - Character frame - Slave address of CP (1 to 255) - With/without RS 485 operation for 2-wire connection - With/without modem operation (ignore smudge characters) - Factor for the character delay time 1-10 - Number of work DB (for FB processing) - Enabling of memory areas for writing by the master - Default setting of receive line when using the X.27 interface module - Conversion of Modbus addresses to S7 data areas
Target system	SIMATIC CP 341, SIMATIC CP 441-2		
Technical specifications	Modbus Master - Modbus protocol with RTU format - Master/slave coupling: SIMATIC S7 is master - Function codes implemented: 01, 02, 03, 04, 05, 06, 07, 08, 11, 12, 15, 16 - No V.24 control and signal lines - CRC polynomial: $x^{16} + x^{15} + x^2 + 1$ - Interfaces: TTY (20 mA); V.24 (RS 232 C); X.27 (RS 422/485) 2-wire or 4-wire - Receive mailbox specified on BRCV - Character delay time 3.5 characters or multiple thereof - Broadcast message possible - Transmission rate 300 bit/s up to 76800 bit/s (TTY up to 19200 bit/s) - Character frame - With/without RS 485 operation for 2-wire connections - With/without modem operation (ignore smudge characters) - Response monitoring time 100 ms to 25.5 s in steps of 100 ms - Factor for the character delay time 1-10 - Default setting of receive line when using the X.27 interface module	Adjustable parameters	

Adjustable parameters

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 343-2P/CP 343-2

Overview



CP 343-2P/CP 343-2

More information

Manual for CP 343-2P/CP 343-2
see <https://support.industry.siemens.com/cs/ww/en/view/5581657>

For diagnostics during ongoing operation, diagnostics blocks with clearly arranged visualization on the SIMATIC HMI panel are available or can be downloaded free of charge via a web browser, see <https://support.industry.siemens.com/cs/ww/en/view/61892138>.

AS-Interface block library for SIMATIC PCS 7 for easy connection of AS-Interface to PCS 7,
see <https://support.industry.siemens.com/cs/ww/en/view/109759605>

AS-Interface I/O modules and other AS-Interface system components
see Catalog IC 10 <https://www.siemens.com/ic10>

More information see <https://www.siemens.com/as-interface>

The CP 343-2P communications processor is the AS-Interface master for the SIMATIC S7-300 and the ET 200M distributed I/O station, with user-friendly parameterizing options.

The CP 343-2 is the basic version of the module.

The CP 343-2P/CP 343-2 has the following characteristics:

- Connection of up to 62 AS-Interface slaves
- Integrated analog value transmission
- Supports all AS-Interface master functions according to the AS-Interface specification V3.0
- Status displays of operating states and indication of the readiness for operation of connected slaves by means of LEDs in the front panel
- Fault indications (including AS-Interface voltage errors, configuration errors) by means of LEDs on the front plate.
- Compact enclosure in the design of the SIMATIC S7-300
- Suitable for AS-Interface with 30 V voltage and AS-i Power24V
- Additionally for CP 343-2P: Supports the configuration of the AS-Interface network with STEP 7

Design

The CP 343-2P/CP 343-2 is connected like an I/O module to the S7-300. It has:

- Two terminal connections for connecting the AS-Interface cable directly.
- LEDs in the front panel for indicating the operating state and the readiness for operation of all connected and activated slaves
- Pushbuttons for switching over the master operating state and for adopting the existing ACTUAL configuration of the AS-i slave as the TARGET configuration

Function

The CP 343-2P/CP 343-2 support all specified functions of the AS-Interface specification V3.0.

The CP 343-2P/CP 343-2 each occupy 16 bytes in the I/O address area of the SIMATIC S7-300. The digital I/O data of the standard slaves and A slaves is saved in this area. The digital I/O data of the B slaves and the analog I/O data can be accessed with the S7 system functions for read/write data records.

If required, master calls can be performed with the command interface, e.g. read/write parameters, read/write configuration.

For more information, see <https://support.industry.siemens.com/cs/ww/en/view/51678777>.

Notes on security:

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens products and solutions represent only one component of such a concept.

For more information about the subject of Industrial Security, see <https://www.siemens.com/industrialsecurity>.

Configuration

All connected AS-Interface slaves are configured at the press of a button. No further configuration of the CP is required.

Additionally for CP 343-2P

The CP 343-2P also supports configuring of the AS-Interface network with STEP 7. Specifying the AS-i configuration in HW-Config facilitates the setting of slave parameters and documentation of the plant. Uploading the ACTUAL configuration of an already configured AS-Interface network is also supported. The saved configuration cannot be overwritten at the press of a button and is therefore tamper-proof.

Benefits

- Shorter start-up times through simple configuration at the press of a button
- Design of flexible machine-related structures using the ET 200M distributed I/O system
- Enables diagnostics of the AS-Interface network
- Well suited also for complex applications thanks to connection options for 62 slaves and integral analog value processing
- Reduction of standstill and servicing times in the event of a fault thanks to the LED indicators:
 - Status of the AS-Interface network
 - Slaves connected and their readiness for operation
 - Monitoring of the AS-Interface voltage
- Lower costs for stock keeping and spare parts inventory because the CP can be used for the SIMATIC S7-300 and also for the ET 200M
- Additionally for CP 343-2P: Improved plant documentation and support for service assignments thanks to a description of the AS-Interface configuration in the STEP 7 project
- Simple operation with AS-Interface power supply unit (see <https://mall.industry.siemens.com/mall/en/WW/Catalog/Products/8200165?tree=CatalogTree>) possible without restrictions
- Alternatively: No need for the AS-i power supply unit with AS-i Power24V. The AS-Interface cable is powered through an existing 24 V DC PELV power supply unit. An S22.5 AS-i data decoupling module (e.g. 3RK1901-1DE12-1AA0) is required for the decoupling, see <https://mall.industry.siemens.com/mall/en/WW/Catalog/Products/10057533?tree=CatalogTree>.

Application

The CP 343-2P/CP 343-2 is the AS-Interface master connection for the SIMATIC S7-300 and the ET 200M.

Through connection to AS-Interface it is possible to access max. 248 DI/248 DQ per CP, using 62 A/B slaves with 4 DI/4 DQ each.

With the integrated analog value processing, it is easy to transmit analog signals. Up to 62 analog slaves with an A/B address (each with up to two channels) or up to 31 analog slaves with a standard address (each with up to four channels) are possible per CP.

The CP 343-2P is the further development of the CP 343-2 and contains its entire functionality. An existing STEP 7 user program for a CP 343-2 can thus be used without restrictions with a CP 343-2P. It is only in STEP 7 HW-Config that the two modules are configured differently, with the CP 343-2P offering additional options. This is why the CP 343-2P is recommended.

Ordering data**Article No.****CP 343-2P****communications processor**

- Device version with expanded configuration options for connection of SIMATIC S7-300 and ET 200M to AS-Interface
- Configuration of the AS-i network using the SET key or STEP 7
- Without front connector
- Corresponds to AS-Interface specification V3.0
- Dimensions (W x H x D) mm: 40 x 125 x 120

6GK7343-2AH11-0XA0**CP 343-2****communications processor**

- Basic version for connection of SIMATIC S7-300 and ET 200M to AS-Interface
- Configuration of the AS-i network using the SET key
- Without front connector
- Corresponds to AS-Interface specification V3.0
- Dimensions (W x H x D) mm: 40 x 125 x 120

6GK7343-2AH01-0XA0**Accessories****Front connector, 20-pin**

- With screw terminals
- With spring-loaded terminals

6ES7392-1AJ00-0AA0**6ES7392-1BJ00-0AA0****AS-Interface addressing unit V3.0**

- For AS-Interface modules and sensors and actuators with integrated AS-Interface according to AS-i specification V3.0
- For setting the AS-i address of standard slaves, and slaves with extended addressing mode (A/B slaves)
- With input/output test function and many other commissioning functions
- Battery operation with four type AA batteries (IEC LR6, NEDA 15)
- Degree of protection IP40
- Dimensions (W x H x D) mm: 84 x 195 x 35
- Scope of supply:
 - Addressing unit with four batteries
 - Addressing cable, with M12 plug to addressing plug (hollow plug), length 1.5 m

3RK1904-2AB02

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 342-5

Overview



DP-M	DP-S	FMS	PG/OP	S7/S5	
●	●		●	●	

- PROFIBUS DP master or slave with electrical interface for connecting the SIMATIC S7-300 to PROFIBUS at up to 12 Mbps (including 45.45 Kbps)
- Communications services:
 - PROFIBUS DP
 - PG/OP communication (OP multiplexing)
 - S7 communication (client, server)
 - Open communication (SEND/RECEIVE)
- Easy configuration and programming over PROFIBUS
- Cross-network PG communication using S7 routing
- Modules can be replaced without the need for a PG

Ordering data

Article No.

CP 342-5 communications processor

Communications processor for electrical connection of SIMATIC S7-300 to PROFIBUS at up to 12 Mbps, with electronic manual on CD-ROM

6GK7342-5DA03-0XE0

Accessories

PROFIBUS FastConnect RS485 connection plug

With 90° cable outlet; with insulation displacement terminals, max. transfer rate 12 Mbps

- Without programming device interface
- With programming device interface

6ES7972-0BA52-0XA0

6ES7972-0BB52-0XA0

PROFIBUS bus connector IP20

With connection to PPI, MPI, PROFIBUS

- Without programming device interface
- With programming device interface

6ES7972-0BA12-0XA0

6ES7972-0BB12-0XA0

PROFIBUS FC standard cable

2-core bus cable, shielded, special design for fast installation, sold by the meter; delivery unit: max. 1000 m, minimum order quantity 20 m

6XV1830-0EH10

PROFIBUS bus terminal 12M

Bus terminal for connection of PROFIBUS stations up to 12 Mbps with connecting cable

6GK1500-0AA10

SIMATIC S7-300 DM 370

Dummy module; used for module replacement

6ES7370-0AA01-0AA0

Technical specifications

Article number	6GK7342-5DA03-0XE0
product type designation	CP 342-5
transfer rate	
transfer rate	
• at the 1st interface according to PROFIBUS	9.6 kbit/s ... 12 Mbit/s
interfaces	
number of interfaces according to Industrial Ethernet	0
number of electrical connections	
• at the 1st interface according to PROFIBUS	1
• for power supply	1
type of electrical connection	
• at the 1st interface according to PROFIBUS	9-pin Sub-D socket (RS485)
• for power supply	4-pole terminal block

Article number	6GK7342-5DA03-0XE0
product type designation	CP 342-5
supply voltage, current consumption, power loss	
type of voltage of the supply voltage	DC
supply voltage 1 from backplane bus	5 V
supply voltage external	24 V
supply voltage external at DC rated value	24 V
relative positive tolerance at DC at 24 V	20 %
relative negative tolerance at DC at 24 V	15 %
consumed current	
• from backplane bus at DC at 5 V typical	0.15 A
• from external supply voltage at DC at 24 V typical	0.25 A
power loss [W]	6.75 W

Technical specifications

Article number	6GK7342-5DA03-0XE0
product type designation	CP 342-5
ambient conditions	
ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
relative humidity	
• at 25 °C without condensation during operation maximum	95 %
protection class IP	IP20
design, dimensions and weights	
module format	Compact module S7-300 single width
width	40 mm
height	125 mm
depth	120 mm
net weight	0.3 kg
product features, product functions, product components general	
number of units	
• per CPU maximum	4
performance data open communication	
number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	16
data volume	
• as user data per connection for open communication by means of SEND/RECEIVE blocks maximum	240 byte

Article number	6GK7342-5DA03-0XE0
product type designation	CP 342-5
performance data PROFIBUS DP	
service as DP master	
• DPV0	Yes
number of DP slaves	
• on DP master operable	124
data volume	
• of the address range of the inputs as DP master total	2 160 byte
• of the address range of the outputs as DP master total	2 160 byte
• of the address range of the inputs per DP slave	244 byte
• of the address range of the outputs per DP slave	244 byte
• of the address range of the diagnostic data per DP slave	240 byte
service as DP slave	
• DPV0	Yes
data volume	
• of the address range of the inputs as DP slave total	240 byte
• of the address range of the outputs as DP slave total	240 byte
performance data S7 communication	
number of possible connections for S7 communication	
• maximum	16
performance data multi-protocol mode	
number of active connections with multi-protocol mode	
• without DP maximum	32
• with DP maximum	28
performance data telecontrol	
protocol is supported	
• TCP/IP	No
product functions management, configuration, engineering	
configuration software	
• required	STEP 7 V5.1 SP2 or higher / STEP 7 Professional V12 (TIA Portal) or higher
standards, specifications, approvals hazardous environments	
certificate of suitability CCC for hazardous zone according to GB standard	Yes

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 343-5

Overview



DP-M	DP-S	FMS	PG/OP	S7/S5	
		●	●	●	6ES7373-1EA00-0AB0

Connection of SIMATIC S7-300 to PROFIBUS at up to 12 Mbps (including 45.45 Kbps)

- Communication services:
 - PG/OP communication
 - S7 communication
 - Open communication (SEND/RECEIVE)
 - PROFIBUS FMS
- Easy configuration and programming over PROFIBUS
- Can be easily integrated into the S7-300 system
- Cross-network PG communication using S7 routing
- Modules can be replaced without the need for a PG

Ordering data

Article No.

CP 343-5 communications processor

Communications processor for connection of S7-300 to PROFIBUS, FMS, open communication, PG/OP and S7 communication; with electronic manual on CD-ROM

6GK7343-5FA01-0XE0

Accessories

STEP 7 Version 5.7

Target system:
SIMATIC S7-300/-400, SIMATIC C7
Requirement:
Windows 10 Professional/Enterprise
Windows Server 2016
Windows Server 2019
Type of delivery:
English, German, French,
Spanish, Italian;
incl. license key on USB flash drive,
with electronic documentation

Floating license on DVD

6ES7810-4CC12-0YA5

Floating license, download¹⁾;
Software, license key and
documentation as download;
consignee email address required
for delivery

6ES7810-4CE12-0YB5

Rental license for 50 hours
Software and documentation on
DVD, license key on USB flash drive

6ES7810-4CC12-0YA6

Rental license for 50 hours,
download¹⁾; Software, license key
and documentation as download;
consignee email address required
for delivery

6ES7810-4CE12-0YB6

Upgrade floating license
V5.3...5.6 to V5.7; on DVD

6ES7810-4CC12-0YE5

Upgrade floating license
V5.3...V5.6 to V5.7, download¹⁾;
Software, license key and
documentation as download;
consignee email address required
for delivery

6ES7810-4CE12-0YE5

STEP 7 V5.7 trial license;
On DVD, operational for 21 days

6ES7810-4CC12-0YA7

PROFIBUS FastConnect RS485 bus connector

With 90° cable outlet;
with insulation displacement
terminals, max. transfer rate
12 Mbps (1 unit)

- Without programming device interface

6ES7972-0BA52-0XA0

- With programming device interface

6ES7972-0BB52-0XA0

PROFIBUS bus connector IP20

With connection to PPI, MPI,
PROFIBUS

- Without programming device interface

6ES7972-0BA12-0XA0

- With programming device interface

6ES7972-0BB12-0XA0

PROFIBUS bus terminal 12M

Bus terminal for connection of
PROFIBUS stations up to 12 Mbps
with connecting cable

6GK1500-0AA10

SIMATIC S7-300 DM 370

Dummy module; used for module
replacement

6ES7370-0AA01-0AA0

¹⁾ For up-to-date information and download availability, see:
<https://www.siemens.com/tia-online-software-delivery>

Technical specifications

Article number	6GK7343-5FA01-0XE0
product type designation	CP 343-5
transfer rate	
transfer rate	
• at the 1st interface according to PROFIBUS	9.6 kbit/s ... 12 Mbit/s
interfaces	
number of interfaces according to Industrial Ethernet	0
number of electrical connections	
• at the 1st interface according to PROFIBUS	1
• for power supply	1
type of electrical connection	
• at the 1st interface according to PROFIBUS	9-pin Sub-D socket (RS485)
• for power supply	4-pole terminal block
supply voltage, current consumption, power loss	
type of voltage of the supply voltage	DC
supply voltage 1 from backplane bus	5 V
supply voltage	24 V
supply voltage external	24 V
supply voltage external at DC rated value	24 V
relative positive tolerance at DC at 24 V	20 %
relative negative tolerance at DC at 24 V	15 %
consumed current	
• from backplane bus at DC at 5 V typical	0.15 A
• from external supply voltage at DC at 24 V typical	0.25 A
power loss [W]	5 W
ambient conditions	
ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
relative humidity	
• at 25 °C without condensation during operation maximum	95 %
protection class IP	IP20

Article number	6GK7343-5FA01-0XE0
product type designation	CP 343-5
design, dimensions and weights	
module format	Compact module S7-300 single width
width	40 mm
height	125 mm
depth	120 mm
net weight	0.3 kg
fastening method	
• S7-300 rail mounting	Yes
product features, product functions, product components general	
number of units	
• per CPU maximum	4
performance data open communication	
number of possible connections for open communication by means of SEND/RECEIVE blocks maximum data volume	16
• as user data per connection for open communication by means of SEND/RECEIVE blocks maximum	240 byte
performance data FMS functions	
number of possible connections for FMS connection maximum	16
data volume of the variables	
• for READ job maximum	237 byte
• for WRITE and REPORT job maximum	233 byte
number of variables	
• configurable from server to FMS partner	256
• loadable from server to FMS partner	256
performance data S7 communication	
number of possible connections for S7 communication	
• maximum	16
performance data multi-protocol mode	
number of active connections with multi-protocol mode	48
performance data telecontrol	
protocol is supported	
• TCP/IP	No
product functions management, configuration, engineering	
configuration software	
• required	STEP 7 V5.1 SP3 or higher and NCM S7 for PROFIBUS
standards, specifications, approvals hazardous environments	
certificate of suitability CCC for hazardous zone according to GB standard	Yes

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 343-1 Lean

Overview



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

Communications processor for connecting a SIMATIC S7-300 to Industrial Ethernet networks, also as PROFINET IO Device.

The CP supports:

- PG/OP communication
- S7 communication
- Open communication (SEND/RECEIVE)
- PROFINET communication

Ordering data

Article No.

CP 343-1 Lean communications processor

For connecting SIMATIC S7-300 to Industrial Ethernet through TCP/IP and UDP, Multicast, S7 communication, open communication (SEND/RECEIVE), FETCH/WRITE, PROFINET IO Device, MRP, integrated 2-port switch ERTEC, comprehensive diagnostics facilities, module replacement without PG, SNMP, initial commissioning over LAN; with electronic manual on CD-ROM

6GK7343-1CX10-0XE0

Accessories

IE FC RJ45 plug 145

RJ45 plug-in connector 2 x 2 for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 145° cable outlet

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

6GK1901-1BB30-0AA0
6GK1901-1BB30-0AB0
6GK1901-1BB30-0AE0

IE FC TP standard cable GP 2 x 2 (type A)

4-core, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

6XV1840-2AH10

IE FC stripping tool

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

6GK1901-1GA00

CSM 377 compact switch module

Unmanaged switch for connection of a SIMATIC S7-300 CPU, ET 200M, and up to three further nodes to Industrial Ethernet operating at 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module including electronic Equipment Manual on CD-ROM

6GK7377-1AA00-0AA0

Technical specifications

Article number	6GK7343-1CX10-0XE0
product type designation	CP 343-1 Lean
transfer rate	
transfer rate	
• at the 1st interface	10 ... 100 Mbit/s
interfaces	
number of interfaces according to Industrial Ethernet	2
number of electrical connections	
• at the 1st interface according to Industrial Ethernet	2
• for power supply	1
type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
• at the 1st interface according to Industrial Ethernet	RJ45 port
type of electrical connection	
• for power supply	2-pole plugable terminal block
supply voltage, current consumption, power loss	
type of voltage of the supply voltage	DC
supply voltage 1 from backplane bus	5 V
supply voltage	24 V
supply voltage external	24 V
supply voltage external at DC rated value	24 V
relative positive tolerance at DC at 24 V	20 %
relative negative tolerance at DC at 24 V	15 %
consumed current	
• from backplane bus at DC at 5 V typical	0.2 A
• from external supply voltage at DC at 24 V typical	0.16 A
• from external supply voltage at DC at 24 V maximum	0.2 A
power loss [W]	5.8 W
ambient conditions	
ambient temperature	
• for vertical installation during operation	0 ... 40 °C
• for horizontally arranged busbars during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
relative humidity	
• at 25 °C without condensation during operation maximum	95 %
protection class IP	IP20

Article number	6GK7343-1CX10-0XE0
product type designation	CP 343-1 Lean
design, dimensions and weights	
module format	Compact module S7-300 single width
width	40 mm
height	125 mm
depth	120 mm
net weight	0.22 kg
fastening method	
• S7-300 rail mounting	Yes
performance data open communication	
number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	8
data volume	
• as user data per ISO on TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks maximum	2 Kibyte
number of Multicast stations	8
performance data S7 communication	
number of possible connections for S7 communication	
• maximum	4
service	
• of SIMATIC communication as server	Yes
performance data multi-protocol mode	
number of active connections with multi-protocol mode	12
performance data PROFINET communication as PN IO controller	
product function PROFINET IO controller	No

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 343-1 Lean

Technical specifications

Article number	6GK7343-1CX10-0XE0
product type designation	CP 343-1 Lean
performance data PROFINET communication as PN IO device	
product function PROFINET IO device	Yes
data volume	
• as user data for input variables as PROFINET IO device maximum	512 byte
• as user data for output variables as PROFINET IO device maximum	512 byte
• as user data for input variables for each sub-module as PROFINET IO device	240 byte
• as user data for output variables for each sub-module as PROFINET IO device	240 byte
• as user data for the consistency area for each sub-module	240 byte
number of submodules per PROFINET IO-Device	32
performance data telecontrol	
protocol is supported	
• TCP/IP	Yes
product functions management, configuration, engineering	
product function MIB support	Yes
protocol is supported	
• SNMP v1	Yes
• DCP	Yes
• LLDP	Yes
configuration software	
• required	STEP 7 V5.4 or higher / STEP 7 Professional V11 (TIA Portal) or higher
identification & maintenance function	
• I&MO - device-specific information	Yes
• I&M1 - higher level designation/location designation	Yes

Article number	6GK7343-1CX10-0XE0
product type designation	CP 343-1 Lean
product functions diagnostics	
product function web-based diagnostics	Yes
product functions switch	
product feature switch	Yes
product function	
• switch-managed	No
• with IRT PROFINET IO switch	No
• configuration with STEP 7	Yes
product functions redundancy	
product function	
• ring redundancy	Yes
• redundancy manager	No
protocol is supported Media Redundancy Protocol (MRP)	Yes
product functions security	
product function	
• password protection for Web applications	No
• ACL - IP-based	Yes
• ACL - IP-based for PLC/routing	No
• switch-off of non-required services	Yes
• blocking of communication via physical ports	Yes
• log file for unauthorized access	No
product functions time	
product function SICLOCK support	Yes
product function pass on time synchronization	Yes
protocol is supported	
• NTP	Yes
standards, specifications, approvals hazardous environments	
certificate of suitability CCC for hazardous zone according to GB standard	Yes

Overview



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

G_K10_XS_10147

Communications processor for connecting a SIMATIC S7-300/SINUMERIK 840D powerline to Industrial Ethernet networks, also as PROFINET IO Controller or IO Device.

The CP supports:

- PG/OP communication
- S7 communication
- Open communication (SEND/RECEIVE)
- PROFINET communication

5

Ordering data

Article No.

Article No.

**CP 343-1
communications processor**

For connection of SIMATIC S7-300 to Industrial Ethernet over ISO and TCP/IP; PROFINET IO Controller or PROFINET IO Device, MRP, integrated 2-port switch ERTEC; S7 communication, open communication (SEND/RECEIVE), FETCH/WRITE, with and without RFC 1006, multicast, DHCP, CPU clock synchronization via SIMATIC procedure and NTP, diagnostics, SNMP, access protection through IP access list, initialization over LAN 10/100 Mbps; with electronic manual on DVD

6GK7343-1EX30-0XE0
Accessories
IE FC RJ45 plug 180 2 x 2

RJ45 plug-in connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPUs/CPUs with Industrial Ethernet interface

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

6GK1901-1BB10-2AA0
6GK1901-1BB10-2AB0
6GK1901-1BB10-2AE0
IE FC RJ45 plug 145

RJ45 plug-in connector 2 x 2 for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 145° cable outlet

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

6GK1901-1BB30-0AA0
6GK1901-1BB30-0AB0
6GK1901-1BB30-0AE0
**IE FC TP standard cable GP 2 x 2
(type A)**

4-core, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

6XV1840-2AH10
IE FC stripping tool

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

6GK1901-1GA00
CSM 377 compact switch module

Unmanaged switch for connection of a SIMATIC S7-300 CPU, ET 200M, and up to three further nodes to Industrial Ethernet operating at 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module including electronic Equipment Manual on CD-ROM

6GK7377-1AA00-0AA0
**SCALANCE XC206-2SFP
Industrial Ethernet switch**

Manageable Layer 2 IE switch; IEC 62443-4-2 certified; 6x 10/100 Mbps RJ45 ports; 2x 100/1000 Mbps SFP; 1x console port

6GK5206-2BS00-2AC2

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 343-1

Technical specifications

Article number	6GK7343-1EX30-0XE0
product type designation	CP 343-1
transfer rate	
transfer rate	
• at the 1st interface	10 ... 100 Mbit/s
interfaces	
number of interfaces according to Industrial Ethernet	2
number of electrical connections	
• at the 1st interface according to Industrial Ethernet	2
• for power supply	1
type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
• at the 1st interface according to Industrial Ethernet	RJ45 port
type of electrical connection	
• for power supply	2-pole plugable terminal block
supply voltage, current consumption, power loss	
type of voltage of the supply voltage	DC
supply voltage 1 from backplane bus	5 V
supply voltage	24 V
supply voltage external	24 V
supply voltage external at DC rated value	24 V
relative positive tolerance at DC at 24 V	20 %
relative negative tolerance at DC at 24 V	15 %
consumed current	
• from backplane bus at DC at 5 V typical	0.2 A
• from external supply voltage at DC at 24 V typical	0.16 A
• from external supply voltage at DC at 24 V maximum	0.2 A
power loss [W]	5.8 W
ambient conditions	
ambient temperature	
• for vertical installation during operation	0 ... 40 °C
• for horizontally arranged busbars during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
relative humidity	
• at 25 °C without condensation during operation maximum	95 %
protection class IP	IP20

Article number	6GK7343-1EX30-0XE0
product type designation	CP 343-1
design, dimensions and weights	
module format	Compact module S7-300 single width
width	40 mm
height	125 mm
depth	120 mm
net weight	0.22 kg
fastening method	
• S7-300 rail mounting	Yes
performance data open communication	
number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	16
data volume	
• as user data per ISO connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per ISO on TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks maximum	2 Kibyte
number of Multicast stations	16
performance data S7 communication	
number of possible connections for S7 communication	
• maximum	16
performance data multi-protocol mode	
number of active connections with multi-protocol mode	32
performance data PROFINET communication as PN IO controller	
number of PN IO devices on PROFINET IO controller operable total	32
number of external PN IO lines with PROFINET per rack	1
data volume	
• as user data for input variables as PROFINET IO controller maximum	1 Kibyte
• as user data for output variables as PROFINET IO controller maximum	1 Kibyte
• as user data for input variables per PN IO device as PROFINET IO controller maximum	1 433 byte
• as user data for output variables per PN IO device as PROFINET IO controller maximum	1 433 byte
• as user data for input variables per PN IO device for each sub-module as PROFINET IO controller maximum	240 byte
• as user data for output variables per PN IO device for each sub-module as PROFINET IO controller maximum	240 byte

Technical specifications

Article number	6GK7343-1EX30-0XE0
product type designation	CP 343-1
performance data PROFINET communication as PN IO device	
product function PROFINET IO device	Yes
data volume	
• as user data for input variables as PROFINET IO device maximum	512 byte
• as user data for output variables as PROFINET IO device maximum	512 byte
• as user data for input variables for each sub-module as PROFINET IO device	240 byte
• as user data for output variables for each sub-module as PROFINET IO device	240 byte
• as user data for the consistency area for each sub-module	240 byte
number of submodules per PROFINET IO-Device	32
performance data telecontrol	
protocol is supported	
• TCP/IP	Yes
product functions management, configuration, engineering	
product function MIB support	Yes
protocol is supported	
• SNMP v1	Yes
• DCP	Yes
• LLDP	Yes
configuration software	
• required	STEP 7 V5.4 SP2 or higher / STEP 7 Professional V11 (TIA Portal) or higher
identification & maintenance function	
• I&MO - device-specific information	Yes
• I&M1 - higher level designation/location designation	Yes

Article number	6GK7343-1EX30-0XE0
product type designation	CP 343-1
product functions diagnostics	
product function web-based diagnostics	Yes
product functions switch	
product feature switch	Yes
product function	
• switch-managed	No
• with IRT PROFINET IO switch	Yes
• configuration with STEP 7	Yes
product functions redundancy	
product function	
• ring redundancy	Yes
• redundancy manager	No
protocol is supported Media Redundancy Protocol (MRP)	Yes
product functions security	
product function	
• password protection for Web applications	No
• ACL - IP-based	Yes
• ACL - IP-based for PLC/routing	No
• switch-off of non-required services	Yes
• blocking of communication via physical ports	Yes
• log file for unauthorized access	No
product functions time	
product function SICLOCK support	Yes
product function pass on time synchronization	Yes
protocol is supported	
• NTP	Yes
standards, specifications, approvals hazardous environments	
certificate of suitability CCC for hazardous zone according to GB standard	Yes

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 343-1 Advanced

Overview



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

Communications processor for connecting the SIMATIC S7-300/SINUMERIK 840D powerline to Industrial Ethernet networks, also as PROFINET IO controller and IO device.

The CP supports:

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

In addition, the CP 343-1 Advanced provides email functions and allows users to create their own Web pages - ideal support for maintenance and quality assurance. The Internet functions such as FTP even allow connection to the most diverse PC-based systems. This CP is therefore the bridge between the field level and the management level for the S7-300. The CP 343-1 Advanced connects seamlessly to the security structures of the office and IT world.

Note:

Critical restrictions to cyber security for CP 343-1 Advanced (6GK7343-1GX31-0XE0)

Parts of the CP firmware originate from third-party vendors who have discontinued maintenance for the supplied software components. Therefore, these components are no longer monitored for newly disclosed critical security vulnerabilities. For CPs purchased after June 2021, this means:

- Siemens can no longer ensure that the firmware does not contain any security-critical vulnerabilities.
- Siemens no longer publishes newly discovered security vulnerabilities as security advisories and no longer eliminates such vulnerabilities. This does not affect the functionality of the CP. It merely means that there is no longer any guarantee that the CP-secured networks are protected without restrictions. Siemens recommends the following measures:
 - Implement a state-of-the-art security concept for the entire plant.
 - You can find more information here: <https://www.siemens.com/industrialsecurity>
 - Additionally secure the Internet access implemented via the CP using further security components, such as a SCALANCE S. In this case, the plant is adequately protected, even if there is a security-critical vulnerability in the CP.

Ordering data

Article No.

Article No.

CP 343-1 Advanced communications processor

For connecting the SIMATIC S7-300 CPU to Industrial Ethernet;
1 x 10/100/1000 Mbps;
2 x 10/100 Mbps (IE SWITCH);
RJ 45 ports; TCP; UDP; ISO;
PROFINET IO controller and device;
S7 communication (client + server);
open communication (SEND/RECEIVE); S7 routing;
IP configuration via DHCP/block;
extended web diagnostics;
time synchronization; IP Access Control List; IP routing; FTP; email;
PROFINET CBA; C-PLUG

- With Security (Firewall + VPN) and PROFinergy (Controller + Device)

6GK7343-1GX31-0XE0

Accessories

IE FC RJ45 plug 180 2 x 2

RJ45 plug-in connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface

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

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

IE FC RJ45 plug 145

RJ45 plug-in connector 2 x 2 for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 145° cable outlet

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

6GK1901-1BB30-0AA0
6GK1901-1BB30-0AB0
6GK1901-1BB30-0AE0

IE FC RJ45 plug 4 x 2

RJ45 plug-in connector for Industrial Ethernet (10/100/1000/10000 Mbps, Cat6A) with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface

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

6GK1901-1BB12-2AA0
6GK1901-1BB12-2AB0
6GK1901-1BB12-2AE0

IE FC TP standard cable GP 2 x 2 (type A)

4-core, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

6XV1840-2AH10

Ordering data

Article No.

Article No.

IE FC TP standard cable GP 4 x 2

8-core, shielded TP installation cable for connection to IE FC RJ45 modular outlet for universal applications; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

- AWG22, for connection to IE FC RJ45 modular outlet
- AWG24, for connection to IE FC RJ45 plug 4 x 2

6XV1870-2E**6XV1878-2A****IE FC stripping tool**

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

6GK1901-1GA00**CSM 377 compact switch module**

Unmanaged switch for connection of a SIMATIC S7-300 CPU, ET 200M, and up to three further nodes to Industrial Ethernet operating at 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module including electronic Equipment Manual on CD-ROM

6GK7377-1AA00-0AA0**SCALANCE XC206-2SFP Industrial Ethernet switch**

Manageable Layer 2 IE switch; IEC 62443-4-2 certified; 6x 10/100 Mbps RJ45 ports; 2x 100/1000 Mbps SFP; 1x console port

6GK5206-2BS00-2AC2

Technical specifications

Article number	6GK7343-1GX31-0XE0
product type designation	CP 343-1 Advanced
transfer rate	
transfer rate	
• at the 1st interface	10 ... 1 000 Mbit/s
• at the 2nd interface	10 ... 100 Mbit/s
interfaces	
number of interfaces according to Industrial Ethernet	3
number of electrical connections	
• at the 1st interface according to Industrial Ethernet	1
• at the 2nd interface according to Industrial Ethernet	2
• for power supply	1
type of electrical connection	
• at the 1st interface according to Industrial Ethernet	RJ45 port
• at the 2nd interface according to Industrial Ethernet	RJ45 port
type of electrical connection	
• for power supply	2-pole plugable terminal block
design of the removable storage	
• C-PLUG	Yes
supply voltage, current consumption, power loss	
type of voltage of the supply voltage	DC
supply voltage 1 from backplane bus	5 V
supply voltage external	24 V
supply voltage external at DC rated value	24 V
relative positive tolerance at DC at 24 V	20 %
relative negative tolerance at DC at 24 V	15 %
consumed current	
• from backplane bus at DC at 5 V typical	0.14 A
• from external supply voltage at DC at 24 V typical	0.48 A
• from external supply voltage at DC at 24 V maximum	0.62 A
power loss [W]	14.7 W

Article number	6GK7343-1GX31-0XE0
product type designation	CP 343-1 Advanced
ambient conditions	
ambient temperature	
• for vertical installation during operation	0 ... 40 °C
• for horizontally arranged busbars during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
relative humidity	
• at 25 °C without condensation during operation maximum	95 %
protection class IP	IP20
design, dimensions and weights	
module format	Compact module
width	80 mm
height	125 mm
depth	120 mm
net weight	0.45 kg
fastening method	
• S7-300 rail mounting	Yes
performance data open communication	
number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	16
data volume	
• as user data per ISO connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per ISO on TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks maximum	2 Kibyte
number of Multicast stations	16

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 343-1 Advanced

Technical specifications

Article number	6GK7343-1GX31-0XE0
product type designation	CP 343-1 Advanced
performance data S7 communication	
number of possible connections for S7 communication	
• maximum	16
performance data multi-protocol mode	
number of active connections with multi-protocol mode	48
performance data IT functions	
number of possible connections	
• as client by means of FTP maximum	10
• as server by means of FTP maximum	2
number of possible connections	
• as server by means of HTTP maximum	4
• as email client maximum	1
data volume as user data for email maximum	8 Kibyte
storage capacity of the user memory	
• as flash memory file system	28 Mibyte
• as RAM	30 Mibyte
number of possible write cycles of the flash memory cells	100 000
performance data PROFINET communication as PN IO controller	
product function PROFINET IO controller	Yes
number of PN IO devices on PROFINET IO controller operable total	128
number of PN IO IRT devices on PROFINET IO controller operable	128
number of external PN IO lines with PROFINET per rack	1
data volume	
• as user data for input variables as PROFINET IO controller maximum	4 Kibyte
• as user data for output variables as PROFINET IO controller maximum	4 Kibyte
• as user data for input variables per PN IO device as PROFINET IO controller maximum	1 433 byte
• as user data for output variables per PN IO device as PROFINET IO controller maximum	1 433 byte
• as user data for input variables per PN IO device for each sub-module as PROFINET IO controller maximum	240 byte
• as user data for output variables per PN IO device for each sub-module as PROFINET IO controller maximum	240 byte

Article number	6GK7343-1GX31-0XE0
product type designation	CP 343-1 Advanced
performance data PROFINET communication as PN IO device	
product function PROFINET IO device	Yes
data volume	
• as user data for input variables as PROFINET IO device maximum	1 024 byte
• as user data for output variables as PROFINET IO device maximum	1 024 byte
• as user data for input variables for each sub-module as PROFINET IO device	240 byte
• as user data for output variables for each sub-module as PROFINET IO device	240 byte
• as user data for the consistency area for each sub-module	240 byte
number of submodules per PROFINET IO-Device	32
performance data PROFINET CBA	
number of remote connection partners with PROFINET CBA	64
number of connections with PROFINET CBA total	1 000
data volume	
• as user data for digital inputs with PROFINET CBA maximum	8 Kibyte
• as user data for digital outputs with PROFINET CBA maximum	8 Kibyte
• as user data for arrays and data types in the case of acyclic transmission with PROFINET CBA maximum	8 Kibyte
• as user data for arrays and data types with PROFINET CBA with cyclical transfer maximum	250 byte
• as user data for arrays and data types with PROFINET CBA in the case of local interconnection maximum	2 400 byte
performance data PROFINET CBA remote interconnection with acyclic transfer	
update time of the remote interconnections in the case of acyclic transmission with PROFINET CBA	100 ms
number of remote connections to input variables in the case of acyclic transmission with PROFINET CBA maximum	128
number of remote connections to output variables in the case of acyclic transmission with PROFINET CBA maximum	128
data volume	
• as user data for remote interconnections with input variables in the case of acyclic transmission with PROFINET CBA	8 Kibyte
• as user data for remote interconnections with output variables in the case of acyclic transmission with PROFINET CBA	8 Kibyte

Technical specifications

Article number	6GK7343-1GX31-0XE0
product type designation	CP 343-1 Advanced
performance data PROFINET CBA remote interconnection with cyclic transfer	
update time of the remote interconnections with cyclical transfer with PROFINET CBA	8 ms
number of remote connections to input variables with PROFINET CBA with cyclic transfer maximum	200
number of remote connections to output variables with cyclical transfer with PROFINET CBA maximum	200
data volume	
• as user data for remote interconnections with input variables with cyclical transfer with PROFINET CBA maximum	2 000 byte
• as user data for remote interconnections with output variables with cyclical transfer with PROFINET CBA maximum	2 000 byte
performance data PROFINET CBA HMI variables via PROFINET acyclic	
number of connectable HMI stations for HMI variables in the case of acyclic transmission with PROFINET CBA	3
update time of the HMI variables in the case of acyclic transmission with PROFINET CBA	500 ms
number of HMI variables in the case of acyclic transmission with PROFINET CBA maximum	200
data volume as user data for HMI variables in the case of acyclic transmission with PROFINET CBA maximum	8 Kibyte
performance data PROFINET CBA device-internal interconnections	
number of internal connections with PROFINET CBA maximum	256
data volume of the internal connections with PROFINET CBA maximum	2 400 byte
performance data PROFINET CBA interconnections to constants	
number of connections with constants with PROFINET CBA maximum	200
data volume as user data for interconnections with constants with PROFINET CBA maximum	4 096 byte
performance data PROFINET CBA PROFIBUS proxy functionality	
product function with PROFINET CBA PROFIBUS proxy functionality	No
performance data telecontrol	
protocol is supported	
• TCP/IP	Yes
product functions management, configuration, engineering	
product function MIB support	Yes

Article number	6GK7343-1GX31-0XE0
product type designation	CP 343-1 Advanced
protocol is supported	
• SNMP v1	Yes
• SNMP v3	Yes
• DCP	Yes
• LLDP	Yes
configuration software	
• required	STEP7 V5.5 SP2 HF1 or higher / STEP 7 Professional V12 (TIA Portal) or higher SIMATIC IMap V3.0 SP4 and higher
• for PROFINET CBA required	
identification & maintenance function	
• I&M0 - device-specific information	Yes
• I&M1 - higher level designation/location designation	Yes
product functions diagnostics	
product function web-based diagnostics	Yes
product functions switch	
product feature switch	Yes
product function	
• switch-managed	No
• with IRT PROFINET IO switch	Yes
• configuration with STEP 7	Yes
product functions redundancy	
product function	
• ring redundancy	Yes
• redundancy manager	Yes
protocol is supported Media Redundancy Protocol (MRP)	Yes
product functions security	
firewall version	stateful inspection
product function with VPN connection	IPSec
type of encryption algorithms with VPN connection	AES-256, AES-192, AES-128, 3DES-168, DES-56
type of authentication procedure with VPN connection	Preshared key (PSK), X.509v3 certificates
type of hashing algorithms with VPN connection	MD5, SHA-1
number of possible connections with VPN connection	32
product function	
• password protection for Web applications	Yes
• ACL - IP-based	Yes
• ACL - IP-based for PLC/routing	Yes
• switch-off of non-required services	Yes
• blocking of communication via physical ports	Yes
• log file for unauthorized access	No
product functions time	
product function SICLOCK support	Yes
product function pass on time synchronization	Yes
protocol is supported	
• NTP	Yes
standards, specifications, approvals hazardous environments	
certificate of suitability CCC for hazardous zone according to GB standard	Yes

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CSM 377 unmanaged

Overview



- Unmanaged switch for connecting a SIMATIC S7-300 with integral PROFINET interface or an Industrial Ethernet CP or SIMATIC ET 200M to an Industrial Ethernet in an electrical line, tree or star structure
- As many as three additional nodes can be connected
- As an unmanaged switch, the CSM 377 is used for integrating small machines into existing automation networks or for the stand-alone operation of the machines
- Simple, space-saving attachment to SIMATIC S7-300 DIN rail due to design as single-width module in SIMATIC S7-300 format
- Low-cost solution for implementing small, local Ethernet networks
- Rugged, industry-standard node connections with PROFINET-compliant RJ45 plug connectors that latch onto the enclosure to offer additional strain and bending relief

Ordering data

Article No.

CSM 377 compact switch module

Unmanaged switch for connecting a SIMATIC S7-300, ET 200 M and up to three further nodes to Industrial Ethernet with 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, diagnostics on LEDs, S7-300 module including electronic Equipment Manual on CD-ROM

6GK7377-1AA00-0AA0

Accessories

IE FC TP standard cable GP 2 x 2 (type A)

4-core, 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 1000 m, minimum order quantity 20 m

6XV1840-2AH10

IE FC RJ45 plug 180 2 x 2

RJ45 plug-in connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface

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

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

IE FC stripping tool

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

6GK1901-1GA00

Technical specifications

Article number	6GK7377-1AA00-0AA0
product type designation	SCALANCE CSM 377
transfer rate	
transfer rate	10 Mbit/s, 100 Mbit/s
interfaces for communication maximum configuration for modular devices	
number of electrical ports maximum	4
interfaces for communication integrated	
number of electrical connections	4
• for network components or terminal equipment	
number of 100 Mbit/s SC ports	0
• for multimode	
number of 1000 Mbit/s LC ports	0
• for multimode	
• for single mode (LD)	0
interfaces other	
number of electrical connections	1
• for power supply	
type of electrical connection	2-pole terminal block
• for power supply	

Article number	6GK7377-1AA00-0AA0
product type designation	SCALANCE CSM 377
supply voltage, current consumption, power loss	
type of voltage 1 of the supply voltage	DC
• supply voltage 1 rated value	24 V
• power loss [W] 1 rated value	1.6 W
• supply voltage 1 rated value	19.2 ... 28.8 V
• consumed current 1 maximum	0.07 A
• type of electrical connection 1 for power supply	2-pole terminal block
• product component 1 fusing at power supply input	Yes
• fuse protection type 1 at input for supply voltage	0.5 A / 60 V

Technical specifications

Article number	6GK7377-1AA00-0AA0
product type designation	SCALANCE CSM 377
ambient conditions	
ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
relative humidity	
• at 25 °C without condensation during operation maximum	95 %
protection class IP	IP20
design, dimensions and weights	
design	SIMATIC S7-300 device design
width	40 mm
height	125 mm
depth	118 mm
net weight	0.2 kg
fastening method	
• 35 mm top hat DIN rail mounting	No
• wall mounting	No
• S7-300 rail mounting	Yes
• S7-1500 rail mounting	No
product functions management, configuration, engineering	
product function	
• multiport mirroring	No
product function switch-managed	No
product functions redundancy	
product function	
• Parallel Redundancy Protocol (PRP)/operation in the PRP-network	Yes
• Parallel Redundancy Protocol (PRP)/Redundant Network Access (RNA)	No

Article number	6GK7377-1AA00-0AA0
product type designation	SCALANCE CSM 377
standards, specifications, approvals	
standard	
• for FM	FM3611: Class 1, Division 2, Group A, B, C, D / T..., CL.1, Zone 2, GP. IIC, T.: Ta
• for safety from CSA and UL	UL 508, CSA C22.2 No. 142
• for emitted interference	EN 61000-6-4:2001
• for interference immunity	EN 61000-6-2:2001
MTBF	144 a
reference code	
• according to IEC 81346-2	KF
• according to IEC 81346-2:2019	KFE
standards, specifications, approvals CE	
certificate of suitability CE marking	Yes
standards, specifications, approvals hazardous environments	
standard for hazardous zone	EN 60079-15, II 3 G Ex nA II T..., KEMA 06 ATEX 0021 X
• from CSA and UL	UL 1604 and UL 2279-15 (Hazardous Location)
certificate of suitability	
• CCC for hazardous zone according to GB standard	Yes
standards, specifications, approvals other	
certificate of suitability	EN 61000-6-2:2001, EN 61000-6-4:2001
• C-Tick	Yes
• KC approval	No
standards, specifications, approvals marine classification	
Marine classification association	
• American Bureau of Shipping Europe Ltd. (ABS)	Yes
• French marine classification society (BV)	Yes
• Det Norske Veritas (DNV)	Yes
• Germanische Lloyd (GL)	No
• Lloyds Register of Shipping (LRS)	Yes
• Nippon Kaiji Kyokai (NK)	Yes
• Polski Rejestr Statkow (PRS)	No
• Royal Institution of Naval Architects (RINA)	No

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

TIM 3V-IE (for S7-300)

Overview



- SINAUT communications module TIM for SIMATIC S7-300 for use in a wide area network (WAN)
- IP communication via secure VPN (virtual private network) using the Internet
- Wireless communication via mobile wireless routers or wireless devices
- Wired communication via Ethernet, DSL, dialup modems or dedicated line modem
- Complete migration of existing wireless, dedicated line and dial-up technology to IP-based network
- Frame buffer for seamless recording of data
- Simple configuration and operation without specialist IT knowledge

Ordering data

Article No.

Article No.

TIM 3V-IE communications module

With an RS232 interface for SINAUT communication via a conventional WAN or an IP-based network (WAN or LAN)

6NH7800-3BA00

SINAUT engineering software V5.5 + SP4

On DVD, comprising

- SINAUT engineering software V5.5 for the PG
- SINAUT TD7 block library
- Electronic manual in German and English

6NH7997-0CA55-0AA0

STEP 7 Professional V18 engineering software

- SIMATIC STEP 7 Professional V18 floating license
- Upgrade SIMATIC STEP 7 Basic V11 ... V17 → V18 floating license

6ES7822-1AA08-0YA5

6ES7822-0AA08-0YE5

Accessories

IE FC TP standard cable GP 2 x 2 (type A)

4-core, 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 1000 m, minimum order quantity 20 m

6XV1840-2AH10

IE FC RJ45 plug 180

RJ45 plug-in connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables, with 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interfaces

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

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

IE FC stripping tool

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

6GK1901-1GA00

Technical specifications

Article number	6NH7800-3BA00
product type designation	TIM 3V-IE
transfer rate	
transfer rate	
• for Industrial Ethernet	10 ... 100 Mbit/s
• according to RS 232	50 ... 38 400 bit/s
interfaces	
number of interfaces according to Industrial Ethernet	1
number of electrical connections	
• for external data transmission according to RS 232	1
• for power supply	1
type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
type of electrical connection	
• at interface 1 for external data transmission	9 pin Sub-D-connector (RS232)
• for power supply	2-pole plugable terminal block
design of the removable storage	
• C-PLUG	No
supply voltage, current consumption, power loss	
type of voltage of the supply voltage	DC
supply voltage	24 V
supply voltage	20.4 ... 28.8 V
supply voltage external at DC rated value	24 V
supply voltage external at DC rated value	20.4 ... 28.8 V
relative symmetrical tolerance at DC	
• at 5 V	5 %
relative positive tolerance at DC at 24 V	5 %
relative negative tolerance at DC at 24 V	5 %
consumed current	
• from backplane bus at DC at 24 V maximum	0.2 A
• from external supply voltage at DC at 24 V maximum	0.2 A
power loss [W]	5.8 W
product extension optional backup battery	No

Article number	6NH7800-3BA00
product type designation	TIM 3V-IE
ambient conditions	
ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
relative humidity	
• at 25 °C without condensation during operation maximum	95 %
protection class IP	IP20
design, dimensions and weights	
module format	Compact module S7-300 single width
width	40 mm
height	125 mm
depth	120 mm
net weight	0.25 kg
product features, product functions, product components general	
number of units	
• per CPU maximum	1
• note	Number of TIM per S7-300
wire length	
• with RS 232 interface maximum	6 m
performance data S7 communication	
number of possible connections for S7 communication	
• maximum	8
• with PG connections maximum	2
• with OP connections maximum	8
service	
• SINAUT ST7 via S7 communication	Yes
• PG/OP communication	Yes
performance data multi-protocol mode	
number of active connections with multi-protocol mode	12

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

TIM 3V-IE (for S7-300)

Technical specifications

Article number	6NH7800-3BA00
product type designation	TIM 3V-IE
performance data telecontrol	
suitability for use	
• node station	No
• substation	Yes
• TIM control center	No
• note	RS232 and Industrial Ethernet can not be operated in parallel
protocol is supported	
• DNP3	No
• SINAUT ST1 protocol	Yes
• SINAUT ST7 protocol	Yes
product function data buffering if connection is aborted	Yes; 16,000 data messages
storage capacity	
• of S7 CPU work memory for TD7onCPU mode data blocks on CPU required	20 Kibyte
• of S7 CPU work memory for TD7onTIM mode data blocks on TIM required	0 Kibyte
• note	TD7onCPU: at least 20 KB, actual requirement determined by data volume and functional scope TD7onTIM: 0 bytes in most favorable case
product feature buffered message frame memory	No
transmission format	
• for SINAUT ST1 protocol with polling 11 bit	Yes
• for SINAUT ST1 protocol with spontaneous 10-bit or 11-bit	Yes
• for SINAUT ST7 protocol with multi-master polling 10-bit	Yes
• for SINAUT ST7 protocol with polling or spontaneous 10-bit or 11-bit	Yes
operating mode for scanning of data transmission	
• with dedicated line/radio link with SINAUT ST1 protocol	Polling, polling with time slot procedure
• with dedicated line/radio link with SINAUT ST7 protocol	Polling, polling with time slot procedure, multi-master polling with time slot procedure
• with dial-up network with SINAUT ST1 protocol	spontaneous
• with dial-up network with SINAUT ST7 protocol	spontaneous
hamming distance	
• for SINAUT ST1 protocol	4
• for SINAUT ST7 protocol	4

Article number	6NH7800-3BA00
product type designation	TIM 3V-IE
product functions management, configuration, engineering	
configuration software	
• required	SINAUT ST7 ES
• for CPU configuring required SINAUT TD7 block library for CPU	Yes
• for PG configuring required SINAUT ST7 configuration software for PG	Yes
storage location of TIM configuration data	on the TIM
product functions security	
operating mode Virtual Private Network (VPN)	Yes; VPN operation as MSC client with MSC protocol and password protection only possible in conjunction with GPRS modem with MSC capability
type of authentication with Virtual Private Network PSK	Yes
product function	
• password protection for VPN	Yes
• MSC client via GPRS modem with MSC capability	Yes
protocol	
• is supported MSC protocol	No
key length for MSC with Virtual Private Network	128 bit
number of possible connections	
• as MSC client with VPN connection	1
• as MSC server with VPN connection	0
standards, specifications, approvals hazardous environments	
certificate of suitability CCC for hazardous zone according to GB standard	Yes

Overview

- SINAUT communications module TIM for SIMATIC S7-300 for use in wide area network (WAN) as station, node station, and control center
- IP communication via secure VPN (virtual private network) using the Internet
- Wireless communication via mobile wireless routers or wireless devices
- Wired communication via Ethernet, DSL, dialup modems or dedicated line modem
- Complete migration of existing wireless, dedicated line and dial-up technology to IP-based network
- Message frame memory for seamless recording of data and support of redundant communication paths
- Simple configuration and operation without specialist IT knowledge

5**Ordering data****Article No.****Article No.****TIM 3V-IE Advanced communications module**

With an RS232 interface and an RJ45 interface for SINAUT communication via a conventional WAN and an IP-based network (WAN or LAN)

6NH7800-3CA00**SINAUT engineering software V5.5 + SP4**

On DVD, comprising

- SINAUT ST7 engineering software V5.5 for the PG
- SINAUT TD7 block library
- Electronic manual in German and English

6NH7997-0CA55-0AA0**SINAUT ST7 engineering software Update from Version V5.0x to V5.5**

SINAUT engineering software V5.5 upgrade; for owners of SINAUT engineering software Version V5.0 or higher

6NH7997-0CA55-0GA0**STEP 7 Professional V18 engineering software**

- SIMATIC STEP 7 Professional V18 floating license
- Upgrade SIMATIC STEP 7 Basic V11 ... V17 → V18 floating license

6ES7822-1AA08-0YA5**6ES7822-0AA08-0YE5****Accessories****IE FC TP standard cable GP 2 x 2 (type A)**

4-core, 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 1000 m, minimum order quantity 20 m

6XV1840-2AH10**IE FC RJ45 plug 180**

RJ45 plug-in connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables, with 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interfaces

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

6GK1901-1BB10-2AA0**6GK1901-1BB10-2AB0****6GK1901-1BB10-2AE0****IE FC stripping tool**

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

6GK1901-1GA00

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

TIM 3V-IE Advanced (for S7-300)**Technical specifications**

Article number	6NH7800-3CA00
product type designation	TIM 3V-IE Advanced
transfer rate	
transfer rate	
• for Industrial Ethernet	10 ... 100 Mbit/s
• according to RS 232	50 ... 38 400 bit/s
interfaces	
number of interfaces according to Industrial Ethernet	1
number of electrical connections	
• for external data transmission according to RS 232	1
• for power supply	1
type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
type of electrical connection	
• at interface 1 for external data transmission	9 pin Sub-D-connector (RS232)
• for power supply	2-pole plugable terminal block
design of the removable storage	
• C-PLUG	No
supply voltage, current consumption, power loss	
type of voltage of the supply voltage	DC
supply voltage	24 V
supply voltage	20.4 ... 28.8 V
supply voltage external at DC rated value	24 V
supply voltage external at DC rated value	20.4 ... 28.8 V
relative symmetrical tolerance at DC	
• at 5 V	5 %
relative positive tolerance at DC at 24 V	5 %
relative negative tolerance at DC at 24 V	5 %
consumed current	
• from backplane bus at DC at 24 V maximum	0.2 A
• from external supply voltage at DC at 24 V maximum	0.2 A
power loss [W]	5.8 W
product extension optional backup battery	No

Article number	6NH7800-3CA00
product type designation	TIM 3V-IE Advanced
ambient conditions	
ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
relative humidity	
• at 25 °C without condensation during operation maximum	95 %
protection class IP	IP20
design, dimensions and weights	
module format	Compact module S7-300 single width
width	40 mm
height	125 mm
depth	120 mm
net weight	0.25 kg
product features, product functions, product components general	
number of units	
• note	Number of TIMs per S7-300: multiple, number depends on the connection resources of the S7-300 CPU
wire length	
• with RS 232 interface maximum	6 m
performance data S7 communication	
number of possible connections for S7 communication	
• maximum	24
• with PG connections maximum	4
• with OP connections maximum	20
service	
• SINAUT ST7 via S7 communication	Yes
• PG/OP communication	Yes
performance data multi-protocol mode	
number of active connections with multi-protocol mode	24

Technical specifications

Article number	6NH7800-3CA00
product type designation	TIM 3V-IE Advanced
performance data telecontrol	
suitability for use	
• node station	Yes
• substation	Yes
• TIM control center	Yes
• note	RS232 and Industrial Ethernet can be operated in parallel
protocol is supported	
• DNP3	No
• SINAUT ST1 protocol	Yes
• SINAUT ST7 protocol	Yes
product function data buffering if connection is aborted	Yes; 32,000 data messages
storage capacity	
• of S7 CPU work memory for TD7onCPU mode data blocks on CPU required	20 Kibyte
• of S7 CPU work memory for TD7onTIM mode data blocks on TIM required	0 Kibyte
• note	TD7onCPU: at least 20 KB, actual requirement determined by data volume and functional scope TD7onTIM: 0 bytes in most favorable case
product feature buffered message frame memory	No
transmission format	
• for SINAUT ST1 protocol with polling 11 bit	Yes
• for SINAUT ST1 protocol with spontaneous 10-bit or 11-bit	Yes
• for SINAUT ST7 protocol with multi-master polling 10-bit	Yes
• for SINAUT ST7 protocol with polling or spontaneous 10-bit or 11-bit	Yes
operating mode for scanning of data transmission	
• with dedicated line/radio link with SINAUT ST1 protocol	Polling, polling with time slot procedure
• with dedicated line/radio link with SINAUT ST7 protocol	Polling, polling with time slot procedure, multi-master polling with time slot procedure
• with dial-up network with SINAUT ST1 protocol	spontaneous
• with dial-up network with SINAUT ST7 protocol	spontaneous
hamming distance	
• for SINAUT ST1 protocol	4
• for SINAUT ST7 protocol	4

Article number	6NH7800-3CA00
product type designation	TIM 3V-IE Advanced
product functions management, configuration, engineering	
configuration software	
• required	SINAUT ST7 ES
• for CPU configuring required SINAUT TD7 block library for CPU	Yes
• for PG configuring required SINAUT ST7 configuration software for PG	Yes
storage location of TIM configuration data	on the TIM
product functions security	
operating mode Virtual Private Network (VPN)	Yes
type of authentication with Virtual Private Network PSK	Yes
product function	
• password protection for VPN	Yes
• MSC client via GPRS modem with MSC capability	Yes
protocol	
• is supported MSC protocol	Yes
• with Virtual Private Network MSC is supported	TCP/IP
key length for MSC with Virtual Private Network	128 bit
number of possible connections	
• as MSC client with VPN connection	1
• as MSC server with VPN connection	0
standards, specifications, approvals hazardous environments	
certificate of suitability CCC for hazardous zone according to GB standard	Yes

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

TIM 4R-IE (for S7-300/-400/PC)

Overview



- SINAUT communications module TIM with four interfaces for SIMATIC S7-300 or as self-contained unit for the S7-400 for use in the wide area network (WAN)
- For universal use in a SINAUT station, node station and control center
- Internet communication via integrated MSC-VPN tunnel with direct connection to DSL router or operation via IPsec VPN with additional SIMATIC NET components
- Wireless communication via mobile wireless routers or wireless devices
- Wired communication via Ethernet, DSL, dialup modems or dedicated line modem
- Complete migration of existing wireless, dedicated line and dial-up technology to IP-based network
- Message frame memory for seamless recording of data and support of redundant communication paths
- Simple configuration and operation without specialist IT knowledge

Ordering data

Article No.

Article No.

TIM 4R-IE communications module

With two combined RS232/RS485 interfaces for SINAUT communication via conventional WANs and two RJ45 interfaces for SINAUT communication via IP-based networks (WAN or LAN)

6NH7800-4BA00

SINAUT engineering software V5.5 + SP4

On DVD, comprising

- SINAUT S77 engineering software V5.5 for the PG
- SINAUT TD7 block library
- Electronic manual in German and English

6NH7997-0CA55-0AA0

SINAUT S77 engineering software Update from Version V5.0x to V5.5

SINAUT engineering software V5.5 upgrade; for owners of SINAUT engineering software Version V5.0 or higher

6NH7997-0CA55-0GA0

STEP 7 Professional V18 engineering software

- SIMATIC STEP 7 Professional V18 floating license
- Upgrade SIMATIC STEP 7 Basic V11 ... V17 → V18 floating license

6ES7822-1AA08-0YA5

6ES7822-0AA08-0YE5

Accessories

Buffer battery

3.6 V/2.3 Ah for TIM 4R-IE

6ES7971-0BA00

IE FC TP standard cable GP 2 x 2 (type A)

4-core, 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 1000 m, minimum order quantity 20 m

6XV1840-2AH10

IE FC RJ45 plug 180

RJ45 plug-in connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables, with 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interfaces

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

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

IE FC stripping tool

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

6GK1901-1GA00

SITOP compact 24 V/0.6 A

1-phase power supply with wide-range input 85 ... 264 V AC/110 to 300 V DC, stabilized output voltage 24 V, rated output current value 0.6 A, slim design

6EP1331-5BA00

Technical specifications

Article number	6NH7800-4BA00
product type designation	TIM 4R-IE
transfer rate	
transfer rate	
• for Industrial Ethernet	10 ... 100 Mbit/s
• according to RS 232	50 ... 38 400 bit/s
interfaces	
number of interfaces according to Industrial Ethernet	2
number of electrical connections	
• for external data transmission according to RS 232	2
• for power supply	1
type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
type of electrical connection	
• at interface 1 for external data transmission	9 pin Sub-D-connector, RS232 switchable to RS485
• at interface 2 for external data transmission	9-pole D-sub connector, RS232 can be switched to RS485
• for power supply	2-pole plugable terminal block
design of the removable storage	
• C-PLUG	Yes
supply voltage, current consumption, power loss	
type of voltage of the supply voltage	DC
supply voltage	24 V
supply voltage	20.4 ... 28.8 V
supply voltage external at DC rated value	24 V
supply voltage external at DC rated value	20.4 ... 28.8 V
consumed current	
• from backplane bus at DC at 24 V maximum	0.2 A
• from external supply voltage at DC at 24 V maximum	0.17 A
power loss [W]	4.6 W
product extension optional backup battery	Yes
type of battery	Lithium AA / 3.6 V / 2.3 Ah
backup current	
• typical	100 µA
• maximum	160 µA

Article number	6NH7800-4BA00
product type designation	TIM 4R-IE
ambient conditions	
ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
relative humidity	
• at 25 °C without condensation during operation maximum	95 %
protection class IP	IP20
design, dimensions and weights	
module format	Compact module S7-300 double width
width	80 mm
height	125 mm
depth	120 mm
net weight	0.4 kg
product features, product functions, product components general	
number of units	
• note	Number of TIM 4R-IE per S7-300/ S7-400: multiple, number depends on the connection resources of the CPU
wire length	
• with RS 232 interface maximum	6 m
• with RS 485 interface maximum	30 m
performance data S7 communication	
number of possible connections for S7 communication	
• maximum	64
• with PG connections maximum	2
• with OP connections maximum	62
service	
• SINAUT ST7 via S7 communication	Yes
• PG/OP communication	Yes
performance data multi-protocol mode	
number of active connections with multi-protocol mode	128

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

TIM 4R-IE (for S7-300/-400/PC)

Technical specifications

Article number	6NH7800-4BA00
product type designation	TIM 4R-IE
performance data telecontrol	
suitability for use	
• node station	Yes
• substation	Yes
• TIM control center	Yes
protocol is supported	
• DNP3	No
• SINAUT ST1 protocol	Yes
• SINAUT ST7 protocol	Yes
product function data buffering if connection is aborted	Yes; 56,000 data messages
storage capacity	
• of S7 CPU work memory for TD7onCPU mode data blocks on CPU required	20 Kibyte
• of S7 CPU work memory for TD7onTIM mode data blocks on TIM required	0 Kibyte
• note	TD7onCPU: at least 20 KB, actual requirement determined by data volume and functional scope TD7onTIM: 0 bytes in most favorable case
product feature buffered message frame memory	Yes
transmission format	
• for SINAUT ST1 protocol with polling 11 bit	Yes
• for SINAUT ST1 protocol with spontaneous 10-bit or 11-bit	Yes
• for SINAUT ST7 protocol with multi-master polling 10-bit	Yes
• for SINAUT ST7 protocol with polling or spontaneous 10-bit or 11-bit	Yes
operating mode for scanning of data transmission	
• with dedicated line/radio link with SINAUT ST1 protocol	Polling, polling with time slot procedure
• with dedicated line/radio link with SINAUT ST7 protocol	Polling, polling with time slot procedure, multi-master polling with time slot procedure
• with dial-up network with SINAUT ST1 protocol	spontaneous
• with dial-up network with SINAUT ST7 protocol	spontaneous
hamming distance	
• for SINAUT ST1 protocol	4
• for SINAUT ST7 protocol	4

Article number	6NH7800-4BA00
product type designation	TIM 4R-IE
product functions management, configuration, engineering	
configuration software	
• required	SINAUT ST7 ES
• for CPU configuring required SINAUT TD7 block library for CPU	Yes
• for PG configuring required SINAUT ST7 configuration software for PG	Yes
storage location of TIM configuration data	on internal TIM flash memory, or on TIM in optional C-PLUG, or on MMC of the S7-300 CPU if TIM installed in S7-300 controller
product functions security	
operating mode Virtual Private Network (VPN)	Yes
type of authentication with Virtual Private Network PSK	Yes
product function	
• password protection for VPN	Yes
• MSC client via GPRS modem with MSC capability	Yes
protocol	
• is supported MSC protocol	Yes
• with Virtual Private Network MSC is supported	TCP/IP
key length for MSC with Virtual Private Network	128 bit
number of possible connections	
• as MSC client with VPN connection	1
• as MSC server with VPN connection	128
product functions time	
product component hardware real time clock	Yes
product feature hardware real time clock w. battery backup	Yes
accuracy of the hardware real time clock per day maximum	4 s
time synchronization	
• from NTP-server	Yes
standards, specifications, approvals hazardous environments	
certificate of suitability CCC for hazardous zone according to GB standard	Yes

5

Overview

In a station for the S7-CPU, the communications module TIM 3V-IE DNP3 (TeleControl Interface Module) handles the data exchange with the assigned master system SIMATIC PCS 7 TeleControl V8.0 using the open DNP3 protocol. The module additionally supports master and node functionality.

- With the S7-300 housing, the module can be fully integrated into the S7-300 system
- The module has an RS232 interface for the connection of an external modem for data transmission via a conventional WAN or the connection of a Modbus RTU slave to an S7-300 system
- The RJ45 port is used for data transmission via IP-based networks

Ordering data**Article No.****Article No.****TIM 3V-IE DNP3 communications module**

With an RS232 interface for SINAUT communication via a conventional WAN and an IP-based network (WAN or LAN)

6NH7803-3BA00-0AA0**SINAUT engineering software V5.5 + SP4**

On DVD, comprising

- SINAUT ST7 engineering software V5.5 for the PG
- SINAUT TD7 block library
- Electronic manual in German and English

6NH7997-0CA55-0AA0**SINAUT ST7 engineering software Update from Version V5.0x to V5.5**

SINAUT engineering software V5.5 upgrade; for owners of SINAUT engineering software Version V5.0 or higher

6NH7997-0CA55-0GA0**Accessories****IE FC TP standard cable GP 2 x 2 (type A)**

4-core, 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 1000 m, minimum order quantity 20 m

6XV1840-2AH10**IE FC RJ45 plug 180**

RJ45 plug-in connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables, with 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interfaces

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

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

IE FC stripping tool

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

6GK1901-1GA00

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

TIM 3V-IE DNP3 (for S7-300)

Technical specifications

Article number	6NH7803-3BA00-0AA0
product type designation	TIM 3V-IE DNP3
transfer rate	
transfer rate	
• for Industrial Ethernet	10 ... 100 Mbit/s
• according to RS 232	9 600 ... 38 400 bit/s
interfaces	
number of interfaces according to Industrial Ethernet	1
number of electrical connections	
• for external data transmission according to RS 232	1
• for power supply	1
type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
type of electrical connection	
• at interface 1 for external data transmission	9 pin Sub-D-connector (RS232)
• for power supply	2-pole plugable terminal block
design of the removable storage	
• C-PLUG	No
supply voltage, current consumption, power loss	
type of voltage of the supply voltage	DC
supply voltage	24 V
supply voltage	20.4 ... 28.8 V
supply voltage external at DC rated value	24 V
supply voltage external at DC rated value	20.4 ... 28.8 V
consumed current	
• from backplane bus at DC at 24 V maximum	0.2 A
• from external supply voltage at DC at 24 V maximum	0.2 A
power loss [W]	5.8 W
product extension optional backup battery	No
ambient conditions	
ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
relative humidity	
• at 25 °C without condensation during operation maximum	95 %
protection class IP	IP20

Article number	6NH7803-3BA00-0AA0
product type designation	TIM 3V-IE DNP3
design, dimensions and weights	
module format	Compact module S7-300 single width
width	40 mm
height	125 mm
depth	120 mm
net weight	0.25 kg
product features, product functions, product components general	
number of units	
• note	Number of TIMs per S7-300: 1
wire length	
• with RS 232 interface maximum	6 m
performance data S7 communication	
number of possible connections for S7 communication	
• maximum	3; only via LAN
• with PG connections maximum	2
• with OP connections maximum	1
service	
• PG/OP communication	Yes
performance data telecontrol	
suitability for use	
• node station	Yes
• substation	Yes
• TIM control center protocol is supported	Yes
• DNP3	Yes
• SINAUT ST1 protocol	No
• SINAUT ST7 protocol	No
• Modbus RTU	Yes
product function data buffering if connection is aborted	Yes; 64,000 data points with one master
number of DNP3 masters	
• for Ethernet maximum	8
• with RS 232 interface maximum	1
number of Modbus RTU slaves maximum	1
product functions management, configuration, engineering	
configuration software	
• required	SINAUT ST7 ES
storage location of TIM configuration data	on the CPU or TIM
standards, specifications, approvals hazardous environments	
certificate of suitability CCC for hazardous zone according to GB standard	Yes

Overview

In a station for the S7-CPU, the communications module TIM 4R-IE DNP3 (TeleControl Interface Module) handles the data traffic with the assigned SIMATIC PCS 7 TeleControl V8.0 master system using the open DNP3 protocol. In addition, the V3.0 module now also supports master and node functionality.

- With the double-width S7-300 enclosure, the module can be fully integrated into the S7-300 system
- Can be connected as a stand-alone module to a SIMATIC S7-400 and SIMATIC S7-400 H System
- Two RS232/RS485 interfaces support connection of an external modem for data transmission via a conventional WAN or of a Modbus RTU slave to an S7-300 system
- The module has two RJ45 interfaces for data transmission via IP-based networks
- By using physically separate connection paths, the module permits media redundancy without loss of data during the switchover

Ordering data**Article No.****Article No.****TIM 4R-IE DNP3 communications module**

With two combined RS232/RS485 interfaces for SINAUT communication via conventional WANs and two RJ45 interfaces for SINAUT communication via IP-based networks (WAN or LAN)

6NH7803-4BA00-0AA0**SINAUT engineering software V5.5 + SP4**

On DVD, comprising

- SINAUT ST7 engineering software V5.5 for the PG
- SINAUT TD7 block library
- Electronic manual in German and English

6NH7997-0CA55-0AA0**SINAUT ST7 engineering software Update from Version V5.0x to V5.5****6NH7997-0CA55-0GA0****Accessories****Buffer battery**

3.6 V/2.3 Ah for TIM 4R-IE DNP3

6ES7971-0BA00**IE FC TP standard cable GP 2 x 2 (type A)**

4-core, 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 1000 m, minimum order quantity 20 m

6XV1840-2AH10**IE FC RJ45 plug 180**

RJ45 plug-in connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables, with 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interfaces

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

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

IE FC stripping tool**6GK1901-1GA00**

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

SITOP compact 24 V/0.6 A**6EP1331-5BA00**

1-phase power supply with wide-range input 85 ... 264 V AC/110 to 300 V DC, stabilized output voltage 24 V, rated output current value 0.6 A, slim design

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

TIM 4R-IE DNP3 (for S7-300/-400)

Technical specifications

Article number	6NH7803-4BA00-0AA0
product type designation	TIM 4R-IE DNP3
transfer rate	
transfer rate	
• for Industrial Ethernet	10 ... 100 Mbit/s
• according to RS 232	9 600 ... 115 200 bit/s
interfaces	
number of interfaces according to Industrial Ethernet	2
number of electrical connections	
• for external data transmission according to RS 232	2
• for power supply	1
type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
type of electrical connection	
• at interface 1 for external data transmission	9 pin Sub-D-connector, RS232 switchable to RS485
• at interface 2 for external data transmission	9-pole D-sub connector, RS232 can be switched to RS485
• for power supply	2-pole pluggable terminal block
design of the removable storage	
• C-PLUG	Yes
supply voltage, current consumption, power loss	
type of voltage of the supply voltage	DC
supply voltage	24 V
supply voltage	20.4 ... 28.8 V
supply voltage external at DC rated value	24 V
supply voltage external at DC rated value	20.4 ... 28.8 V
consumed current	
• from backplane bus at DC at 24 V maximum	0.2 A
• from external supply voltage at DC at 24 V maximum	0.17 A
power loss [W]	4.6 W
product extension optional backup battery	Yes
type of battery	Lithium AA / 3.6 V / 2.3 Ah
backup current	
• typical	100 µA
• maximum	160 µA
ambient conditions	
ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
relative humidity	
• at 25 °C without condensation during operation maximum	95 %
protection class IP	IP20

Article number	6NH7803-4BA00-0AA0
product type designation	TIM 4R-IE DNP3
design, dimensions and weights	
module format	Compact module S7-300 double width
width	80 mm
height	125 mm
depth	120 mm
net weight	0.4 kg
product features, product functions, product components general	
number of units	
• note	Number of TIMs per S7-300 / S7-400: 1
wire length	
• with RS 232 interface maximum	6 m
• with RS 485 interface maximum	30 m
performance data S7 communication	
number of possible connections for S7 communication	
• maximum	5; only via LAN
• with PG connections maximum	2
• with OP connections maximum	1
service	
• PG/OP communication	Yes
performance data telecontrol	
suitability for use	
• node station	Yes
• substation	Yes
• TIM control center	Yes
protocol is supported	
• DNP3	Yes
• SINAUT ST1 protocol	No
• SINAUT ST7 protocol	No
• Modbus RTU	Yes
product function data buffering if connection is aborted	Yes; 200,000 data points with one master
number of DNP3 masters	
• for Ethernet maximum	8
• with RS 232 interface maximum	1
number of Modbus RTU slaves maximum	1
product functions management, configuration, engineering	
configuration software	
• required	SINAUT ST7 ES
storage location of TIM configuration data	on the CPU or TIM
product functions time	
product component hardware real time clock	Yes
product feature hardware real time clock w. battery backup	Yes
accuracy of the hardware real time clock per day maximum	4 s
time synchronization	
• from NTP-server	Yes
standards, specifications, approvals hazardous environments	
certificate of suitability CCC for hazardous zone according to GB standard	Yes

Overview



The ASM 475 is a powerful communications module for connecting the MOBY D, SIMATIC RF200, RF300 and SIMATIC MV400, MV500 identification systems to the S7-300 and ET 200M.

Ordering data

Article No.

ASM 475 communications module For SIMATIC S7-300 and ET 200M, parameterizable	6GT2002-0GA10
Accessories	
Front connector (1 x per ASM 475) • with screw terminals • with spring-loaded terminals	6ES7392-1AJ00-0AA0 6ES7392-1BJ00-0AA0
Shield connection element (80 mm wide for 2 x ASM 475)	6ES7390-5AA00-0AA0
Shield connection clamp (1 x per reader cable)	6ES7390-5BA00-0AA0
SIMATIC RF200 / RF300 / MV400 connecting cable Pre-assembled, between ASM 475 and RF200 / RF300 / MV400, IP65, straight connector, PUR material, trailable, available in following lengths ¹⁾ :	
2 m	6GT2891-4EH20
5 m	6GT2891-4EH50
Extension cable SIMATIC RF200 / RF300 / MV400, PUR material, trailable, straight connector	
2 m	6GT2891-4FH20
5 m	6GT2891-4FH50
10 m	6GT2891-4FN10
20 m	6GT2891-4FN20
50 m	6GT2891-4FN50

¹⁾ The connecting cables can be extended using RF300 connecting cables of type 6GT2891-4Fxxx. These connecting cables are available in the lengths 2 m, 5 m, 10 m, 20 m and 50 m.

Technical specifications

Article number	6GT2002-0GA10
product type designation	ASM 475 communication module
suitability for operation	SIMATIC S7-300, ET200M together with RF200/300, MV400/500, MOBY D/E/I/U
transfer rate	
transfer rate at the point-to-point connection serial maximum	115.2 kbit/s
interfaces	
design of the interface for point-to-point connection	RS422
number of readers connectable	2
type of electrical connection	
• of the backplane bus	S7-300 backplane bus
• of the PROFIBUS interface	(according to the head module)
• of Industrial Ethernet interface	(according to the head module)
• for supply voltage	Screw-type or spring-loaded terminals
design of the interface to the reader for communication	Screw-type or spring-loaded terminals
mechanical data	
material	Noryl
color	anthracite
supply voltage, current consumption, power loss	
supply voltage	
• at DC rated value	24 V
• at DC	20 ... 30 V
• consumed current at DC at 24 V without connected devices typical	0.1 A
• Consumed current from supply voltage 1L+ maximum	1 A
ambient conditions	
ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
protection class IP	IP20
shock resistance	According to IEC 61131-2
shock acceleration	150 m/s ²
vibrational acceleration	10 m/s ²
design, dimensions and weights	
width	40 mm
height	125 mm
depth	120 mm
net weight	0.2 kg
fastening method	S7-300 rack
wire length for RS 422 interface maximum	1 000 m

SIMATIC S7-300 Advanced Controllers
I/O modules
Communication

ASM 475

Technical specifications

Article number	6GT2002-0GA10
product type designation	ASM 475 communication module
product features, product functions, product components general	
display version	4 LEDs per reader connection, 2 LEDs for device status
product function addressable transponder file handler	Yes
protocol is supported	
• S7 communication	Yes
product functions management, configuration, engineering	
type of parameterization	Object manager, GSD
type of programming	FB 45, FB 55, FC 56 (FC 45/55 with limited functionality)
type of computer-switched communication	acyclic communication

Article number	6GT2002-0GA10
product type designation	ASM 475 communication module
standards, specifications, approvals	
certificate of suitability	CE, FCC, UL/CSA
accessories	
accessories	Front connector with screw-type or spring-loaded terminals

Overview



Ordering data

Article No.

SIPLUS S7-300 CP 340 communications module

For industrial applications with extended ambient conditions

Extended temperature range and exposure to media

with 1 RS 232C (V.24) interface

with 1 RS 422/485 (X.27) interface

6AG1340-1AH02-2AE0

6AG1340-1CH02-2AE0

- The low-cost, complete solution for serial communication over a point-to-point connection
- RS 232C (V.24) and RS 422/485 (X.27)
- Implemented protocols:
 - ASCII
 - 3964 (R) (not for RS 485)
 - Printer driver
- Simple parameterization using tool integrated in STEP 7

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.

Technical specifications

Article number	6AG1340-1AH02-2AE0	6AG1340-1CH02-2AE0
Based on	6ES7340-1AH02-0AE0 SIPLUS S7-300 CP340 RS232	6ES7340-1CH02-0AE0 SIPLUS S7-300 CP340 RS422/485
Ambient conditions		
Ambient temperature during operation		
• min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	60 °C; = Tmax
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)
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)

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

SIPLUS S7-300 CP 340**Technical specifications**

Article number	6AG1340-1AH02-2AE0	6AG1340-1CH02-2AE0
Based on	6ES7340-1AH02-0AE0	6ES7340-1CH02-0AE0
	SIPLUS S7-300 CP340 RS232	SIPLUS S7-300 CP340 RS422/485
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



- For fast, high-performance serial data exchange via point-to-point coupling
- Two versions with different physical transmission characteristics:
 - RS 232C (V.24),
 - RS 422/RS 485 (X.27)
- Implemented protocols: ASCII, 3964 (R), RK 512, customized protocols (can be reloaded)
- Simple parameter assignment using tool integrated in STEP 7

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 S7-300 CP 341 communications processor

For industrial applications with extended ambient conditions

Extended temperature range and exposure to environmental substances

With RS 232 interface (V.24)

6AG1341-1AH02-7AE0

With RS 422/485 (X.27) interface

6AG1341-1CH02-7AE0

Accessories**Modbus Master V3.1**

Task:

Communication via Modbus protocol with RTU format, SIMATIC S7 as master

Requirement:

CP 341 or CP 441-2; STEP 7 V4.02 and higher

Type of delivery:

Driver program/documentation, English, German, French

Single license

6ES7870-1AA01-0YA0

Single license, without software and documentation

6ES7870-1AA01-0YA1

Modbus Slave V3.1

Task:

Communication via Modbus protocol with RTU format, SIMATIC S7 as slave

Requirement:

CP 341 or CP 441-2; STEP 7 V4.02 and higher

Type of delivery:

Driver program/documentation, English, German, French

Single license

6ES7870-1AB01-0YA0

Single license, without software and documentation

6ES7870-1AB01-0YA1

Technical specifications

Article number	6AG1341-1AH02-7AE0	6AG1341-1CH02-7AE0
Based on	6ES7341-1AH02-0AE0 SIPLUS S7-300 CP341 RS232C	6ES7341-1CH02-0AE0 SIPLUS S7-300 CP341 RS422/485
Ambient conditions		
Ambient temperature during operation		
• min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
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)
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)

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

SIPLUS S7-300 CP 341**Technical specifications**

Article number	6AG1341-1AH02-7AE0	6AG1341-1CH02-7AE0
Based on	6ES7341-1AH02-0AE0	6ES7341-1CH02-0AE0
	SIPLUS S7-300 CP341 RS232C	SIPLUS S7-300 CP341 RS422/485
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



DP-M	DP-S	FMS	PG/OP	S7/S5	
●	●		●	●	6...1K10...XX...10143

- PROFIBUS DP master or slave with electrical interface for connecting the SIMATIC S7-300 to PROFIBUS at up to 12 Mbps (including 45.45 Kbps)
- Communications services:
- PROFIBUS DP
- PG/OP communication (OP multiplexing)
- S7 communication (client, server)
- Open communication (SEND/RECEIVE)
- Easy configuring and programming via PROFIBUS
- Cross-network PG communication using S7 routing
- Modules can be replaced without a PG

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were adopted from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

Article number	6AG1342-5DA03-7XE0
Based on	6GK7342-5DA03-0XE0
product type designation	SIPLUS NET CP 342-5
ambient conditions	
ambient temperature	
• during operation	-25 ... +70 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
installation altitude at height above sea level maximum	5 000 m
ambient condition relating to ambient temperature - air pressure - installation 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)
relative humidity	
• with condensation according to IEC 60068-2-38 maximum	100 %; RH including condensation/frost (no commissioning when condensation is present), horizontal installation
chemical resistance to commercially available cooling lubricants	Yes; incl. airborne diesel and oil droplets
resistance to biologically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3B2 mold and fungal spores (excluding fauna), Class 3B3 on request
• conformity according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
resistance to chemically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray in accordance with EN 60068-2-52 (Severity 3). The supplied plug covers must remain in place on the unused interfaces during operation.
• conformity according to EN 60721-3-6	Yes
resistance to mechanically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
• conformity according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
coating for equipped printed circuit board according to EN 61086	Yes; Class 2 for high availability
type of coating protection against pollution according to EN 60664-3	Yes; Protection of the type 1
type of test of the coating according to MIL-I-46058C	Yes; Coating discoloration during service life possible
product conformity of the coating Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, class A
protection class IP	IP20

Ordering data

Article No.

SIPLUS CP 342-5 communications processor

(Extended temperature range and exposure to environmental substances)

Communications processor for electrical connection of SIMATIC S7-300 to PROFIBUS at up to 12 Mbps, with electronic manual on CD-ROM

Ambient temperature range
-25 ... +70 °C

6AG1342-5DA03-7XE0

Accessories

See SIMATIC CP 342-5 communications processor, page 5/182

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

SIPLUS S7-300 CP 343-1 Lean

Overview



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

- Connection for the SIMATIC S7-300 to Industrial Ethernet (not for SINUMERIK)
 - 2 x RJ45 interface for 10/100 Mbps full/half duplex connection (with autosensing for automatic switchover and autocrossover function)
 - Integrated 2-port real-time switch ERTEC
 - Multi-protocol operation with TCP and UDP transport protocol and PROFINET IO
 - Keep Alive function
- Communications services:
 - Open communication (TCP/IP and UDP)
 - PG/OP communication
 - S7 communication (server)
 - PROFINET IO device
- Multicast for UDP
- Remote programming and initial commissioning is possible over Industrial Ethernet
- IT communication
 - Web function
- Integration into network management through SNMP
- Configuration with STEP 7
- Cross-network PG/OP communication by means of S7 routing
- Diagnostics possibilities in STEP 7 and via web browser

Note:

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

Ordering data

Article No.

SIPLUS CP 343-1 Lean communications processor

For connecting SIMATIC S7-300 to Industrial Ethernet through TCP/IP and UDP, Multicast, S7 communication, open communication (SEND/RECEIVE), FETCH/WRITE, PROFINET IO device, integral 2-port switch ERTEC, comprehensive diagnostics facilities, module replacement without programming device, SNMP, initial commissioning over LAN; with electronic manual on CD-ROM

For industrial applications with extended ambient conditions

Extended temperature range and exposure to environmental substances

6AG1343-1CX10-2XE0

Accessories

Consumables

IE FC RJ45 plug 180

(Extended temperature range and exposure to environmental substances)

180° cable outlet

- 1 unit

6AG1901-1BB10-7AA0

IE FC TP standard cable GP 2 x 2 (type A)

4-wire, shielded TP installation cable for connection to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

6XV1840-2AH10

IE FC stripping tool

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

6GK1901-1GA00

Programming tools

STEP 7 Version 5.7

See chapter 12

STEP 7 Professional V18

See chapter 12

SOFTNET-S7 for Industrial Ethernet

Software for S7 and open communication, incl. OPC server, PG/OP communication, and NCM PC/STEP 7 Professional V12, runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A

See SiePortal

Technical specifications

Article number	6AG1343-1CX10-2XE0	Article number	6AG1343-1CX10-2XE0
Based on	6GK7343-1CX10-0XE0	Based on	6GK7343-1CX10-0XE0
Product type designation	SIPLUS NET CP343-1 LEAN	Product type designation	SIPLUS NET CP343-1 LEAN
ambient conditions		resistance to chemically active substances	
ambient temperature		• conformity according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray in accordance with EN 60068-2-52 (Severity 3). The supplied plug covers must remain in place on the unused interfaces during operation.
• for vertical installation during operation	-25 ... +40 °C		Yes
• for horizontally arranged busbars during operation	-25 ... +60 °C	• conformity according to EN 60721-3-6	
• during storage	-40 ... +70 °C	resistance to mechanically active substances	
• during transport	-40 ... +70 °C	• conformity according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
installation altitude at height above sea level maximum	5 000 m	• conformity according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
ambient condition relating to ambient temperature - air pressure - installation 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)	coating for equipped printed circuit board according to EN 61086	Yes; Class 2 for high availability
relative humidity		type of coating protection against pollution according to EN 60664-3	Yes; Protection of the type 1
• with condensation according to IEC 60068-2-38 maximum	100 %; RH including condensation/frost (no commissioning when condensation is present), horizontal installation	type of test of the coating according to MIL-I-46058C	Yes; Coating discoloration during service life possible
chemical resistance to commercially available cooling lubricants	Yes; incl. airborne diesel and oil droplets	product conformity of the coating Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, class A
resistance to biologically active substances		protection class IP	IP20
• conformity according to EN 60721-3-3	Yes; Class 3B2 mold and fungal spores (excluding fauna), Class 3B3 on request		
• conformity according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)		

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

SIPLUS S7-300 CP 343-1

Overview



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

- The connection of SIMATIC S7-300/SINUMERIK 840D powerline to Industrial Ethernet
 - 2 x RJ45 interface for 10/100 Mbps full/half-duplex connection with autosensing/autonegotiation and autocrossover function
 - Integrated 2-port real-time switch ERTEC
 - Multi-protocol operation with ISO, TCP, UDP transport protocol and PROFINET IO
 - Adjustable keep-alive function

- Communications services:
 - Open communication (ISO, TCP/IP, and UDP)
 - PROFINET IO controller or PROFINET IO device
 - PG/OP communication: Cross-network by means of S7 routing
 - S7 communication (client, server, multiplexing)
- Media redundancy (MRP); within an Ethernet network with ring topology, the CP supports the media redundancy procedure MRP (V2.2 or higher).
- Multicast for UDP
- IP address assignment via DHCP, simple PC tool or via the user program (e.g. HMI)
- Access protection via configurable access list
- Remote programming and commissioning via Industrial Ethernet
- Configuration with STEP 7
- Automatic setting of CPU clock setting over Ethernet with NTP or SIMATIC procedure
- Web diagnostics
- Integration in network management systems via SNMP (MIB2 diagnostics information)
- Diagnostics possibilities in STEP 7 and via web browser

Note:

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

Ordering data

Article No.

SIPLUS S7-300 CP 343-1 communications processor

For connection of SIMATIC S7-300 to Industrial Ethernet over ISO and TCP/IP; PROFINET IO controller or PROFINET IO device, MRP, integrated 2-port switch ERTEC; S7 communication, open communication (SEND/RECEIVE), FETCH/WRITE, with and without RFC 1006, multicast, DHCP, CPU clock synchronization via SIMATIC procedure and NTP, diagnostics, SNMP, access protection through IP access list, initialization over LAN 10/100 Mbps; with electronic manual on DVD

For industrial applications with extended ambient conditions

Extended temperature range and exposure to environmental substances

6AG1343-1EX30-7XE0

Article No.

Accessories

Consumables

IE FC RJ45 plug 180

(Extended temperature range and exposure to environmental substances)

180° cable outlet

- 1 unit

6AG1901-1BB10-7AA0

C-PLUG

Removable data storage medium for simple replacement of devices in the event of a fault; for storing configuration or engineering and application data; can be used for SIMATIC NET products with C-PLUG slot, -40 ... +70 °C, exposure to environmental substances

6AG1900-0AB10-7AA0

IE FC TP standard cable GP 2 x 2 (type A)

4-wire, shielded TP installation cable for connection to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

6XV1840-2AH10

IE FC stripping tool

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

6GK1901-1GA00

Ordering data

Article No.

Article No.

Communication within the application

SIPLUS SCALANCE XC-200 Industrial Ethernet switches

Industrial Ethernet switches with integrated SNMP access, web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager; incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM

Extended temperature range and exposure to environmental substances

Switches with PROFINET delivery state

- **SIPLUS SCALANCE XC206-2 (ST/BFOC)**
with six RJ45 ports 10/100 Mbps and two ST/BFOC ports 100 Mbps

6AG1206-2BB00-7AC2

Programming tools

STEP 7 Version 5.7

See chapter 12

STEP 7 Professional V18

See chapter 12

SOFTNET-S7 for Industrial Ethernet

See SiePortal

Software for S7 and open communication, incl. OPC server, PG/OP communication, and NCM PC/STEP 7 Professional V12, runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A

Technical specifications

Article number	6AG1343-1EX30-7XE0
Based on	6GK7343-1EX30-0XE0
product type designation	SIPLUS NET CP 343-1
ambient conditions	
ambient temperature	
• during operation	-25 ... +70 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
installation altitude at height above sea level maximum	5 000 m
ambient condition relating to ambient temperature - air pressure - installation 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)
relative humidity	
• with condensation according to IEC 60068-2-38 maximum	100 %; RH including condensation/frost (no commissioning when condensation is present), horizontal installation
chemical resistance to commercially available cooling lubricants	Yes; incl. airborne diesel and oil droplets
resistance to biologically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3B2 mold and fungal spores (excluding fauna), Class 3B3 on request
• conformity according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)

Article number	6AG1343-1EX30-7XE0
Based on	6GK7343-1EX30-0XE0
product type designation	SIPLUS NET CP 343-1
resistance to chemically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray in accordance with EN 60068-2-52 (Severity 3). The supplied plug covers must remain in place on the unused interfaces during operation.
• conformity according to EN 60721-3-6	Yes
resistance to mechanically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
• conformity according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
coating for equipped printed circuit board according to EN 61086	Yes; Class 2 for high availability
type of coating protection against pollution according to EN 60664-3	Yes; Protection of the type 1
type of test of the coating according to MIL-I-46058C	Yes; Coating discoloration during service life possible
product conformity of the coating Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, class A
protection class IP	IP20

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

SIPLUS S7-300 CP 343-1 Advanced

Overview



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

- The connection of SIMATIC S7-300/SINUMERIK 840D powerline to Industrial Ethernet
 - Multi-protocol operation with TCP and UDP transport protocol
 - Adjustable keep-alive function
- Two separate interfaces (integrated network separation):
 - Gigabit interface with one RJ45 port with 10/100/1 000 Mbps, full/half-duplex with auto-sensing capability
 - PROFINET interface with two RJ45 ports with 10/100 Mbps full/half-duplex with auto-sensing and auto-crossover functionality via integrated 2-port switch
- Communications services via both interfaces:
 - Open communication (TCP/IP and UDP): Multicast with UDP, including routing between both interfaces
 - PG/OP communication:
 - Cross-network by means of S7 routing
 - S7 communication (client, server, multiplexing) including routing between both interfaces
 - IT communication:
 - HTTP communication supports access to process data via own web pages;
 - e-mail client function, sending of e-mails directly from user program;
 - FTP communication supports program-controlled FTP client communication;
 - access to data blocks through FTP server

- Communications services via PROFINET interfaces:
 - PROFINET IO controller and IO device with real-time properties (RT and IRT)¹⁾
 - PROFINET CBA
 - IP address assignment via DHCP, simple PC tool or via program block (e.g. for HMI)
 - Configuration with STEP 7
- Media redundancy (MRP);
 - within an Ethernet network with ring topology, the CP supports the media redundancy procedure MRP (V2.2 or higher).
- Access protection by means of configurable IP access list
- Module replacement without programming device;
 - all information is stored on the C-PLUG (also file system for IT functions)
- Extensive diagnostic functions for all modules in the rack
- IT communication
 - Web function
 - E-mail function
 - FTP
- Integration into network management systems through the support of SNMP V1 MIB-II

- ¹⁾ possible combinations in parallel operation:
- IO controller with IRT and IO device with RT
 - IO controller with RT and IO device with IRT

Note:

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

Ordering data	Article No.	Article No.
SIPLUS S7-300 CP 343-1 Advanced communications processor For connecting the SIMATIC S7-300 to Industrial Ethernet, PROFINET IO controller and IO Device with RT and IRT, MRP, PROFINET CBA, TCP/IP and UDP, S7 communication, open communication (SEND/RECEIVE), FETCH/WRITE with or without RFC 1006, diagnostics extensions, multicast, web server, HTML diagnostics, FTP server, FTP client, email client, CPU clock set via SIMATIC procedure and NTP, access protection via IP access list, SNMP, DHCP, initialization over LAN 10/100 Mbps; with electronic manual on DVD; C-PLUG included in scope of delivery <i>For industrial applications with extended ambient conditions</i> Exposure to environmental substances	6AG1343-1GX31-4XE0	<i>Communication within the application</i> SIPLUS SCALANCE XC-200 Industrial Ethernet switches Industrial Ethernet switches with integrated SNMP access, web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager; incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM Extended temperature range and exposure to environmental substances Switches with PROFINET delivery state • SIPLUS SCALANCE XC206-2 (ST/BFOC) with six RJ45 ports 10/100 Mbps and two ST/BFOC ports 100 Mbps
Accessories <i>Consumables</i> IE FC RJ45 plug 180 (Extended temperature range and exposure to environmental substances) 180° cable outlet • 1 unit	6AG1901-1BB10-7AA0	<i>Programming tools</i> STEP 7 Version 5.7
SIPLUS C-PLUG Removable data storage medium for simple replacement of devices in the event of a fault; for storing configuration or engineering and application data; can be used for SIMATIC NET products with C-PLUG slot, -40 ... +70 °C, exposure to environmental substances	6AG1900-0AB10-7AA0	STEP 7 Professional V18
IE FC TP standard cable GP 2 x 2 (type A) 4-wire, shielded TP installation cable for connection to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-2AH10	SOFTNET-S7 for Industrial Ethernet
IE FC TP standard cable GP 4 x 2 8-wire, shielded TP installation cable for universal applications; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m • AWG22, for connection to IE FC RJ45 modular outlet • AWG24, for connecting to IE FC RJ45 plug 4 x 2, IE FC M12 plug PRO 4 x 2	6XV1870-2E 6XV1878-2A	See chapter 12 See chapter 12 See SiePortal
IE FC stripping tool Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	6GK1901-1GA00	

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

SIPLUS S7-300 CP 343-1 Advanced**Technical specifications**

Article number	6AG1343-1GX31-4XE0
Based on	6GK7343-1GX31-0XE0
product type designation	SIPLUS NET CP343-1 ADVANCED
ambient conditions	
ambient temperature	
• for vertical installation during operation	0 ... 40 °C
• for horizontally arranged busbars during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
installation altitude at height above sea level maximum	5 000 m
ambient condition relating to ambient temperature - air pressure - installation 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)
relative humidity	
• with condensation according to IEC 60068-2-38 maximum	100 %; RH including condensation/frost (no commissioning when condensation is present), horizontal installation
chemical resistance to commercially available cooling lubricants	Yes; incl. airborne diesel and oil droplets
resistance to biologically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3B2 mold and fungal spores (excluding fauna), Class 3B3 on request
• conformity according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)

Article number	6AG1343-1GX31-4XE0
Based on	6GK7343-1GX31-0XE0
product type designation	SIPLUS NET CP343-1 ADVANCED
resistance to chemically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray in accordance with EN 60068-2-52 (Severity 3). The supplied plug covers must remain in place on the unused interfaces during operation.
• conformity according to EN 60721-3-6	Yes
resistance to mechanically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
• conformity according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
coating for equipped printed circuit board according to EN 61086	Yes; Class 2 for high availability
type of coating protection against pollution according to EN 60664-3	Yes; Protection of the type 1
type of test of the coating according to MIL-I-46058C	Yes; Coating discoloration during service life possible
product conformity of the coating Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, class A
protection class IP	IP20

Overview



- SINAUT communications module SIPLUS TIM for SIMATIC S7-300 for use in a wide area network (WAN)
- IP communication via secure VPN (virtual private network) using the Internet
- Wireless communication via GPRS router, GPRS modem, or radio devices
- Wired communication via Ethernet, DSL, dialup modems or dedicated line modem
- Complete migration of existing wireless, dedicated line and dial-up technology to IP-based network
- Message buffer for seamless recording of data
- Simple configuration and operation without specialist IT knowledge

Note:

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

Ordering data

Article No.

SIPLUS ST7 TIM 3V-IE communications module With an RS232 interface for SINAUT communication via a conventional WAN or an IP-based network (WAN or LAN)	6AG1800-3BA00-7AA0
Accessories	
<i>Consumables</i>	
IE FC TP standard cable GP 2 x 2 (type A) 4-wire, shielded TP installation cable for connection to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-2AH10
IE FC RJ45 plug 180 RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface • 1 pack = 1 unit, -40 ... +70 °C, exposure to environmental substances	6AG1901-1BB10-7AA0
IE FC stripping tool Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables	6GK1901-1GA00

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

SIPLUS TIM 3V-IE for WAN and Ethernet**Technical specifications**

Article number	6AG1800-3BA00-7AA0
Based on	6NH7800-3BA00
product type designation	SIPLUS SINAUT ST7, TIM 3V-IE
ambient conditions	
ambient temperature	
• during operation	-25 ... +70 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
installation altitude at height above sea level maximum	5 000 m
ambient condition relating to ambient temperature - air pressure - installation 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)
relative humidity	
• with condensation according to IEC 60068-2-38 maximum	100 %; RH including condensation/frost (no commissioning when condensation is present), horizontal installation
chemical resistance to commercially available cooling lubricants	Yes; incl. airborne diesel and oil droplets
resistance to biologically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3B2 mold and fungal spores (excluding fauna), Class 3B3 on request
• conformity according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)

Article number	6AG1800-3BA00-7AA0
Based on	6NH7800-3BA00
product type designation	SIPLUS SINAUT ST7, TIM 3V-IE
resistance to chemically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray in accordance with EN 60068-2-52 (Severity 3). The supplied plug covers must remain in place on the unused interfaces during operation.
• conformity according to EN 60721-3-6	Yes
resistance to mechanically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
• conformity according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
coating for equipped printed circuit board according to EN 61086	Yes; Class 2 for high availability
type of coating protection against pollution according to EN 60664-3	Yes; Protection of the type 1
type of test of the coating according to MIL-I-46058C	Yes; Coating discoloration during service life possible
product conformity of the coating Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, class A
protection class IP	IP20

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

SIPLUS TIM 4R-IE for WAN and Ethernet**Overview**

- SINAUT communications module SIPLUS TIM with four interfaces for SIMATIC S7-300 or as a self-contained device for S7-400 for use in a wide area network (WAN)
- For universal use in a SINAUT station, node station and control center
- Internet communication via integrated MSC-VPN tunnel with direct connection to DSL router or operation via IPsec VPN with additional SIMATIC NET components
- Wireless communication via GPRS router, GPRS modem, or radio devices
- Wired communication via Ethernet, DSL, dialup modems or dedicated line modem
- Complete migration of existing wireless, dedicated line and dial-up technology to IP-based network
- Message buffer for seamless recording of data and support of redundant communication paths
- Simple configuration and operation without specialist IT knowledge

Note:

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

Ordering data**Article No.****SIPLUS ST7 TIM 4R-IE communications module****6AG1800-4BA00-7AA0**

With two combined RS232/RS485 interfaces for SINAUT communication via conventional WANs and two RJ45 interfaces for SINAUT communication via IP-based networks (WAN or LAN)

Accessories*Consumables***IE FC TP standard cable GP 2 x 2 (type A)****6XV1840-2AH10**

4-wire, shielded TP installation cable for connection to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

IE FC RJ45 plug 180

RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface

6AG1901-1BB10-7AA0

- 1 pack = 1 unit, -40 ... +70 °C, exposure to environmental substances

IE FC stripping tool**6GK1901-1GA00**

Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables

SIMATIC S7-300 Advanced Controllers

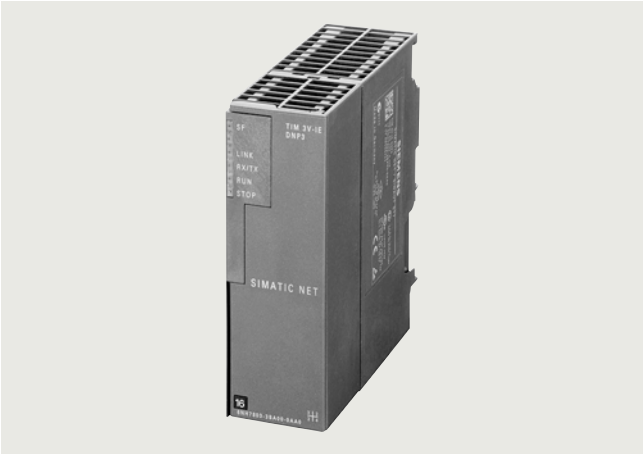
I/O modules

SIPLUS S7-300 communication

SIPLUS TIM 4R-IE for WAN and Ethernet**Technical specifications**

Article number	6AG1800-4BA00-7AA0	Article number	6AG1800-4BA00-7AA0
Based on	6NH7800-4BA00	Based on	6NH7800-4BA00
product type designation	PLUS SINAUT ST7, TIM 4R-IE	product type designation	PLUS SINAUT ST7, TIM 4R-IE
ambient conditions		resistance to chemically active substances	
ambient temperature		• conformity according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray in accordance with EN 60068-2-52 (Severity 3). The supplied plug covers must remain in place on the unused interfaces during operation.
• during operation	-25 ... +70 °C		
• during storage	-40 ... +70 °C	• conformity according to EN 60721-3-6	Yes
• during transport	-40 ... +70 °C	resistance to mechanically active substances	
installation altitude at height above sea level maximum	5 000 m	• conformity according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
ambient condition relating to ambient temperature - air pressure - installation 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)	• conformity according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
relative humidity		coating for equipped printed circuit board according to EN 61086	Yes; Class 2 for high availability
• with condensation according to IEC 60068-2-38 maximum	100 %; RH including condensation/frost (no commissioning when condensation is present), horizontal installation	type of coating protection against pollution according to EN 60664-3	Yes; Protection of the type 1
chemical resistance to commercially available cooling lubricants	Yes; incl. airborne diesel and oil droplets	type of test of the coating according to MIL-I-46058C	Yes; Coating discoloration during service life possible
resistance to biologically active substances		product conformity of the coating Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, class A
• conformity according to EN 60721-3-3	Yes; Class 3B2 mold and fungal spores (excluding fauna), Class 3B3 on request	protection class IP	IP20
• conformity according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)		

Overview



In a station for the S7-CPU, the new SIPLUS TIM 3V-IE DNP3 communications module V3.0 (TeleControl Interface Module) handles the data traffic with the assigned master system SIMATIC PCS 7 TeleControl V8.0 using the open DNP3 protocol. In addition, the V3.0 module now also supports master and node functionality.

- With the S7-300 housing, the module can be fully integrated into the S7-300 system
- The module has an RS232 interface for the connection of an external modem for data transmission via a conventional WAN or the connection of a Modbus RTU slave to an S7-300 system
- The RJ45 port is used for data transmission via IP-based networks

Note:

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

Ordering data

Article No.

SIPLUS TIM 3V-IE DNP3 communications module With an RS232 interface for SINAUT communication via a conventional WAN and an IP-based network (WAN or LAN)	6AG1803-3BA00-7AA0
Accessories	
<i>Consumables</i>	
IE FC TP standard cable GP 2 x 2 (type A) 4-wire, shielded TP installation cable for connection to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-2AH10
IE FC RJ45 plug 180 RJ45 plug-in connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface • 1 pack = 1 unit, -40 ... +70 °C, exposure to environmental substances	6AG1901-1BB10-7AA0
IE FC stripping tool Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables	6GK1901-1GA00

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

SIPLUS TIM 3V-IE DNP3**Technical specifications**

Article number	6AG1803-3BA00-7AA0
Based on	6NH7803-3BA00-0AA0
product type designation	SIPLUS NET TIM 3V-IE DNP3
ambient conditions	
ambient temperature	
• during operation	-25 ... +70 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
installation altitude at height above sea level maximum	5 000 m
ambient condition relating to ambient temperature - air pressure - installation 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)
relative humidity	
• with condensation according to IEC 60068-2-38 maximum	100 %; RH including condensation/frost (no commissioning when condensation is present), horizontal installation
chemical resistance to commercially available cooling lubricants	Yes; incl. airborne diesel and oil droplets
resistance to biologically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3B2 mold and fungal spores (excluding fauna), Class 3B3 on request
• conformity according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)

Article number	6AG1803-3BA00-7AA0
Based on	6NH7803-3BA00-0AA0
product type designation	SIPLUS NET TIM 3V-IE DNP3
resistance to chemically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray in accordance with EN 60068-2-52 (Severity 3). The supplied plug covers must remain in place on the unused interfaces during operation.
• conformity according to EN 60721-3-6	Yes
resistance to mechanically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
• conformity according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
coating for equipped printed circuit board according to EN 61086	Yes; Class 2 for high availability
type of coating protection against pollution according to EN 60664-3	Yes; Protection of the type 1
type of test of the coating according to MIL-I-46058C	Yes; Coating discoloration during service life possible
product conformity of the coating Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, class A
protection class IP	IP20

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

SIPLUS TIM 4R-IE DNP3**Overview**

In a station for the S7-CPU, the SIPLUS communication module TIM 4R-IE DNP3 (TeleControl Interface Module) handles the data exchange with the assigned SIMATIC PCS7 TeleControl V8.0 master system using the open DNP3 protocol. In addition, the V3.0 module now also supports master and node functionality.

- With the double-width S7-300 housing, the module can be fully integrated into the S7-300 system
- Can be connected as a stand-alone module to a SIMATIC S7-400 and SIMATIC S7-400 H System
- Two RS232/RS485 interfaces support connection of an external modem for data transmission via a conventional WAN or of a Modbus RTU slave to an S7-300 system
- The module has two RJ45 interfaces for data transmission via IP-based networks
- By using physically separate connection paths, the module permits media redundancy without loss of data during the switchover

Note:

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

Ordering data**Article No.****SIPLUS TIM 4R-IE DNP3 communications module****6AG1803-4BA00-7AA0**

With two combined RS232/RS485 interfaces for SINAUT communication via conventional WANs and two RJ45 interfaces for SINAUT communication via IP-based networks (WAN or LAN)

Accessories*Consumables***IE FC TP standard cable GP 2 x 2 (type A)****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 1000 m, minimum order quantity 20 m

IE FC RJ45 plug 180

RJ45 plug-in connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface

- 1 pack = 1 unit, -40 ... +70 °C, exposure to environmental substances

6AG1901-1BB10-7AA0**IE FC stripping tool****6GK1901-1GA00**

Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

SIPLUS TIM 4R-IE DNP3**Technical specifications**

Article number	6AG1803-4BA00-7AA0
Based on	6NH7803-4BA00-0AA0
product type designation	SIPLUS NET TIM 4R-IE DNP3
ambient conditions	
ambient temperature	
• during operation	-25 ... +70 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
installation altitude at height above sea level maximum	5 000 m
ambient condition relating to ambient temperature - air pressure - installation 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)
relative humidity	
• with condensation according to IEC 60068-2-38 maximum	100 %; RH including condensation/frost (no commissioning when condensation is present), horizontal installation
chemical resistance to commercially available cooling lubricants	Yes; incl. airborne diesel and oil droplets
resistance to biologically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3B2 mold and fungal spores (excluding fauna), Class 3B3 on request
• conformity according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)

Article number	6AG1803-4BA00-7AA0
Based on	6NH7803-4BA00-0AA0
product type designation	SIPLUS NET TIM 4R-IE DNP3
resistance to chemically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray in accordance with EN 60068-2-52 (Severity 3). The supplied plug covers must remain in place on the unused interfaces during operation.
• conformity according to EN 60721-3-6	Yes
resistance to mechanically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
• conformity according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
coating for equipped printed circuit board according to EN 61086	Yes; Class 2 for high availability
type of coating protection against pollution according to EN 60664-3	Yes; Protection of the type 1
type of test of the coating according to MIL-I-46058C	Yes; Coating discoloration during service life possible
product conformity of the coating Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, class A
protection class IP	IP20

Overview



- Simulator module for program testing during commissioning and ongoing operation
- For the simulation of sensor signals using switches
- For display of signal conditions on the outputs using LED
- Simulation of
 - 16 inputs or
 - 16 outputs or
 - 8 inputs and 8 outputs
- Function can be directly adjusted on the module using a screwdriver

Technical specifications

Article number	6ES7374-2XH01-0AA0
	SM 374 simulator module 16I/16O
General information	
Product type designation	SM 374
Input current	
from backplane bus 5 V DC, max.	80 mA
Power loss	
Power loss, typ.	0.35 W
Digital inputs	
Number of digital inputs	16; Switch
Digital outputs	
Number of digital outputs	16; LEDs
Potential separation	
Potential separation digital inputs	
• between the channels and backplane bus	No
Potential separation digital outputs	
• between the channels and backplane bus	No
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	190 g

Ordering data	Article No.
SM 374 simulator module incl. bus connectors, labeling strips	6ES7374-2XH01-0AA0
Bus connectors 1 unit, spare part	6ES7390-0AA00-0AA0
Labeling strips 10 units (spare part)	6ES7392-2XX00-0AA0
Label cover 10 units (spare part)	6ES7392-2XY00-0AA0
Labeling sheets for machine inscription 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

SIMATIC S7-300 Advanced Controllers

I/O modules
Special modules

DM 370 dummy module

Overview



- Dummy module for reserving slots for non-parameterized signal modules
- Structure and address allocation is retained when replaced with a signal module

Technical specifications

Article number	6ES7370-0AA01-0AA0 DM 370 Dummy module
General information	
Product type designation	DM 370
Input current	
from backplane bus 5 V DC, max.	5 mA
Power loss	
Power loss, max.	0.03 W
Digital inputs	
Number of digital inputs	0
Digital outputs	
Number of digital outputs	0
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	180 g

Ordering data	Article No.
DM 370 dummy module incl. bus connectors, labeling strips	6ES7370-0AA01-0AA0
Bus connectors 1 unit, spare part	6ES7390-0AA00-0AA0
Labeling strips 10 units (spare part)	6ES7392-2XX00-0AA0
Label cover 10 units (spare part)	6ES7392-2XY00-0AA0
Labeling sheets for machine inscription 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

Overview



- Dummy module for reserving slots for unconfigured signal modules
- Retention of design and address assignment when replacing with a signal module

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.

SIMATIC S7-300 DM 370 dummy module

for use when replacing modules

Extended temperature range and exposure to media

6AG1370-0AA01-7AA0

Accessories*Consumables***Bus connectors**

1 unit (spare part)

6ES7390-0AA00-0AA0

Labeling strips

10 units (spare part)

For modules with 20-pin front connector

6ES7392-2XX00-0AA0

Label cover

10 units (spare part)

For modules with 20-pin front connector

6ES7392-2XY00-0AA0

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

Technical specifications

Article number	6AG1370-0AA01-7AA0
Based on	6ES7370-0AA01-0AA0 SIPLUS S7-300 dummy module
Ambient conditions	
Ambient temperature during operation	
• min.	-40 °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)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	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
- 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!

SIMATIC S7-300 Advanced Controllers

I/O modules
Connection system

Front connectors

Overview



- For the simple and user-friendly connection of sensors and actuators to the S7-300 I/O modules
- For maintaining the wiring when replacing modules ("permanent wiring")
- With mechanical coding to avoid errors when replacing modules

Ordering data

Article No.

Front connectors

20-pin, with screw contacts

- 1 unit
- 100 units

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

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

40-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AM00-0AA0
6ES7392-1AM00-1AB0

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0
6ES7392-1BM01-1AB0

Front door, elevated design

e.g. for 32 channel modules;
enables connection of
1.3 mm²/16 AWG wires

6ES7328-0AA00-7AA0

Front door, higher version,
for F-modules

For F-modules; for connecting
1.3 mm²/16 AWG wires; wiring
diagram and labels in yellow

6ES7328-7AA10-0AA0

Overview

Wiring of SIMATIC S7 I/O modules with the sensors/actuators is a significant factor with respect to time/cost overhead, configuring, control cabinet installation, procurement and ease of service.

With SIMATIC TOP connect system cabling, it is simple and quick to establish a reliable connection for your SIMATIC S7-300 or ET 200M.

With the TIA Selection Tool, a mouse click is all that is required to configure the connection from the SIMATIC S7 module to the I/O. The program automatically checks for plausibility and generates a parts list for the selected connection components that can then be ordered in the Industry Mall.

More information can be found on the Internet at

<http://www.siemens.com/tia-selection-tool>

Design

Two cabling variants are available for a wide range of control cabinet concepts:

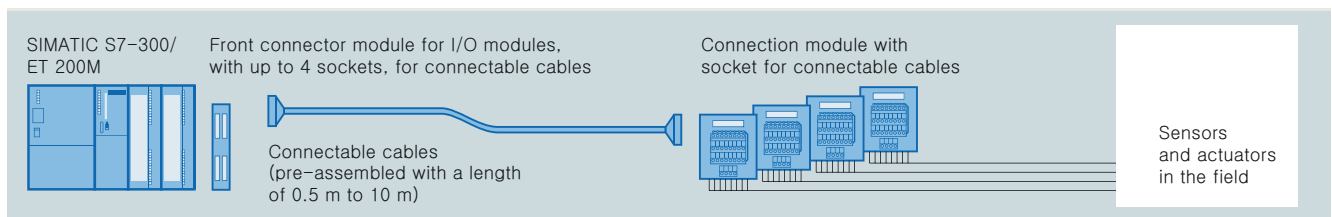
Fully modular connection

Each component is individually inserted.

The system consists of:

- Front connector module
- Connecting cable
- Connection modules in the following versions: basic module, signal module and function module

Connection errors are thus practically excluded and installation overhead is minimized. Systematic connection of the SIMATIC system. The assembly work for the connecting cables is drastically reduced thanks to the use of pre-assembled cables sold by the meter.



SIMATIC TOP connect for S7-300/ ET 200M, fully modular connection

Flexible connection

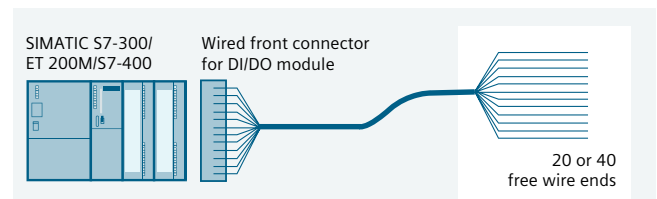
Consisting of:

- Front connector with screw-type or crimp connection
- Front connector with fixed single cores
- Single cores also available with UL/CSA-certified cores

The blue wires are numbered sequentially and can be routed direct to each element in the control cabinet. The numbering of the single cores corresponds to the coding of the front connector contacts.

In comparison to conventional single wiring, there is a cost saving of 50% for assembly, since the single cores that have already been checked on the connector are fixed.

This eliminates the time-consuming assembly of up to 40 individual wires per module.



SIMATIC TOP connect for S7-300/ET 200M, flexible connection

SIMATIC S7-300 Advanced Controllers

I/O modules

Connection system

System cabling for SIMATIC S7-300 and ET 200M > Fully modular connection

Overview



The fully modular connection for connecting to the digital I/O modules of the SIMATIC S7-300 or ET 200M consists of modified front connectors, called front connector modules, preassembled connecting cables of various lengths, and terminal modules. Suitable components can be selected for the application in question and joined by means of simple plug-in connections. The terminal modules are used instead of conventional terminal blocks and act as the interface to the sensors and actuators.

Benefits

- Front connector module, connecting cable and terminal module are easy to plug in
- Fast, low-cost wiring
- For digital and analog signals, supply voltage can be connected to the front plug-in module or terminal module
- Reduction in wiring errors, clear control cabinet wiring
- Distribution of digital signals by byte or quadruple byte
- Each component can be replaced individually
- Pre-assembled cables can be used in different lengths

Design

Front connector module

Modified front connectors, called front connector modules, are available for connecting to the module. These are plugged into the module to be wired instead of the front connector. Many different front connector module versions, for digital I/O modules, 24 V 2-ampère modules or analog I/O modules. The connecting cables are plugged into these front connector modules.

Connecting cable

There are different versions of the connecting cable.

As a pre-assembled 16-pin or 50-pin round cable (shielded or unshielded) it is available in lengths up to 10 m.

When assembled, there are one or two insulation displacement connectors (female ribbon connectors) at both ends of the cable.

The connecting cable connects the front connector module with the terminal module.

Terminal module

The system has both digital and analog terminal modules for connecting the I/O signals. These are snapped onto the DIN rail. The terminal modules with basic or signal functionality are available in 1-byte or 4-byte versions.

Terminal modules are available for two different connection methods: with push-in or screw-type terminals. The potential can be fed in at the terminal module or at the front connector module.

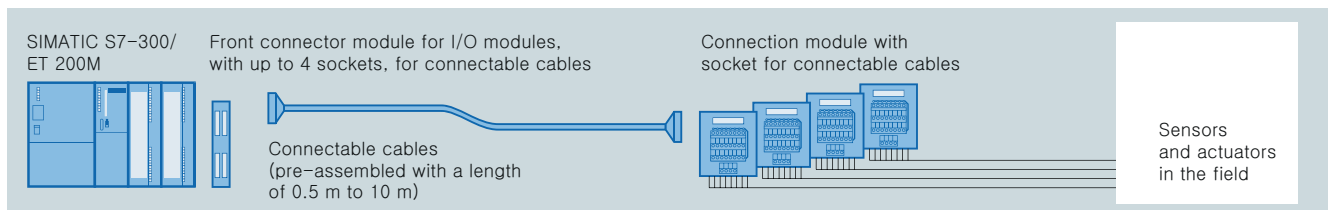
If other voltage or power levels are required in the field, the terminal module for TPRo or TPOo output signals is used. For the TPRo terminal module, relays are used for the implementation. For the TPOo terminal module, optocouplers are used for the implementation. This converts the 24 V DC output signal simply and reliably to another voltage or power level. If 230 V AC or 110 V AC input signals have to be transmitted to the controller in the field, a terminal module with relay TPRI is available that simply converts the 230/110 V AC signal to 24 V DC. This means that there is always the same voltage level on the module side.

Use with optocouplers for the TPRo relay modules

If higher switching frequencies of the relay terminal module are required for the output signals, the relay can simply be replaced with an optocoupler (note technical specifications) in order to increase the switching frequency.

Shield plate

The shield plate is latched onto the terminal module for 3-core initiators or optionally onto the terminal module for analog signals and then snapped onto the DIN rail with the terminal module. With the shield connection clamps, optimal shield connection is achieved between the shielded round-sheath ribbon cable or the shielded field cables and the grounded DIN rail.



SIMATIC TOP connect for S7-300/ET 200M, fully modular connection

Ordering data

Article No.

Article No.

Front connector modules¹⁾**Front connector module
(compact CPU 312C)**Power supply via
• Screw terminals

6ES7921-3AK20-0AA0

**Front connector module
(compact CPU 313C/
314C-2PtP/314C-2DP), slot X1**Power supply via
• Screw terminals

6ES7921-3AM20-0AA0

**Front connector module
(digital 2 x 8 I/O)**Power supply via
• Spring-loaded terminals
• Screw terminals6ES7921-3AA00-0AA0
6ES7921-3AB00-0AA0**Front connector module
(digital 4 x 8 I/O)**Power supply via
• Spring-loaded terminals
• Screw terminals6ES7921-3AA20-0AA0
6ES7921-3AB20-0AA0**Front connector module
(1 x 8 outputs)
for 2-ampere digital outputs**Power supply via
• Spring-loaded terminals
• Screw terminals6ES7921-3AC00-0AA0
6ES7921-3AD00-0AA0**Front connector module 20-pin
(analog)**Power supply via
• Spring-loaded terminals
• Screw terminals6ES7921-3AF00-0AA0
6ES7921-3AG00-0AA0**Front connector module 40-pin
(analog)**Power supply via
• Spring-loaded terminals
• Screw terminals6ES7921-3AF20-0AA0
6ES7921-3AG20-0AA0

¹⁾ The terminal assignments of these front connector modules are unambiguous, so dimension drawings can be omitted. The dimension drawings for these front connector modules can be found under "Wiring of S7-300 analog modules".

Connecting cables**Connecting cables for
SIMATIC S7-300****Pre-assembled round cable**16-pin, 0.14 mm²

Unshielded

- 0.5 m
- 1.0 m
- 1.5 m
- 2.0 m
- 2.5 m
- 3.0 m
- 4.0 m
- 5.0 m
- 6.5 m
- 8.0 m
- 10.0 m

6ES7923-0BA50-0CB0
6ES7923-0BB00-0CB0
6ES7923-0BB50-0CB0
6ES7923-0BC00-0CB0
6ES7923-0BC50-0CB0
6ES7923-0BD00-0CB0
6ES7923-0BE00-0CB0
6ES7923-0BF00-0CB0
6ES7923-0BG50-0CB0
6ES7923-0BJ00-0CB0
6ES7923-0CB00-0CB0

Shielded

- 1.0 m
- 2.0 m
- 2.5 m
- 3.0 m
- 4.0 m
- 5.0 m
- 6.5 m
- 8.0 m
- 10.0 m

6ES7923-0BB00-0DB0
6ES7923-0BC00-0DB0
6ES7923-0BC50-0DB0
6ES7923-0BD00-0DB0
6ES7923-0BE00-0DB0
6ES7923-0BF00-0DB0
6ES7923-0BG50-0DB0
6ES7923-0BJ00-0DB0
6ES7923-0CB00-0DB0
Version 4 x 16 to 1 x 50-pin,
0.14 mm²

Unshielded

- 0.5 m
- 1.0 m
- 1.5 m
- 2.0 m
- 2.5 m
- 3.0 m
- 4.0 m
- 5.0 m
- 6.5 m
- 8.0 m
- 10.0 m

6ES7923-5BA50-0EB0
6ES7923-5BB00-0EB0
6ES7923-5BB50-0EB0
6ES7923-5BC00-0EB0
6ES7923-5BC50-0EB0
6ES7923-5BD00-0EB0
6ES7923-5BE00-0EB0
6ES7923-5BF00-0EB0
6ES7923-5BG50-0EB0
6ES7923-5BJ00-0EB0
6ES7923-5CB00-0EB0

SIMATIC S7-300 Advanced Controllers

I/O modules

Connection system

System cabling for SIMATIC S7-300 and ET 200M > Fully modular connection**Ordering data****Article No.****Article No.****Connection modules****Connection module TP1**

For 1-wire connection,
for 16-pin connecting cables

- Push-in terminals without LEDs
- Screw-type terminals without LEDs
- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0AA20-0AC0
6ES7924-0AA20-0AA0

6ES7924-0AA20-0BC0
6ES7924-0AA20-0BA0

For 1-wire connection,
for 50-pin connecting cables

- Push-in terminals without LEDs
- Screw-type terminals without LEDs
- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-2AA20-0AC0
6ES7924-2AA20-0AA0

6ES7924-2AA20-0BC0
6ES7924-2AA20-0BA0

Connection module TP3

For 3-wire connection,
for 16-pin connecting cables

- Push-in terminals without LEDs
- Screw-type terminals without LEDs
- Push-in terminals with LEDs
- Screw-type terminals with LEDs
- Push-in terminals with LEDs and one isolating terminal per channel
- Screw-type terminals with LEDs and one isolating terminal per channel
- Push-in terminals with LEDs and fuse per channel
- Screw-type terminals with LEDs and fuse per channel

6ES7924-0CA20-0AC0
6ES7924-0CA20-0AA0

6ES7924-0CA20-0BC0
6ES7924-0CA20-0BA0
6ES7924-0CH20-0BC0

6ES7924-0CH20-0BA0

6ES7924-0CL20-0BC0

6ES7924-0CL20-0BA0

For 3-wire connection,
for 50-pin connecting cables

- Push-in terminals without LEDs
- Screw-type terminals without LEDs
- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-2CA20-0AC0
6ES7924-2CA20-0AA0

6ES7924-2CA20-0BC0
6ES7924-2CA20-0BA0

Connection module TPPro

Relay module for 8 outputs, relay as
normally open contact

- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0BD20-0BC0
6ES7924-0BD20-0BA0

Connection module TPRI

Relay module for 8 inputs
(110 V AC), relay as normally open
contact

- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0BG20-0BC0
6ES7924-0BG20-0BA0

Connection module TPRI

Relay module for 8 inputs
(230 V AC), relay as normally
open contact

- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0BE20-0BC0
6ES7924-0BE20-0BA0

Connection module TPOo

Optocoupler module for 8 outputs
(max. 24 V DC/4 A)

- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0BF20-0BC0
6ES7924-0BF20-0BA0

**Connection module for digital
output modules 2 A**

Connection module TP2

- Push-in terminals without LEDs
- Screw-type terminals without LEDs

6ES7924-0BB20-0AC0
6ES7924-0BB20-0AA0

**Connection module for analog
modules**

Connection module TPA

- Push-in terminals without LEDs
- Screw-type terminals without LEDs

6ES7924-0CC21-0AC0
6ES7924-0CC21-0AA0

Accessories**Shield plate for analog
connection module**

PU = 4 units (for connection of
15-pin connecting cable)

6ES7928-1AA20-4AA0

Shield connection clamp

For shield plate at SIMATIC end,
PU = 10 units

6ES7590-5BA00-0AA0

For shield plate at field end,
2 x 2 ... 6 mm

6ES7390-5AB00-0AA0

For shield plate at field end,
3 ... 8 mm

6ES7390-5BA00-0AA0

For shield plate at field end,
4 ... 13 mm

6ES7390-5CA00-0AA0

System cabling for SIMATIC S7-300 and ET 200M > Fully modular connection

Technical specifications connector modules

Technical data of front connector module

Rated operating voltage	24 V DC
Max. permissible operating voltage	60 V DC
Max. permissible continuous current • per connector pin	1 A
Max. permissible summation current	4 A/byte
Permissible ambient temperature	0 to + 60°C
Test voltage	0.5 kV, 50 Hz, 60 sec.
Air gaps and creepage distances	IEC 664 (1980), IEC 664 A (1981), in accordance with DIN VDE 0110 (01.89), overvoltage class II, pollution degree 2

Wiring rules for front connector modules

Front connector module SIMATIC TOP connect,
connection for potential infeed

	Spring connection	Screw connection
	Modules up to 4 connections	
Connectable cable cross-sections	• solid cables • flexible cables with/without wire end ferrule	
	No 0,25 to 1.5 mm ²	
Number of wires per connection	1 or a combination of 2 conductors up to 1.5 mm ² (total) in a common wire end ferrule	
Max. diameter of the cable insulation	3.1 mm	
Stripping length of the cables	• without insulating collar • with insulating collar	
	6 mm -	
Wire-end ferrules in acc. with DIN 46228	• without insulating collar • with insulating collar • with insulating collar 1.5 mm²	
	Form A; 5 to 7 mm long - 0.25 to 1.0 mm ² -	
Blade width of the screwdriver	3.5 mm (cylindrical shape)	
Tightening torque for connecting the cables	-	0.4 to 0.7 Nm

Front connector module SIMATIC TOP connect,
connection for potential infeed

	Spring connection	Screw connection
	Modules up to 8 connections	
Connectable cable cross-sections	• solid cables • flexible cables with/without wire end ferrule	
	No 0.25 to 0.75 mm ²	
Number of cables per connection	1 or a combination of 2 wires up to 0.75 mm ² (total) in a common wire end ferrule	
Max. diameter of the cable insulation	2.0 mm	
Stripping length of the cables	• without insulating collar • with insulating collar	
	6 mm -	
Wire-end ferrules in acc. with DIN 46228	• without insulating collar • with insulating collar • with insulating collar 1.5 mm²	
	Form A; 5 to 7 mm long - 0.25 to 1.0 mm ² -	
Blade width of the screwdriver	3.5 mm (cylindrical shape)	
Tightening torque for connecting the cables	-	0.4 to 0.7 Nm

Technical specifications connection cable

Technical specifications
of connecting cable from SIMATIC S7 to connection module

Operating voltage	60 V DC
Continuous current per signal conductor	1 A
Max. total current	4 A/byte
Operating temperature	0 to +60 °C
Outer diameter of pre-assembled round cable in mm unshielded/shielded (16-pole)	Approx. 6.5/7.0

SIMATIC S7-300 Advanced Controllers

I/O modules

Connection system

System cabling for SIMATIC S7-300 and ET 200M > Flexible connection > Front connector with single wires

Overview



Flexible connection enables fast, direct connection of the SIMATIC S7-300/ET 200M input/output modules to the individual elements in the control cabinet.

Attached single cores reduce the wiring outlay.

Core cross-sections of 0.5 mm² allow higher currents, too.

Technical specifications

Front connector with single cores for 16 channels	
Rated operating voltage	24 V DC
Permissible continuous current with simultaneous load of all wires, max.	1.5 A
Permissible ambient temperature	0 to 60 °C
Core type	H05V-K or with UL 1007/1569; CSA TR64
Number of single cores	20
Core cross-section	0.5 mm ² ; Cu
Bundle diameter in mm	approx. 15
Core color	Blue, RAL 5010
Designation of cores	Numbered from 1 to 20 (front connector contact = core number)
Assembly	Screw-type or crimp contacts
Front connector with single cores for 32 channels	
Rated operating voltage	24 V DC
Permissible continuous current with simultaneous load of all wires, max.	1.5 A
Permissible ambient temperature	0 to 60 °C
Core type	H05V-K or with UL 1007/1569; CSA TR64
Number of single cores	40
Core cross-section	0.5 mm ² ; Cu
Bundle diameter in mm	approx. 17
Core color	Blue, RAL 5010
Designation of cores	Numbered from 1 to 40 (front connector contact = core number)
Assembly	Screw-type or crimp contacts

Ordering data

Article No.

Front connector with single wires for 16-channel digital modules SIMATIC S7-300, 20 x 0.5 mm²

Core type H05V-K

Screw version

Packaging unit: 1 unit

Length:

- 2.5 m
- 3.2 m
- 5 m
- Custom lengths

6ES7922-3BC50-0AB0
6ES7922-3BD20-0AB0
6ES7922-3BF00-0AB0
On request

Packaging unit: 5 units

Length:

- 2.5 m
- 3.2 m
- 5.0 m

6ES7922-3BC50-5AB0
6ES7922-3BD20-5AB0
6ES7922-3BF00-5AB0

Crimp version

Packaging unit: 1 unit

Length:

- 2.5 m
- 3.2 m
- 5.0 m
- Custom lengths

6ES7922-3BC50-0AF0
6ES7922-3BD20-0AF0
6ES7922-3BF00-0AF0
On request

Core type UL/CSA-certified

Screw version

Packaging unit: 1 unit

Length:

- 3.2 m
- 5.0 m

6ES7922-3BD20-0UB0
6ES7922-3BF00-0UB0

Front connector with single wires for 32-channel digital modules SIMATIC S7-300, 40 x 0.5 mm²

Core type H05V-K

Screw version

Packaging unit: 1 unit

Length:

- 2.5 m
- 3.2 m
- 5.0 m
- Custom lengths

6ES7922-3BC50-0AC0
6ES7922-3BD20-0AC0
6ES7922-3BF00-0AC0
On request

Packaging unit: 5 units

Length:

- 2.5 m
- 3.2 m
- 5.0 m

6ES7922-3BC50-5AC0
6ES7922-3BD20-5AC0
6ES7922-3BF00-5AC0

Crimp version

Packaging unit: 1 unit

Length:

- 2.5 m
- 3.2 m
- 5.0 m
- Custom lengths

6ES7922-3BC50-0AG0
6ES7922-3BD20-0AG0
6ES7922-3BF00-0AG0
On request

Core type UL/CSA-certified

Screw version

Packaging unit: 1 unit

Length:

- 3.2 m
- 5.0 m

6ES7922-3BD20-0UC0
6ES7922-3BF00-0UC0

Design	Ordering data	Article No.
The front connector is available in two versions: <u>The 20-pin front connector comprises:</u> • 20 crimp contact connections for the wiring • Strain relief for the cables • Unlocking button for unlatching the front connector when replacing the module • Receptacle for coding element attachment; there are two coding elements with attachments on the module. The attachments latch into the front connector when inserted for the first time. <u>The 40-pin front connector comprises:</u> • 40 crimp contact connections for the wiring • Strain relief for the cables • Locking screw for fixing and detaching the front connector when the module is replaced • Receptacle for coding element attachment; there is one two coding element with attachment on the module. The attachment latches into the front connector when inserted for the first time.	Front connector 20-pin, crimp version <u>without</u> crimp contacts Packing unit 100 units Front connector 40-pin, crimp version <u>without</u> crimp contacts Packing unit 100 units Accessories Crimp contacts for front connectors Packing unit 250 units Crimping tool For crimping the crimp contacts	6ES7921-3AH00-1AA0 6ES7921-3AH20-1AA0 6XX3070 6XX3071
Integration <u>Use of the 20-pole front connector with</u> • 16-channel signal modules • Function modules • CPU 312 IFM <u>Use of the 40-pole front connector with</u> • 32-channel signal modules • Compact CPUs		

SIMATIC S7-300 Advanced Controllers

Power supplies

1-phase, 24 V DC (for S7-300 and ET 200M)

Overview



The design and functionality of the SIMATIC PS307 single-phase load power supply (system and load current supply) with automatic range switching of the input voltage are an optimal match to the SIMATIC S7-300 PLC. The supply to the CPU is quickly established by means of the connecting comb that is supplied with the system and load current supply. It is also possible to provide a 24 V supply to other S7-300 system components, input/output circuits of the input/output modules and, if necessary, the sensors and actuators. Comprehensive certifications such as UL and GL enable universal use (does not apply to outdoor use).

Ordering data

Article No.

PS307 load current supply, 2 A **6ES7307-1BA01-0AA0**

incl. connecting comb
Input: 120/230 V AC
Output: 24 V DC/2 A

SIMATIC S7-300 Outdoor, 2 A **6ES7305-1BA80-0AA0**

Stabilized power supply PS305
Input: 24 ... 110 V DC
Output: 24 V DC/2 A

PS307 load current supply, 5 A **6ES7307-1EA01-0AA0**

incl. connecting comb
Input: 120/230 V AC
Output: 24 V DC/5 A

SIMATIC S7-300 Outdoor, 5 A **6ES7307-1EA80-0AA0**

PS307 stabilized power supply
Input: 120/230 V AC
Output: 24 V DC/5 A

PS307 load current supply, 10 A **6ES7307-1KA02-0AA0**

Input: 120/230 V AC
Output: 24 V DC/10 A

Accessories

SIMATIC S7-300 mounting adapter **6EP1971-1BA00**

For snapping the new PS307 onto a 35 mm DIN rail (EN 60715)
Spare part

SIMATIC S7-300 mounting adapter **6ES7390-6BA00-0AA0**

For snapping the PS307 onto a 35 mm DIN rail

Technical specifications

Article number	6ES7307-1BA01-0AA0	6ES7305-1BA80-0AA0	6ES7307-1EA01-0AA0	6ES7307-1EA80-0AA0	6ES7307-1KA02-0AA0
Product	PS 307	PS 305 Outdoor	PS 307	PS 307 Outdoor	PS 307
Power supply, type	24 V/2 A	24 V/2 A	24 V/5 A	24 V/5 A	24 V/10 A
Input					
type of the power supply network	1-phase AC	DC voltage	1-phase AC	1-phase AC	1-phase AC
supply voltage at AC					
• initial value	Automatic range selection		Automatic range selection	Set by means of selector switch on the device	Automatic range selection
supply voltage					
• 1 at AC rated value	120 V		120 V	120 V	120 V
• 2 at AC rated value	230 V		230 V	230 V	230 V
• at DC		24 ... 110 V			
input voltage					
• 1 at AC	85 ... 132 V		85 ... 132 V	93 ... 132 V	85 ... 132 V
• 2 at AC	170 ... 264 V		170 ... 264 V	187 ... 264 V	170 ... 264 V
• at DC		16.8 ... 138 V			
design of input wide range input	No	Yes	No	No	No
overvoltage overload capability	2.3 × Vin rated, 1.3 ms	154 V; 0.1 s	2.3 × Vin rated, 1.3 ms	2.3 × Vin rated, 1.3 ms	2.3 × Vin rated, 1.3 ms
operating condition of the mains buffering	at Vin = 93/187 V	at Vin rated	at Vin = 93/187 V	at Vin = 93/187 V	at Vin = 93/187 V
buffering time for rated value of the output current in the event of power failure minimum	20 ms	10 ms	20 ms	20 ms	20 ms
operating condition of the mains buffering	at Vin = 93/187 V	at Vin rated	at Vin = 93/187 V	at Vin = 93/187 V	at Vin = 93/187 V
line frequency					
• 1 rated value	50 Hz		50 Hz	50 Hz	50 Hz
• 2 rated value	60 Hz		60 Hz	60 Hz	60 Hz
line frequency	47 ... 63 Hz		47 ... 63 Hz	47 ... 63 Hz	47 ... 63 Hz
input current					
• at rated input voltage 120 V	0.9 A		2.3 A	2.1 A	4.2 A
• at rated input voltage 230 V	0.5 A		1.2 A	1.2 A	1.9 A

SIMATIC S7-300 Advanced Controllers

Power supplies

1-phase, 24 V DC (for S7-300 and ET 200M)**Technical specifications**

Article number	6ES7307-1BA01-0AA0	6ES7305-1BA80-0AA0	6ES7307-1EA01-0AA0	6ES7307-1EA80-0AA0	6ES7307-1KA02-0AA0
Product	PS 307	PS 305 Outdoor	PS 307	PS 307 Outdoor	PS 307
Power supply, type	24 V/2 A	24 V/2 A	24 V/5 A	24 V/5 A	24 V/10 A
- at rated input voltage 24 V - at rated input voltage 110 V		2.4 A			
current limitation of inrush current at 25 °C maximum	22 A	0.6 A 20 A	20 A	45 A	55 A
duration of inrush current limiting at 25 °C					
• maximum	3 ms	10 ms	3 ms	3 ms	3 ms
I ² t value maximum	1 A ² ·s	5 A ² ·s	1.2 A ² ·s	1.8 A ² ·s	3.3 A ² ·s
fuse protection type	T 1.6 A/250 V (not accessible)	T 6.3 A/250 V (not accessible)	T 3,15 A/250 V (not accessible)	T 3,15 A/250 V (not accessible)	T 6.3 A/250 V (not accessible)
• in the feeder	Recommended miniature circuit breaker: 3 A characteristic C	Recommended miniature circuit breaker: from 10 A characteristic C, suitable for DC	Recommended miniature circuit breaker: from 6 A characteristic C	Recommended miniature circuit breaker: from 10 A characteristic C or from 6 A characteristic D	Recommended miniature circuit breaker: from 10 A characteristic C
Output					
voltage curve at output	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage
output voltage at DC rated value	24 V	24 V	24 V	24 V	24 V
output voltage					
• at output 1 at DC rated value	24 V	24 V	24 V	24 V	24 V
relative overall tolerance of the voltage	3 %	3 %	3 %	3 %	3 %
relative control precision of the output voltage					
• on slow fluctuation of input voltage	0.1 %	0.2 %	0.1 %	0.2 %	0.1 %
• on slow fluctuation of ohm loading	0.2 %	0.4 %	0.5 %	0.4 %	0.5 %
residual ripple					
• maximum	50 mV	150 mV	50 mV	150 mV	50 mV
• typical	5 mV	30 mV	10 mV	40 mV	15 mV
voltage peak					
• maximum	150 mV	240 mV	150 mV	240 mV	150 mV
• typical	20 mV	150 mV	20 mV	90 mV	60 mV
product function output voltage adjustable	No	No	No	No	No
type of output voltage setting	-	-	-	-	-
display version for normal operation	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK
behavior of the output voltage when switching on	No overshoot of V _{out} (soft start)	No overshoot of V _{out} (soft start)	No overshoot of V _{out} (soft start)	No overshoot of V _{out} (soft start)	No overshoot of V _{out} (soft start)
response delay maximum	2 s	3 s	2 s	3 s	2 s
voltage increase time of the output voltage					
• typical	10 ms	5 ms	10 ms	100 ms	10 ms
output current					
• rated value	2 A	2 A	5 A	5 A	10 A
• rated range	0 ... 2 A	0 ... 3 A; 3 A up to +60°C at V _{in} > 24 V	0 ... 5 A	0 ... 5 A	0 ... 10 A
supplied active power typical	48 W	48 W	120 W	120 W	240 W
short-term overload current					
• on short-circuiting during the start-up typical	9 A	9 A	20 A	20 A	38 A
• at short-circuit during operation typical	9 A	9 A	20 A	20 A	38 A
duration of overloading capability for excess current					
• on short-circuiting during the start-up	90 ms	270 ms	100 ms	180 ms	80 ms
• at short-circuit during operation	90 ms	270 ms	100 ms	80 ms	80 ms

SIMATIC S7-300 Advanced Controllers

Power supplies

1-phase, 24 V DC (for S7-300 and ET 200M)

Technical specifications

Article number	6ES7307-1BA01-0AA0	6ES7305-1BA80-0AA0	6ES7307-1EA01-0AA0	6ES7307-1EA80-0AA0	6ES7307-1KA02-0AA0
Product	PS 307	PS 305 Outdoor	PS 307	PS 307 Outdoor	PS 307
Power supply, type	24 V/2 A	24 V/2 A	24 V/5 A	24 V/5 A	24 V/10 A
product feature					
• bridging of equipment	Yes	Yes	Yes	No	Yes
number of parallel-switched equipment resources for increasing the power	2	2			
Efficiency					
efficiency in percent	84 %	75 %	87 %	84 %	90 %
power loss [W]					
• at rated output voltage for rated value of the output current typical	9 W	16 W	18 W	23 W	27 W
Closed-loop control					
relative control precision of the output voltage with rapid fluctuation of the input voltage by +/- 15% typical	0.1 %	0.3 %	0.1 %	0.3 %	0.1 %
relative control precision of the output voltage load step of resistive load 50/100/50 % typical	0.8 %	2.5 %	1 %	3 %	2 %
setting time					
• load step 50 to 100% typical	0.5 ms	2.5 ms	0.3 ms	0.2 ms	
• load step 100 to 50% typical	0.5 ms	2.5 ms	0.3 ms	0.2 ms	
setting time					
• maximum	1 ms	5 ms		5 ms	0.1 ms
Protection and monitoring					
design of the overvoltage protection	Additional control loop, shutdown at < 28.8 V, automatic restart	Additional control loop, shutdown at approx. 30 V, automatic restart	Additional control loop, shutdown at < 28.8 V, automatic restart	Additional control loop, shutdown at approx. 30 V, automatic restart	Additional control loop, shutdown at < 28.8 V, automatic restart
response value current limitation	2.2 ... 2.6 A	3.3 ... 3.9 A	5.5 ... 6.5 A	5.5 ... 6.5 A	11 ... 12 A
property of the output short-circuit proof	Yes	Yes	Yes	Yes	Yes
design of short-circuit protection	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart
enduring short circuit current RMS value					
• maximum	2 A	2 A	7 A	5 A	12 A
display version for overload and short circuit	-	-			-
Safety					
galvanic isolation between input and output	Yes	Yes	Yes	Yes	Yes
galvanic isolation	Safety extra-low output voltage Uout acc. to EN 60950-1 and EN 50178	Safety extra low output voltage Vout according to EN 60950-1 and EN 50178, creepage distances and clearances > 5 mm	Safety extra-low output voltage Uout acc. to EN 60950-1 and EN 50178	Safety extra low output voltage Vout according to EN 60950-1 and EN 50178, creepage distances and clearances > 5 mm	Safety extra-low output voltage Uout acc. to EN 60950-1 and EN 50178
operating resource protection class	Class I	Class I	Class I	Class I	Class I
leakage current					
• maximum	3.5 mA		3.5 mA	3.5 mA	3.5 mA
• typical	0.5 mA		0.5 mA	0.3 mA	0.6 mA
protection class IP	IP20	IP20	IP20	IP20	IP20
Approvals					
certificate of suitability					
• CE marking	Yes	Yes	Yes	Yes	Yes
• UL approval	Yes; cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289	Yes; UL-Listed (UL 508), File E143289; CSA (CSA C22.2 No. 142)	Yes; cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289	Yes; UL-Listed (UL 508), File E143289; CSA (CSA C22.2 No. 142)	Yes; cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289
• CSA approval	Yes; cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289	Yes; UL-Listed (UL 508), File E143289, CSA (CSA C22.2 No. 142)	Yes; cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289	Yes; UL-Listed (UL 508), File E143289, CSA (CSA C22.2 No. 142)	Yes; cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289
• cCSAus, Class 1, Division 2	No	No	No	No	No
• ATEX	Yes; ATEX (EX) II 3G Ex nA nC IIC T4 Gc	No	Yes; ATEX (EX) II 3G Ex nA nC IIC T3 Gc	No	Yes; ATEX (EX) II 3G Ex nA nC IIC T3 Gc

SIMATIC S7-300 Advanced Controllers

Power supplies

1-phase, 24 V DC (for S7-300 and ET 200M)

Technical specifications

Article number	6ES7307-1BA01-0AA0	6ES7305-1BA80-0AA0	6ES7307-1EA01-0AA0	6ES7307-1EA80-0AA0	6ES7307-1KA02-0AA0
Product	PS 307	PS 305 Outdoor	PS 307	PS 307 Outdoor	PS 307
Power supply, type	24 V/2 A	24 V/2 A	24 V/5 A	24 V/5 A	24 V/10 A
certificate of suitability					
• relating to ATEX	IECEX Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cULus (ANSI/ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T4, File E330455		IECEX Ex nA nC IIC T3 Gc; ATEX (EX) II 3G Ex nA nC IIC T3 Gc; cULus (ANSI/ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T4, File E330455		IECEX Ex nA nC IIC T3 Gc; ATEX (EX) II 3G Ex nA nC IIC T3 Gc; cULus (ANSI/ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T4, File E330455
• IECEX	Yes; IECEX Ex nA nC IIC T4 Gc	No	Yes; IECEX Ex nA nC IIC T3 Gc	No	Yes; IECEX Ex nA nC IIC T3 Gc
• NEC Class 2	No	No	No	No	No
• ULhazloc approval	Yes	No	Yes	No	Yes
• FM registration	Yes; Class I, Div. 2, Group ABCD, T4	No	Yes; Class I, Div. 2, Group ABCD, T4	No	Yes; Class I, Div. 2, Group ABCD, T4
type of certification CB-certificate	Yes	No	Yes	No	Yes
certificate of suitability					
• EAC approval	Yes	Yes	Yes	Yes	Yes
certificate of suitability shipbuilding approval	Yes	No	Yes	No	Yes
shipbuilding approval	In S7-300 system	-	In S7-300 system	-	In S7-300 system
Marine classification association					
• American Bureau of Shipping Europe Ltd. (ABS)	No	No	No	No	No
• French marine classification society (BV)	No	No	No	No	No
• DNV GL	No	No	No	No	No
• Lloyds Register of Shipping (LRS)	No	No	No	No	No
• Nippon Kaiji Kyokai (NK)	No	No	No	No	No
EMC					
standard					
• for emitted interference	EN 55022 Class B	EN 55011 Class A	EN 55022 Class B	EN 55011 Class A	EN 55022 Class B
• for mains harmonics limitation	not applicable	not applicable	EN 61000-3-2	-	EN 61000-3-2
• for interference immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Environmental conditions					
ambient temperature					
• during operation	0 ... 60 °C; with natural convection	-25 ... +70 °C; with natural convection	0 ... 60 °C; with natural convection	-25 ... +70 °C; with natural convection	0 ... 60 °C; with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
environmental category according to IEC 60721	Climate class 3K3, 5 ... 95% no condensation	Climate class 3K5, transient condensation permitted	Climate class 3K3, 5 ... 95% no condensation	Climate class 3K5, transient condensation permitted	Climate class 3K3, 5 ... 95% no condensation
Mechanics					
type of electrical connection	screw-type terminals	screw-type terminals	screw-type terminals	screw-type terminals	screw-type terminals
• at input	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm ² single-core/finely stranded	L+1, M1, PE: 1 screw terminal each for 0.5 ... 2.5 mm ² single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm ² single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm ² single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm ² single-core/finely stranded
• at output	L+, M: 2 screw terminals each for 0.5 ... 2.5 mm ²	L+, M: 3 screw terminals each for 0.5 ... 2.5 mm ²	L+, M: 3 screw terminals each for 0.5 ... 2.5 mm ²	L+, M: 3 screw terminals each for 0.5 ... 2.5 mm ²	L+, M: 4 screw terminals each for 0.5 ... 2.5 mm ²
• for auxiliary contacts	-	-	-	-	-
width of the enclosure	40 mm	80 mm	60 mm	80 mm	80 mm
height of the enclosure	125 mm	125 mm	125 mm	125 mm	125 mm

SIMATIC S7-300 Advanced Controllers

Power supplies

1-phase, 24 V DC (for S7-300 and ET 200M)

Technical specifications

Article number	6ES7307-1BA01-0AA0	6ES7305-1BA80-0AA0	6ES7307-1EA01-0AA0	6ES7307-1EA80-0AA0	6ES7307-1KA02-0AA0
Product	PS 307	PS 305 Outdoor	PS 307	PS 307 Outdoor	PS 307
Power supply, type	24 V/2 A	24 V/2 A	24 V/5 A	24 V/5 A	24 V/10 A
depth of the enclosure	120 mm	120 mm	120 mm	120 mm	120 mm
required spacing					
• top	40 mm	50 mm	40 mm	50 mm	40 mm
• bottom	40 mm	50 mm	40 mm	50 mm	40 mm
• left	0 mm	0 mm	0 mm	0 mm	0 mm
• right	0 mm	0 mm	0 mm	0 mm	0 mm
net weight	0.4 kg	0.57 kg	0.6 kg	0.57 kg	0.8 kg
product feature of the enclosure housing can be lined up	Yes	Yes	Yes	Yes	Yes
fastening method	Can be mounted onto S7 rail	Can be mounted onto S7 rail	Can be mounted onto S7 rail	Can be mounted onto S7 rail	Can be mounted onto S7 rail
mechanical accessories	Mounting adapter for standard mounting rail (6EP1971-1BA00)	Mounting adapter for standard mounting rail (6ES7390-6BA00-0AA0)	Mounting adapter for standard mounting rail (6EP1971-1BA00)	Mounting adapter for standard mounting rail (6ES7390-6BA00-0AA0)	Mounting adapter for standard mounting rail (6EP1971-1BA00)
MTBF at 40 °C	2 320 078 h	964 506 h	2 480 589 h	2 231 610 h	1 504 280 h
other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

SIMATIC S7-300 Advanced Controllers
SIPLUS power supplies

1-phase, 24 V DC (for S7-300 and ET200M)

Overview



The design and functionality of the SIPLUS PS 305 and PS 307 1-phase load power supplies (system and load current supply) with automatic range switchover of the input voltage are an optimal match for the SIMATIC S7-300 in design and functionality. By means of the connecting comb that is supplied with the system and load current supply, the supply to the CPU is quickly established. It is also possible to provide a 24 V supply to other S7-300 system components, input/output circuits of the input/output modules and, if necessary, the sensors and actuators. Comprehensive certifications, such as UL, ATEX or GL facilitate universal use (does not apply to outdoor use).

Note:

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

Ordering data	Article No.
SIPLUS power supplies	
<i>For industrial applications with extended ambient conditions</i>	
SIPLUS S7-300 PS 305 (Extended temperature range and medial exposure) Input: 24 ... 110 V DC Output: 24 V DC/2 A	6AG1305-1BA80-2AA0
SIPLUS S7-300 PS 307 5 A (Extended temperature range and medial exposure) Incl. connection bracket 120/230 V AC; 24 V DC Output current 5 A (dimensions 60 x 125 x 120)	6AG1307-1EA01-7AA0
SIPLUS S7-300 PS 307 10 A (Extended temperature range and medial exposure) Incl. connection bracket 120/230 V AC; 24 V DC Output current 10 A (dimensions 80 x 125 x 120)	6AG1307-1KA02-7AA0
<i>For rolling stock railway applications</i>	
SIPLUS S7-300 PS 305 (Extended temperature range and medial exposure) Input: 24 ... 110 V DC Output: 24 V DC/2 A	6AG1305-1BA80-2AA0
Accessories	
SIMATIC S7-300 mounting adapter For snapping the PS 307 onto a 35 mm DIN rail (EN 60715)	6EP1971-1BA00
Spare part SIMATIC S7-300 mounting adapter; for snapping the PS 307 onto 35 mm standard rails	6ES7390-6BA00-0AA0

SIMATIC S7-300 Advanced Controllers

SIPLUS power supplies

1-phase, 24 V DC (for S7-300 and ET200M)

Technical specifications

Article number	6AG1305-1BA80-2AA0	6AG1307-1EA01-7AA0	6AG1307-1KA02-7AA0
Based on	6ES7305-1BA80-0AA0	6ES7307-1EA01-0AA0	6ES7307-1KA02-0AA0
	SIPLUS S7-300 PS 305 2 A	SIPLUS S7-300 PS 307 5 A	SIPLUS S7-300 PS 307 10 A
Ambient conditions			
Ambient temperature during operation			
- min. - max.	-25 °C; = Tmin 70 °C; = Tmax; for use on railway vehicles according to EN 50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/UL hazardous use applies	-25 °C; = Tmin 70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	-25 °C; = Tmin 70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Altitude during operation relating to sea level			
- Installation altitude above sea level, max. - Ambient air temperature-barometric pressure-altitude	2 000 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); above 2 000 m max. 75 V DC	2 000 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); above 2 000 m max. 75 V DC	2 000 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); above 2 000 m max. 75 V DC
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)
Resistance			
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3 - to chemically active substances according to EN 60721-3-3 - to mechanically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *	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 land craft, rail vehicles and special-purpose vehicles			
- to biologically active substances according to EN 60721-3-5 - to chemically active substances according to EN 60721-3-5 - to mechanically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); * Yes; Class 5S3 incl. sand, dust; *		
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6 - to chemically active substances according to EN 60721-3-6 - to mechanically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6B2 mold 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			
- 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)	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark			
Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

SIMATIC S7-300 Advanced Controllers

Interface modules

IM 360/361/365 interface modules

Overview



- For connection of the SIMATIC S7-300 rack in multi-tier configurations
- IM 365:
For configuring central controllers and max. 1 expansion unit. Limited use of modules in the expansion unit (e.g. no CPs and FMs)
- IM 360/IM 361:
For configuring central controllers and max. 3 expansion units. Unlimited selection of modules in the expansion unit

Ordering data

Article No.

IM 360 interface module

For expanding the S7-300 with max. 3 EUs; can be plugged into the CC

6ES7360-3AA01-0AA0

IM 361 interface module

For expanding the S7-300 with max. 3 EUs; can be plugged into the EU

6ES7361-3CA01-0AA0

Connecting cable

Between IM 360 and IM 361 or IM 361 and IM 361

1 m

6ES7368-3BB01-0AA0

2.5 m

6ES7368-3BC51-0AA0

5 m

6ES7368-3BF01-0AA0

10 m

6ES7368-3CB01-0AA0

IM 365 interface module

For expanding the S7-300 with max. 1 EU; 2 modules with permanent connecting cable (1 m)

6ES7365-0BA01-0AA0

SIMATIC Manual Collection

Electronic manuals on DVD, multilingual:
all manuals for
S7-1200/1500/200/300/400,
LOGO!, SIMATIC DP, PC, PG,
STEP 7, Engineering software,
runtime SW, SIMATIC HMI,
SIMATIC NET, SIMATIC IDENT

6ES7998-8XC01-8YE0

SIMATIC Manual Collection update service for 1 year

Current "Manual Collection" DVD and the three subsequent updates

6ES7998-8XC01-8YE2

Technical specifications

Article number	6ES7360-3AA01-0AA0	6ES7361-3CA01-0AA0	6ES7365-0BA01-0AA0
	IM 360 interf. mod. in CC, with K-Bus	IM 361 interf. mod. in EU, with K-Bus	IM 365 interf. mod., w/o K-Bus
Supply voltage			
Rated value (DC)			
• 24 V DC		Yes	
Input current			
from supply voltage L+, max.		500 mA	
from backplane bus 5 V DC, max.	350 mA		100 mA
Power loss			
Power loss, typ.	2 W	5 W	0.5 W
Hardware configuration			
Number of interfaces per CPU, max.	1	3	1; 1 pair
Dimensions			
Width	40 mm	80 mm	40 mm
Height	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm
Weights			
Weight, approx.	225 g	505 g	580 g

SIMATIC S7-300 Advanced Controllers

SIPLUS interface modules

SIPLUS S7-300 IM 365

Overview



- SIPLUS IM 365:
For configuration of 1 central controller and max. 1 expansion unit

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

SIPLUS S7-300 IM 365 interface module

For expansion of S7-300 with max. 1 EU; 2 modules with permanent connecting cable (1 m)

Extended temperature range and exposure to media

Article No.

6AG1365-0BA01-2AA0

Technical specifications

Article number	6AG1365-0BA01-2AA0
Based on	6ES7365-0BA01-0AA0 SIPLUS S7-300 IM365
Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	60 °C; = Tmax
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
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)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	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
- 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	6AG1365-0BA01-2AA0
Based on	6ES7365-0BA01-0AA0 SIPLUS S7-300 IM365
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 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 DIN rail



- The mechanical rack for SIMATIC S7-300
- For accommodating the modules
- Can be attached to walls

Ordering data

Article No.

DIN rail

160 mm
482 mm
530 mm
830 mm
2000 mm

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

Overview labelling sheets

Labeling sheets

- Film sheets for the application-specific labeling of SIMATIC S7-300 I/O modules using standard laser printers
- Plain color films, tear-resistant, dirt-repellent
- Simple handling:
 - perforated labeling sheets in DIN A4 format for easy separation of the labeling strips.
 - the separated strips can be attached directly onto the I/O modules.
- Different colors to distinguish between different module types or preferred applications:
The labeling sheets are available in the following colors: petrol, light beige, red, and yellow. Yellow is reserved for fail-safe systems.

Label cover

- Petrol-colored film
- For sealing and fixing of custom labeling strips on normal paper
- Accessories, 10 units

Ordering data

Article No.

Labeling sheets

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

For modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units

Petrol

6ES7392-2AX10-0AA0

Light beige

6ES7392-2BX10-0AA0

Yellow

6ES7392-2CX10-0AA0

Red

6ES7392-2DX10-0AA0

Technical specifications

Labeling sheets for S7-300

Dimensions	DIN A4
Labeling strips per sheet, pre-perforated	10
Weight, approx.	0.1 kg