SIMATIC S7-300 advanced controller

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

www.siemens.com/simatic/printmaterial

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
- Powerful thanks to a range of integrated functions

S7-300F

- Failsafe automation system for plants with increased safety requirements for production technology
- Based on S7-300
- Additional ET 200S and ET 200M distributed I/O stations 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-relevant applications

Technical specifications

General technical data SIMATIC S7-300	
Degree of protection	IP20 according to IEC 60 529
Ambient temperature	
• For horizontal installation	0 to 60 °C
• For vertical installation	0 to 40 °C
Relative humidity	10 to 95%, without condensation, 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	500 V DC test voltage
• < 150 V	2500 V DC test voltage
• < 250 V	4000 V DC test voltage
Electromagnetic compatibility	Requirements of the EMC directive; interference immunity according to IEC 61000-6-2
• Pulse-shaped disturbance variables	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,
• Sinusoidal disturbance variables	Test according to: HF irradiation according to IEC 61000-4-3, HF decoupling according to IEC 61000-4-6
• Emission of radio interference	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 Hz ≤ f ≤ 58 Hz • Continuous: 0.0375 mm amplitude • Occasionally 0.75 mm amplitude
	Frequency range 58 Hz ≤ f ≤ 150 Hz • Continuous: 0.5 g constant acceleration • Occasionally 1 g constant acceleration
	Testing according to IEC 60068-2-6 Tested with:
	5 Hz ≤ f ≤ 9 Hz, constant amplitude 3.5 mm; 9 Hz ≤ f ≤ 150 Hz, constant acceleration 1 g;
	Duration of oscillation: 10 frequency passes per axis in each direction of the 3 mutually perpendicular axes
• Shock	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 ± direction in each of the 3 mutually vertical axes

Technical specifications (continued)

General technical data 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 ambient conditions	
• Relative to ambient temperature-atmospheric pressure-installation 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)
Relative humidity	
• With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
• against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
• against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
• against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

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 the CPU.

Overview CPU 314

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

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 power 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 315-2 PN/DP

- The CPU with mid-range program memory and quantity frameworks
- High processing power 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 intelligent PROFINET device under a SIMATIC or third-party PROFINET I/O 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 power 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.

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 power in binary and floating-point arithmetic
- PROFINET interface with 2-port switch
- PROFINET I/O Controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as intelligent PROFINET device under a SIMATIC or third-party PROFINET I/O 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 operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET I/O 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 the CPU.

Technical specifications

Article number	**6ES7312-1AE14-0AB0**	**6ES7314-1AG14-0AB0**	**6ES7315-2AH14-0AB0**	**6ES7315-2EH14-0AB0**
	CPU312, 32KB	CPU314, 128 KB	CPU315-2DP, 256 KB	CPU315-2 PN/DP, 384 KB
Product type designation				
General information				
Engineering with				
• Programming package	STEP 7 V5.5 + SP1 or higher or STEP7 V5.2 + SP1 or higher with HSP 218	STEP 7 V5.5 + SP1 or higher or STEP7 V5.2 + SP1 or higher with HSP 218	STEP 7 V5.5 + SP1 or higher or STEP7 V5.2 + SP1 or higher with HSP 218	STEP7 V 5.5 or higher
Supply voltage				
Rated value (DC)				
• 24 V DC	Yes	Yes	Yes	Yes
Power losses				
Power loss, typ.	4 W	4 W	4.5 W	4.65 W
Memory				
Work memory				
• Integrated	32 kbyte	128 kbyte	256 kbyte	384 kbyte
• Size of retentive memory for retentive data blocks	32 kbyte	64 kbyte	128 kbyte	128 kbyte
Load memory				
• pluggable (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
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				
• Number, 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 clock)		Yes	Yes	Yes
Operating hours counter				
• Number	1	1	1	1

Technical specifications (continued)

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
1st interface				
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485	RS 485
Functionality				
• MPI	Yes	Yes	Yes	Yes
• DP master	No	No	No	Yes
• DP slave	No	No	No	Yes
• Point-to-point connection	No	No	No	No
DP master				
• Number of DP slaves, max.				124
2nd interface				
Interface type			Integrated RS 485 interface	PROFINET
Physics			RS 485	Ethernet RJ45
Number of ports				2
Functionality				
• MPI			No	No
• DP master			Yes	No
• DP slave			Yes	No
• PROFINET IO Controller				Yes; Also simultaneously with IO-Device functionality
• PROFINET IO Device				Yes; Also simultaneously with IO Controller functionality
• PROFINET CBA				Yes
DP master				
• Number of DP slaves, max.			124; Per station	
PROFINET IO Controller				
• Max. number of connectable IO devices for RT				128
• Number of IO devices with IRT and the option "high flexibility"				128
• Number of IO Devices with IRT and the option "high performance", max.				64
Isochronous mode				
Isochronous operation (application synchronized up to terminal)			Yes	Yes; Via PROFIBUS DP or PROFINET interface
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

Technical specifications (continued)

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
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
Number of connections				
• overall	6	12	16	16
Ambient conditions				
Ambient temperature in 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

Technical specifications (continued)

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
Product type designation			
General information			
Engineering with			
• Programming package	STEP7 as of V5.5 + SP1 or STEP 7 V5.2 + SP1 or higher with HSP 202	STEP7 V 5.5 or higher	STEP7 V 5.5 or higher
Supply voltage			
Rated value (DC)			
• 24 V DC	Yes	Yes	Yes
Power losses			
Power loss, typ.	4.5 W	4.65 W	14 W
Memory			
Work memory			
• Integrated	1 024 kbyte	1 024 kbyte	2 048 kbyte
• Size of retentive memory for retentive data blocks	256 kbyte	256 kbyte	700 kbyte
Load memory			
• pluggable (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			
• Number, 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 clock)	Yes	Yes	Yes
Operating hours counter			
• Number	4	4	4
1st interface			
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485
Functionality			
• MPI	Yes	Yes	Yes
• DP master	Yes	Yes	Yes
• 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
DP master			
• Number of DP slaves, max.	124	124	124

Technical specifications (continued)

Article number	**6ES7317-2AK14-0AB0**	**6ES7317-2EK14-0AB0**	**6ES7318-3EL01-0AB0**
	CPU317-2 DP, 1 MB	CPU317-2 PN/DP, 1 MB	CPU319-3 PN/DP, 2 MB
2nd interface			
Interface type	Integrated RS 485 interface	PROFINET	Integrated RS 485 interface
Physics	RS 485	Ethernet RJ45	RS 485
Number of ports		2	
Functionality			
• MPI	No	No	No
• DP master	Yes	No	Yes
• DP slave	Yes; A DP slave at both interfaces simultaneously is not possible	No	Yes; A DP slave at both interfaces simultaneously is not possible
• PROFINET IO Controller		Yes; Also simultaneously with IO-Device functionality	No
• PROFINET IO Device		Yes; Also simultaneously with IO Controller functionality	No
• PROFINET CBA		Yes	No
DP master			
• Number of DP slaves, max.	124		124
PROFINET IO Controller			
• Max. number of connectable IO devices for RT		128	
• Number of IO devices with IRT and the option "high flexibility"		128	
• Number of IO Devices with IRT and the option "high performance", max.		64	
3rd interface			
Interface type			PROFINET
Physics			Ethernet RJ45
Number of ports			2
Functionality			
• MPI			No
• DP master			No
• DP slave			No
• PROFINET IO Controller			Yes; Also simultaneously with I-Device functionality
• PROFINET IO Device			Yes; Also simultaneously with IO Controller functionality
• PROFINET CBA			Yes
PROFINET IO Controller			
• Max. number of connectable IO devices for RT			256
• Number of IO devices with IRT and the option "high flexibility"			256
• Number of IO Devices with IRT and the option "high performance", max.			64
Isochronous mode			
Isochronous operation (application synchronized up to terminal)		Yes; Via PROFIBUS DP or PROFINET interface	Yes; Via 2nd PROFIBUS DP or PROFINET interface

Technical specifications (continued)

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
Open IE communication			
• TCP/IP		Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.		16	32
• ISO-on-TCP (RFC1006)		Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.		16	32
• UDP		Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.		16	32
Web server			
• supported		Yes	Yes
Number of connections			
• overall	32	32	32
Ambient conditions			
Ambient temperature in 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

Ordering data	Article No.
CPU 312 32 KB main memory, 24 V DC power supply, MPI; MMC required	**6ES7312-1AE14-0AB0**
CPU 314 128 KB main memory, 24 V DC power supply, MPI; MMC required	**6ES7314-1AG14-0AB0**
CPU 315-2 DP 256 KB main memory, 24 V DC power supply, MPI, PROFIBUS DP master/slave interface, MMC required	**6ES7315-2AH14-0AB0**
CPU 315-2 PN/DP 384 KB main memory, 24 V DC power supply, combined MPI/PROFIBUS DP master/slave interface, Ethernet/PROFINET interface with 2-port switch; MMC required	**6ES7315-2EH14-0AB0**
CPU 317-2 DP Main memory 1 MB, power supply 24 V DC, MPI, PROFIBUS DP master/slave interface, MMC required	**6ES7317-2AK14-0AB0**
CPU 317-2 PN/DP 1 MB main memory, 24 V DC power supply, combined MPI/PROFIBUS DP master/slave interface, Ethernet/PROFINET interface with 2-port switch; MMC required	**6ES7317-2EK14-0AB0**
CPU 319-3 PN/DP 1.4 MB main memory, 24 V DC power supply, 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	**6ES7953-8LF30-0AA0**
128 KB	**6ES7953-8LG30-0AA0**
512 KB	**6ES7953-8LJ30-0AA0**
2 MB	**6ES7953-8LL31-0AA0**
4 MB	**6ES7953-8LM31-0AA0**
8 MB	**6ES7953-8LP31-0AA0**
MPI cable for connection of SIMATIC S7 and PG via MPI; 5 m in length	**6ES7901-0BF00-0AA0**
Slot number plates	**6ES7912-0AA00-0AA0**

	Article No.
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	**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 PG/PC or Notebook to PROFIBUS or MPI; USB cable included in scope of delivery	**6GK1571-0BA00-0AA0**
PROFIBUS bus components	
PROFIBUS DP bus connector RS 485	
• with 90° cable outlet, max. transfer rate 12 Mbit/s	
- Without PG interface	**6ES7972-0BA12-0XA0**
- With PG interface	**6ES7972-0BB12-0XA0**
• with 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbit/s	
- Without PG interface, 1 unit	**6ES7972-0BA52-0XA0**
- Without PG interface, 100 units	**6ES7972-0BA52-0XB0**
- With PG interface, 1 unit	**6ES7972-0BB52-0XA0**
- With PG interface, 100 units	**6ES7972-0BB52-0XB0**
• With axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS	**6GK1500-0EA02**
PROFIBUS FastConnect bus cable Standard type with special design for quick mounting, 2-core, shielded, sold by the meter, max. delivery unit 1000 m, minimum ordering quantity 20 m	**6XV1830-0EH10**
RS 485 repeater for PROFIBUS Transmission rate up to 12 Mbit/s; 24 V DC; IP20 enclosure	**6ES7972-0AA02-0XA0**

Ordering data	Article No.
PROFINET bus components	
IE FC TP Standard Cable GP 2x2 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ 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 X204-2 Industrial Ethernet Switch Industrial Ethernet switches with integral SNMP access, Web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbit/s RJ45 ports and two FO ports	**6GK5204-2BB10-2AA3**
Compact Switch Module CSM 377 Unmanaged switch for connecting a SIMATIC S7-300, ET200 M and up to three other stations to Industrial Ethernet with 10/100 Mbit/s; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module incl. electronic manual on CD-ROM	**6GK7377-1AA00-0AA0**

	Article No.
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	**6GK1901-1BB30-0AA0**
10 units	**6GK1901-1BB30-0AB0**
50 units	**6GK1901-1BB30-0AE0**
IE FC RJ45 Plug 180	
180° cable outlet	
1 unit	**6GK1901-1BB10-2AA0**
10 units	**6GK1901-1BB10-2AB0**
50 units	**6GK1901-1BB10-2AE0**
PROFIBUS/PROFINET bus components For establishing MPI/PROFIBUS/ PROFINET communication	See catalogs IK PI, CA 01

Overview SIPLUS CPU 314

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

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.

Technical specifications

Article number	**6AG1314-1AG14-2AY0**	**6AG1314-1AG14-7AB0**
Based on	**6ES7314-1AG14-0AB0**	**6ES7314-1AG14-0AB0**
	SIPLUS CPU314 EN50155	SIPLUS S7-300 CPU314
Ambient conditions		
Ambient temperature in operation		
• Min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Extended ambient conditions		

• Relative to ambient temperature-atmospheric pressure-installation 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)
		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)

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		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

SIPLUS standard CPUs

Ordering data	Article No.
SIPLUS S7-300 CPU 314	
CPU, work memory 128 KB, power supply 24 V DC, MPI; MMC required	
Extended temperature range and exposure to media	**6AG1314-1AG14-7AB0**
Conformity to EN 50155	**6AG1314-1AG14-2AY0**

Accessories	Article No.
SIPLUS Upmiter upstream device	**6AG1305-1AA00-2AA0**
for reliable operation when connected to the battery of combustion engines	
Output current 4 A	
SIPLUS RS 485 repeater for PROFIBUS	**6AG1972-0AA02-7XA0**
Transfer rate up to max. 12 Mbit/s, 24 V DC, enclosure IP20	
for temperature range -25 °C to +70 °C and use when exposed to media (e.g. sulfur chloride atmosphere)	
RS 485 bus connector with 90° cable outlet	
Max. transfer rate 12 Mbit/s	
Extended temperature range and exposure to media	
without PG interface	**6AG1972-0BA12-2XA0**
with PG interface	**6AG1972-0BB12-2XA0**
RS 485 bus connector with axial cable outlet	**6AG1500-0EA02-2AA0**
for SIPLUS OP, for connection to PPI, MPI, PROFIBUS	
Additional accessories	See SIMATIC S7-300 CPU 314, page 5/13

Overview SIPLUS 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

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.

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Technical specifications

Article number	**6AG1315-2AH14-2AY0**	**6AG1315-2AH14-7AB0**
Based on	**6ES7315-2AH14-0AB0**	**6ES7315-2AH14-0AB0**
	SIPLUS CPU 315-2DP EN50155	SIPLUS S7-300 CPU 315-2DP
Ambient conditions		
Ambient temperature in operation		
• Min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Extended ambient conditions		

• Relative to ambient temperature-atmospheric pressure-installation 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)
		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)

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		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation in corrosive atmospheres!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

SIPLUS standard CPUs

Ordering data	Article No.
SIPLUS S7-300 CPU 315-2 DP	
CPU, work memory 256 KB, power supply 24 V DC, MPI, PROFIBUS DP master/slave interface; MMC required	
Extended temperature range and exposure to media	**6AG1315-2AH14-7AB0**
Conforms to EN 50155	**6AG1315-2AH14-2AY0**

	Article No.
Accessories	
SIPLUS Upmiter upstream device	**6AG1305-1AA00-2AA0**
for reliable operation when connected to the battery of combustion engines	
Output current 4 A	
SIPLUS RS 485 repeater for PROFIBUS	**6AG1972-0AA02-7XA0**
Transfer rate up to max. 12 Mbit/s, 24 V DC, enclosure IP20	
for temperature range -25 °C to +70 °C and use when exposed to media (e.g. sulfur chloride atmosphere)	
RS 485 bus connector with 90° cable outlet	
Max. transfer rate 12 Mbit/s	
Extended temperature range and exposure to media	
without PG interface	**6AG1972-0BA12-2XA0**
with PG interface	**6AG1972-0BB12-2XA0**
RS 485 bus connector with axial cable outlet	**6AG1500-0EA02-2AA0**
for SIPLUS OP, for connection to PPI, MPI, PROFIBUS	
Additional accessories	See SIMATIC S7-300 CPU 315-2 DP, page 5/13

Overview SIPLUS 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.

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Technical specifications

Article number	**6AG1315-2EH14-2AY0**	**6AG1315-2EH14-7AB0**
Based on	**6ES7315-2EH14-0AB0**	**6ES7315-2EH14-0AB0**
	SIPLUS S7-300 CPU315-2PN/DP EN 50155	SIPLUS S7-300 CPU315-2PN/DP
Ambient conditions		
Ambient temperature in operation		
• Min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Extended ambient conditions		

• Relative to ambient temperature-atmospheric pressure-installation 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)
		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)

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		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation in corrosive atmospheres!	
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	

SIPLUS standard CPUs

Ordering data	Article No.
SIPLUS S7-300 CPU 315-2 PN/DP	
CPU, main memory 384 KB, power supply 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 media	**6AG1315-2EH14-7AB0**
Conforms to EN 50155	**6AG1315-2EH14-2AY0**

	Article No.
Accessories	
SIPLUS Upmiter upstream device for reliable operation when connected to the battery of combustion engines Output current 4 A	**6AG1305-1AA00-2AA0**
SIPLUS RS 485 repeater for PROFIBUS Transfer rate up to max. 12 Mbit/s, 24 V DC, enclosure IP20 for temperature range -25 °C to +70 °C and use when exposed to media (e.g. sulfur chloride atmosphere)	**6AG1972-0AA02-7XA0**
RS 485 bus connector with 90° cable outlet max. transfer rate 12 Mbit/s Extended temperature range and exposure to media	
without PG interface	**6AG1972-0BA12-2XA0**
with PG interface	**6AG1972-0BB12-2XA0**
RS 485 bus connector with axial cable outlet for SIPLUS OP, for connection to PPI, MPI, PROFIBUS	**6AG1500-0EA02-2AA0**
SIPLUS NET SCALANCE X-200 Industrial Ethernet switches Industrial Ethernet switches with integral SNMP access, online diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager (except: SCALANCE X208PRO); incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM • with electrical and optical ports for glass multimode FOC up to 3 km • Extended temperature range and exposure to media - SIPLUS NET SCALANCE X204-2 with four 10/100 Mbit/s RJ45 ports and two fiber-optic ports	**6AG1204-2BB10-4AA3**
Additional accessories	See SIMATIC S7-300 CPU 315-2 PN/DP, page 5/13

Overview SIPLUS 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 operating 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.

Technical specifications

Article number	**6AG1317-2EK14-2AY0**	**6AG1317-2EK14-7AB0**
Based on	**6ES7317-2EK14-0AB0**	**6ES7317-2EK14-0AB0**
	SIPLUS S7-300 CPU317-2PN/DP EN50155	SIPLUS S7-300 CPU317-2PN/DP
Ambient conditions		
Ambient temperature in operation		
• Min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C
Extended ambient conditions		

• Relative to ambient temperature-atmospheric pressure-installation 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)
		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)

Relative humidity		
- With condensation, max.	100 %; Relative humidity, incl. condensation / frost permitted (no commissioning under condensation conditions)	100 %; Relative humidity, incl. condensation / frost permitted (no commissioning under condensation conditions)
Resistance		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation in corrosive atmospheres!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

SIPLUS standard CPUs

Ordering data	Article No.
SIPLUS S7-300 CPU 317-2 PN/DP	
CPU, main memory 1 MB, power supply 24 V DC, combined MPI/PROFIBUS DP master/slave interface, Ethernet/PROFINET interface MMC required	
Extended temperature range and exposure to media	**6AG1317-2EK14-7AB0**
Conforms to EN 50155	**6AG1317-2EK14-2AY0**

	Article No.
Accessories	
SIPLUS Upmiter upstream device for reliable operation when connected to the battery of combustion engines Output current 4 A	**6AG1305-1AA00-2AA0**
SIPLUS RS 485 repeater for PROFIBUS Transfer rate up to max. 12 Mbit/s, 24 V DC, enclosure IP20 for temperature range -25 °C to +70 °C and use when exposed to media (e.g. sulfur chloride atmosphere)	**6AG1972-0AA02-7XA0**
RS 485 bus connector with 90° cable outlet max. transfer rate 12 Mbit/s Extended temperature range and exposure to media	
without PG interface	**6AG1972-0BA12-2XA0**
with PG interface	**6AG1972-0BB12-2XA0**
RS 485 bus connector with axial cable outlet for SIPLUS OP, for connection to PPI, MPI, PROFIBUS	**6AG1500-0EA02-2AA0**
SIPLUS NET SCALANCE X-200 Industrial Ethernet switches Industrial Ethernet switches with integral SNMP access, online diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager (except: SCALANCE X208PRO); incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM • with electrical and optical ports for glass multimode FOC up to 3 km • Extended temperature range and exposure to media - SIPLUS NET SCALANCE X204-2 with four 10/100 Mbit/s RJ45 ports and two fiber-optic ports	**6AG1204-2BB10-4AA3**
Additional accessories	See SIMATIC S7-300 CPU 317-2 PN/DP, page 5/13

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 the CPU.

Overview CPU 313C

- The compact CPU with integral 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 the 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 the CPU.

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 the CPU.

Overview CPU 314C-2 DP

- The compact CPU with integral 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 the CPU.

Overview CPU 314C-2 PN/DP

- The compact CPU with integral 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 intelligent PROFINET device under a SIMATIC or third-party PROFINET I/O 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.

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
Product type designation				
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	STEP7 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 DC	Yes	Yes	Yes	Yes
Power losses				
Power loss, typ.	8 W	12 W	9 W	9 W
Memory				
Work memory				
• Integrated	64 kbyte	128 kbyte	128 kbyte	128 kbyte
• Size of retentive memory for retentive data blocks	64 kbyte	64 kbyte	64 kbyte	64 kbyte
Load memory				
• pluggable (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				
• Number, 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 clock)		Yes	Yes	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

Technical specifications (continued)

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 inputs				
Integrated channels (AI)	0	5; 4 x current/voltage, 1 x 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		
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		
1st interface				
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485	RS 485
Functionality				
• MPI	Yes	Yes	Yes	Yes
• DP master	No	No	No	No
• DP slave	No	No	No	No
• Point-to-point connection	No	No	No	No
2nd interface				
Interface type			Integrated RS 422/485 interface	Integrated RS 485 interface
Physics			RS 422/RS 485 (X.27)	RS 485
Functionality				
• MPI			No	No
• DP master			No	Yes
• DP slave			No	Yes
• PROFINET IO Controller			No	No
• PROFINET IO Device			No	No
• PROFINET CBA			No	No
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

Technical specifications (continued)

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
Integrated Functions				
Number of counters	2; See "Technological Functions" manual	3; See "Technological Functions" manual	3; See "Technological Functions" manual	3; See "Technological Functions" manual
Counter frequency (counter) 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
Ambient conditions				
Ambient temperature in 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	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

Technical specifications (continued)

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
Product type designation			
General information			
Engineering with			
• Programming package	STEP7 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	STEP7 V5.5 or higher with HSP191
Supply voltage			
Rated value (DC)			
• 24 V DC	Yes	Yes	Yes
Power losses			
Power loss, typ.	13 W	13 W	14 W
Memory			
Work memory			
• Integrated	192 kbyte	192 kbyte	192 kbyte
• Size of retentive memory for retentive data blocks	64 kbyte	64 kbyte	64 kbyte
Load memory			
• pluggable (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
Data areas and their retentivity			
Flag			
• Number, 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 clock)	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

Technical specifications (continued)

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
Analog inputs			
Integrated channels (AI)	5; 4 x current/voltage, 1 x resistance	5; 4 x current/voltage, 1 x resistance	5; 4 x current/voltage, 1 x resistance
Input ranges			
• Voltage	Yes; ±10 V / 100 kΩ; 0 V to 10 V / 100 kΩ	Yes; ±10 V / 100 kΩ; 0 V to 10 V / 100 kΩ	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	Yes; ±20 mA / 100 Ω; 0 mA to 20 mA / 100 Ω; 4 mA to 20 mA / 100 Ω	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	Yes; Pt 100 / 10 MΩ	Yes; Pt 100 / 10 MΩ
• Resistance	Yes; 0 Ω to 600 Ω / 10 MΩ	Yes; 0 Ω to 600 Ω / 10 MΩ	Yes; 0 Ω to 600 Ω / 10 MΩ
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
1st interface			
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485
Functionality			
• MPI	Yes	Yes	Yes
• DP master	No	No	Yes
• DP slave	No	No	Yes
• Point-to-point connection	No	No	No
DP master			
• Number of DP slaves, max.			124
2nd interface			
Interface type	Integrated RS 422/ 485 interface	Integrated RS 485 interface	PROFINET
Physics	RS 422/RS 485 (X.27)	RS 485	Ethernet RJ45
Number of ports			2
Functionality			
• MPI	No	No	No
• DP master	No	Yes	No
• DP slave	No	Yes	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
DP master			
• Number of DP slaves, max.		124	
PROFINET IO Controller			
• Max. number of connectable IO devices for RT			128
• Number of IO devices with IRT and the option "high flexibility"			128
• Number of IO Devices with IRT and the option "high performance", max.			64
Isochronous mode			
Isochronous operation (application synchronized up to terminal)			Yes; For PROFINET only
Communication functions			
PG/OP communication	Yes	Yes	Yes
Data record routing	No	Yes	Yes
Global data communication			
• supported	Yes	Yes	Yes

Technical specifications (continued)

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
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
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
Number of connections			
• overall	12	12	12
Integrated Functions			
Number of counters	4; See "Technological Functions" manual	4; See "Technological Functions" manual	4; See "Technological Functions" manual
Counter frequency (counter) 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 in 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

Ordering data

	Article No.
CPU 312C Compact CPU, 64 KB main memory, 24 V DC power supply, 10 DI/6 DO integrated, integrated functions, MPI; including slot number labels; MMC required	**6ES7312-5BF04-0AB0**
CPU 313C Compact CPU, 128 KB main memory, 24 V DC power supply, 24 DI/16 DO, 4 AI/2 AO integrated, integrated functions, MPI; MMC required	**6ES7313-5BG04-0AB0**
CPU 313C-2 PtP Compact CPU, 128 KB, 24 V DC power supply, 16 DI/16 DO integrated, integrated functions, MPI, RS 422/485 interface; MMC required	**6ES7313-6BG04-0AB0**
CPU 313C-2 DP Compact CPU, 128 KB main memory, 24 V DC power supply, 16 DI/16 DO integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required	**6ES7313-6CG04-0AB0**
CPU 314C-2 PtP Compact CPU, 192 KB main memory, 24 V DC power supply, 24DI/16DO/4AI/2AO integrated, integrated functions, MPI, RS 422/485 interface; MMC required	**6ES7314-6BH04-0AB0**
CPU 314C-2 DP Compact CPU, 192 KB main memory, 24 V DC power supply, 24DI/16DO/4AI/2AO integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required	**6ES7314-6CH04-0AB0**
CPU 314C-2 PN/DP Compact CPU, 192 KB main memory, 24 V DC power supply, 24 DI/16 DO/4 AI/2 AO integrated, integrated functions, MPI; PROFIBUS DP master/slave interface; PROFINET IO Controller/I-Device interface, MMC is required	**6ES7314-6EH04-0AB0**
SIMATIC Micro Memory Card	
64 KB	**6ES7953-8LF30-0AA0**
128 KB	**6ES7953-8LG30-0AA0**
512 KB	**6ES7953-8LJ30-0AA0**
2 MB	**6ES7953-8LL31-0AA0**
4 MB	**6ES7953-8LM31-0AA0**
8 MB	**6ES7953-8LP31-0AA0**

	Article No.
MPI cable for connection of SIMATIC S7 and PG via MPI; 5 m in length	**6ES7901-0BF00-0AA0**
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**
Front connector (1 unit) For compact CPUs 40-pin, with screw contacts	
• 1 unit	**6ES7392-1AM00-0AA0**
• 100 units	**6ES7392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7392-1BM01-0AA0**
• 100 units	**6ES7392-1BM01-1AB0**
SIMATIC TOP connect	See page 5/247; for information about which components can be used for the respective module, see Industry Mall or Catalog KT 10.2
Front door, elevated design For compact CPUs; for connecting 1.3 mm^2/16 AWG wires; wiring diagram and labels in petrol	**6ES7328-7AA20-0AA0**
Slot number plates	**6ES7912-0AA00-0AA0**
English	**6ES7398-8FA10-8BA0**
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	**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**
Labeling strips 10 units, spare part	**6ES7392-2XX00-0AA0**
Label cover 10 units, spare part	**6ES7392-2XY00-0AA0**

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Ordering data	Article No.
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	**6GK1571-0BA00-0AA0**
for connecting a PG/PC or Notebook to PROFIBUS or MPI; USB cable included in scope of delivery	
PROFIBUS DP bus connectors RS 485	
• with 90° cable outlet, max. transfer rate 12 Mbit/s	
- without PG interface	**6ES7972-0BA12-0XA0**
- with PG interface	**6ES7972-0BB12-0XA0**
• with 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbit/s	
- without PG interface, 1 unit	**6ES7972-0BA52-0XA0**
- without PG interface, 100 units	**6ES7972-0BA52-0XB0**
- with PG interface, 1 unit	**6ES7972-0BB52-0XA0**
- with PG interface, 100 units	**6ES7972-0BB52-0XB0**
• with axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS	**6GK1500-0EA02**
PROFIBUS FastConnect bus cable	**6XV1830-0EH10**
Standard type with special design for quick mounting, 2-core, shielded, sold by the meter, max. delivery unit 1000 m, minimum ordering quantity 20 m	
RS 485 repeater for PROFIBUS	**6ES7972-0AA02-0XA0**
Transmission rate up to 12 Mbit/s; 24 V DC; IP20 enclosure	

	Article No.
PROFINET bus components	
IE FC TP Standard Cable GP 2x2	**6XV1840-2AH10**
4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter	
FO Standard Cable GP (50/125)	**6XV1873-2A**
Standard cable, splittable, UL approval, sold by the meter	
SCALANCE X204-2 Industrial Ethernet Switch	**6GK5204-2BB10-2AA3**
Industrial Ethernet Switches with integral SNMP access, web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbit/s RJ45 ports and two FO ports	
Compact Switch Module CSM 377	**6GK7377-1AA00-0AA0**
Unmanaged switch for connecting a SIMATIC S7-300, ET200 M and up to three other stations to Industrial Ethernet with 10/100 Mbit/s; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module incl. electronic manual on CD-ROM	
IE FC RJ45 plugs	
RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
IE FC RJ45 plug 180	
180° cable outlet	
1 unit	**6GK1901-1BB10-2AA0**
10 units	**6GK1901-1BB10-2AB0**
50 units	**6GK1901-1BB10-2AE0**
PROFIBUS/PROFINET bus components	See catalogs IK PI, CA 01
For establishing MPI/PROFIBUS/ PROFINET communication	

Overview SIPLUS 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.

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Technical specifications

Article number	**6AG1312-5BF04-2AY0**	**6AG1312-5BF04-7AB0**
Based on	**6ES7312-5BF04-0AB0**	**6ES7312-5BF04-0AB0**
	SIPLUS S7-300 CPU312C EN50155	SIPLUS S7-300 CPU312C
Ambient conditions		
Ambient temperature in operation		
• Min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Extended ambient conditions		

• Relative to ambient temperature-atmospheric pressure-installation 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)

Relative humidity		
- With condensation, tested in accordance with IEC 60068-2-38, max.		100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
- against biologically active substances / conformity with EN 60721-3-3		Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3		Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3		Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS S7-300 CPU 312C	
Compact CPU, 64 KB main memory, 24 V DC power supply, 10 DI/6 DO integrated, integrated functions, MPI; including slot number labels; MMC required	
Extended temperature range and exposure to media	**6AG1312-5BF04-7AB0**
Conforms to EN 50155	**6AG1312-5BF04-2AY0**

	Article No.
SIPLUS accessories	See SIPLUS CPU 313C-2 DP, page 5/36
Additional accessories	See SIMATIC S7-300 CPU 312C, page 5/31

Overview SIPLUS CPU 313C

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

Micro Memory Card required to operate the 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.

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Technical specifications

Article number	**6AG1313-5BG04-2AY0**	**6AG1313-5BG04-7AB0**
Based on	**6ES7313-5BG04-0AB0**	**6ES7313-5BG04-0AB0**
	SIPLUS S7-300 CPU313C EN50155	SIPLUS S7-300 CPU313C
Ambient conditions		
Ambient temperature in operation		
• Min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Extended ambient conditions		

• Relative to ambient temperature-atmospheric pressure-installation 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)

Relative humidity		
- With condensation, tested in accordance with IEC 60068-2-38, max.		100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
- against biologically active substances / conformity with EN 60721-3-3		Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3		Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3		Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS S7-300 CPU 313C	
Compact CPU, 128 KB main memory, 24 V DC power supply, 24 DI/16 DO, 4 AI/2 AO integrated, integrated functions, MPI; MMC required	
Extended temperature range and exposure to media	**6AG1313-5BG04-7AB0**
Conforms to EN 50155	**6AG1313-5BG04-2AY0**

	Article No.
SIPLUS accessories	See SIPLUS CPU 313C-2 DP, page 5/36
Accessories	See SIMATIC S7-300 CPU 313C, page 5/31

Overview SIPLUS 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/O

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.

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Technical specifications

Article number	**6AG1313-6CG04-2AY0**	**6AG1313-6CG04-7AB0**
Based on	**6ES7313-6CG04-0AB0**	**6ES7313-6CG04-0AB0**
	SIPLUS S7-300 CPU 313C-2 DP EN 50155	SIPLUS S7-300 CPU 313C-2 DP
Ambient conditions		
Ambient temperature in operation		
• Min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Extended ambient conditions		

• Relative to ambient temperature-atmospheric pressure-installation 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)
		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)

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		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

SIPLUS compact CPUs

Ordering data	Article No.
SIPLUS S7-300 CPU 313C-2 DP	
Compact CPU, 128 KB work memory, power supply 24 V DC, 16 DI/16 DO integrated, integrated functions, MPI, PROFIBUS DP master/slave interface MMC required	
Extended temperature range and exposure to media	**6AG1313-6CG04-7AB0**
Conforms to EN 50155	**6AG1313-6CG04-2AY0**

	Article No.
Accessories	
SIPLUS Upmiter upstream device for reliable operation when connected to the battery of combustion engines Output current 4 A	**6AG1305-1AA00-2AA0**
SIPLUS RS 485 repeater for PROFIBUS Transfer rate up to max. 12 Mbit/s, 24 V DC, enclosure IP20 for temperature range -25 °C to +70 °C and use when exposed to media (e.g. sulfur chloride atmosphere)	**6AG1972-0AA02-7XA0**
RS 485 bus connector with 90° cable outlet Max. transfer rate 12 Mbit/s Extended temperature range and exposure to media	
without PG interface	**6AG1972-0BA12-2XA0**
with PG interface	**6AG1972-0BB12-2XA0**
RS 485 bus connector with axial cable outlet for SIPLUS OP, for connection to PPI, MPI, PROFIBUS	**6AG1500-0EA02-2AA0**
Additional accessories	See SIMATIC S7-300 CPU 313C-2 DP, page 5/31

Overview SIPLUS 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.

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Technical specifications

Article number	**6AG1314-6BH04-7AB0**
Based on	**6ES7314-6BH04-0AB0**
	SIPLUS S7-300 CPU314C-2 PTP
Ambient conditions	
Ambient temperature in operation	
• Min.	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL use
Extended ambient conditions	
• Relative to ambient temperature-atmospheric pressure-installation 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)
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	**6AG1314-6BH04-7AB0**
Based on	**6ES7314-6BH04-0AB0**
	SIPLUS S7-300 CPU314C-2 PTP
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

SIPLUS compact CPUs

Ordering data

	Article No.
SIPLUS S7-300 CPU 314C-2 PtP Compact CPU, 192 KB main memory, 24 V DC power supply, 24DI/16DO/4AI/2AO integrated, integrated functions, MPI, RS 422/485 interface; MMC required Extended temperature range and exposure to media	**6AG1314-6BH04-7AB0**

	Article No.
Accessories	
SIPLUS Upmiter upstream device for reliable operation when connected to the battery of combustion engines Output current 4 A	**6AG1305-1AA00-2AA0**
SIPLUS RS 485 repeater for PROFIBUS Transfer rate up to max. 12 Mbit/s, 24 V DC, enclosure IP20 for temperature range -25 °C to +70 °C and use when exposed to media (e.g. sulfur chloride atmosphere)	**6AG1972-0AA02-7XA0**
RS 485 bus connector with 90° cable outlet Max. transfer rate 12 Mbit/s Extended temperature range and exposure to media	
without PG interface	**6AG1972-0BA12-2XA0**
with PG interface	**6AG1972-0BB12-2XA0**
RS 485 bus connector with axial cable outlet for SIPLUS OP, for connection to PPI, MPI, PROFIBUS	**6AG1500-0EA02-2AA0**
Additional accessories	See SIMATIC S7-300 CPU 314C-2 PtP, page 5/31

Overview SIPLUS CPU 314C-2 DP

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

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.

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Technical specifications

Article number	**6AG1314-6CH04-2AY0**	**6AG1314-6CH04-7AB0**
Based on	**6ES7314-6CH04-0AB0**	**6ES7314-6CH04-0AB0**
	SIPLUS S7-300 CPU314C-2DP EN50155	SIPLUS S7-300 CPU314C-2DP
Ambient conditions		
Ambient temperature in operation		
• Min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Extended ambient conditions		

• Relative to ambient temperature-atmospheric pressure-installation 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)

Relative humidity		
- With condensation, tested in accordance with IEC 60068-2-38, max.		100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
- against biologically active substances / conformity with EN 60721-3-3		Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3		Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3		Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS S7-300 CPU 314C-2 DP	
Compact CPU, 192 KB main memory, 24 V DC power supply, 24DI/16DO/4AI/2AO integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required	
Extended temperature range and exposure to media	**6AG1314-6CH04-7AB0**
Conforms to EN 50155	**6AG1314-6CH04-2AY0**

	Article No.
SIPLUS accessories	See SIPLUS CPU 313C-2 DP, page 5/36
Additional accessories	see SIMATIC S7-300 CPU 314C-2 DP, page 5/31

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Overview CPU 315F-2 DP

- Based on the SIMATIC CPU 315-2 DP
- 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
- Distributed fail-safe I/O modules can be connected through the integral PROFIBUS DP interface (PROFIsafe)
- Fail-safe I/O modules of the ET 200M range 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
- Fail-safe I/O modules in distributed stations can be connected through the integrated PROFINET interface (PROFIsafe) and/ or through the integrated PROFIBUS DP interface (PROFIsafe)
- Fail-safe I/O modules of the ET 200M range can also be centrally connected
- Central and distributed use of standard modules for non safety-relevant 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 constructing 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 I/O modules of the ET 200M range can also be centrally connected
- Standard modules for non-safety-related applications can be operated centrally and decentralized

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 317F-2 PN/DP

- Based on CPU 317-2 PN/DP
- The fail-safe CPU with a large program memory and quantity framework for demanding applications; 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
- Fail-safe I/O modules in distributed stations can be connected through the integrated PROFINET interface (PROFIsafe) and/or through the integrated PROFIBUS DP interface (PROFIsafe)
- Fail-safe I/O modules of the ET 200M range can also be centrally connected
- Central and distributed use of standard modules for non safety-relevant 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 constructing 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
- Fail-safe I/O modules can be connected decentralized over the integrated PROFINET interface (PROFIsafe) and/or over the integrated PROFIBUS DP interface (PROFIsafe);
- Fail-safe I/O modules of ET200M can also be connected centrally
- Standard modules for non-safety-related applications can be operated centrally and decentralized
- 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.

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
Product type designation					
General information					
Engineering with					
• Programming package	STEP 7 V5.5 + SP1 or higher or STEP7 V5.2 + SP1 or higher with HSP 218 + Distributed Safety	STEP 7 V 5.5 or higher, Distributed Safety V 5.4 SP4	STEP 7 V5.5 + SP1 or higher or STEP7 V5.2 + SP1 or higher with HSP 202 + Distributed Safety	STEP 7 V 5.5 or higher, Distributed Safety V 5.4 SP4	STEP 7 V 5.5 or higher, Distributed Safety V 5.4 SP4
Supply voltage					
Rated value (DC)					
• 24 V DC	Yes	Yes	Yes	Yes	Yes
Power losses					
Power loss, typ.	4.5 W	4.65 W	4.5 W	4.65 W	14 W
Memory					
Work memory					
• Integrated	384 kbyte	512 kbyte	1 536 kbyte	1 536 kbyte	2 560 kbyte
• Size of retentive memory for retentive data blocks	128 kbyte	128 kbyte	256 kbyte	256 kbyte	700 kbyte
Load memory					
• pluggable (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					
• Number, 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 clock)	Yes	Yes	Yes	Yes	Yes
Operating hours counter					
• Number	1	1	4	4	4

Technical specifications (continued)

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
1st interface					
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485	RS 485	RS 485
Functionality					
• MPI	Yes	Yes	Yes	Yes	Yes
• DP master	No	Yes	Yes	Yes	Yes
• 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
DP master					
• Number of DP slaves, max.		124	124	124	124
2nd interface					
Interface type	Integrated RS 485 interface	PROFINET	Integrated RS 485 interface	PROFINET	Integrated RS 485 interface
Physics	RS 485	Ethernet RJ45	RS 485	Ethernet RJ45	RS 485
Number of ports		2		2	
Functionality					
• MPI	No	No	No	No	No
• DP master	Yes	No	Yes	No	Yes
• 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
• 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
DP master					
• Number of DP slaves, max.	124; Per station		124		124
PROFINET IO Controller					
• Max. number of connectable IO devices for RT		128		128	
• Number of IO devices with IRT and the option "high flexibility"		128		128	
• Number of IO Devices with IRT and the option "high performance", max.		64		64	

Technical specifications (continued)

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
3rd interface					
Interface type					PROFINET
Physics					Ethernet RJ45
Number of ports					2
Functionality					
• MPI					No
• DP master					No
• DP slave					No
• PROFINET IO Controller					Yes; Also simultaneously with I-Device functionality
• PROFINET IO Device					Yes; Also simultaneously with IO Controller functionality
• PROFINET CBA					Yes
PROFINET IO Controller					
• Max. number of connectable IO devices for RT					256
• Number of IO devices with IRT and the option "high flexibility"					256
• Number of IO Devices with IRT and the option "high performance", max.					64
Isochronous mode					
Isochronous operation (application synchronized up to terminal)	Yes	Yes; Via PROFIBUS DP or PROFINET interface		Yes; Via PROFIBUS DP or PROFINET interface	Yes; Via 2nd PROFIBUS DP or PROFINET interface
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
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
Number of connections					
• overall	16	16	32	32	32

Technical specifications (continued)

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
Ambient conditions					
Ambient temperature in 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

Ordering data

	Article No.
CPU 315F-2 DP CPU for SIMATIC S7-300F; 384 KB RAM, power supply 24 V DC, MPI, PROFIBUS DP master/slave interface, incl. slot number labels; MMC required	**6ES7315-6FF04-0AB0**
CPU 315F-2 PN/DP CPU for SIMATIC S7-300F; 512 KB main memory, 24 V DC power supply, MPI/PROFIBUS DP master/slave interface, Industrial Ethernet/PROFINET interface; incl. slot number labels; MMC required	**6ES7315-2FJ14-0AB0**
CPU 317F-2 DP Main memory 1.5 MB, power supply 24 V DC, MPI, PROFIBUS DP master/slave interface, MMC required	**6ES7317-6FF04-0AB0**
CPU 317F-2 PN/DP Main memory 1.5 MB, 2 4 V DC power supply, MPI/PROFIBUS DP master/slave interface, Industrial Ethernet/PROFINET interface; MMC required	**6ES7317-2FK14-0AB0**

	Article No.
CPU 319F-3 PN/DP Main memory 2.5 MB, power supply 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 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 Requirement: STEP 7 V5.3 SP3 and higher	
Floating license	**6ES7833-1FC02-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7833-1FC02-0YH5**
S7 Distributed Safety upgrade From V5.x to V5.4; Floating license for 1 user	**6ES7833-1FC02-0YE5**

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

Fail-safe CPUs

Ordering data	Article No.
STEP 7 Safety Advanced V13 SP1 Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 Professional V13 SP1	
Floating license for 1 user	**6ES7833-1FA13-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7833-1FA13-0YH5**
SIMATIC Micro Memory Card	
64 KB	**6ES7953-8LF30-0AA0**
128 KB	**6ES7953-8LG30-0AA0**
512 KB	**6ES7953-8LJ30-0AA0**
2 MB	**6ES7953-8LL31-0AA0**
4 MB	**6ES7953-8LM31-0AA0**
8 MB	**6ES7953-8LP31-0AA0**
MPI cable for connection of SIMATIC S7 and PG via MPI; 5 m in length	**6ES7901-0BF00-0AA0**
Slot number plates	**6ES7912-0AA00-0AA0**
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	**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 PG/PC or Notebook to PROFIBUS or MPI; USB cable included in scope of delivery	**6GK1571-0BA00-0AA0**
PROFIBUS DP bus connector RS 485	
• with 90° cable outlet, max. transfer rate 12 Mbit/s	
- without PG interface	**6ES7972-0BA12-0XA0**
- with PG interface	**6ES7972-0BB12-0XA0**
• with 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbit/s	
- without PG interface, 1 unit	**6ES7972-0BA52-0XA0**
- without PG interface, 100 units	**6ES7972-0BA52-0XB0**
- with PG interface, 1 unit	**6ES7972-0BB52-0XA0**
- with PG interface, 100 units	**6ES7972-0BB52-0XB0**
• with axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS	**6GK1500-0EA02**

	Article No.
PROFIBUS FastConnect bus cable Standard type with special design for quick mounting, 2-core, shielded, sold by the meter, max. delivery unit 1000 m, minimum ordering quantity 20 m	**6XV1830-0EH10**
RS 485 repeater for PROFIBUS Transmission rate up to 12 Mbit/s; 24 V DC; IP20 enclosure	**6ES7972-0AA02-0XA0**
PROFINET bus components	
IE FC TP Standard Cable GP 2x2 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ 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 X204-2 Industrial Ethernet Switch Industrial Ethernet Switches with integral SNMP access, web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbit/s RJ45 ports and two FO ports	**6GK5204-2BB10-2AA3**
Compact Switch Module CSM 377 Unmanaged switch for connecting a SIMATIC S7-300, ET200 M and up to three other stations to Industrial Ethernet with 10/100 Mbit/s; 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	**6GK1901-1BB30-0AA0**
10 units	**6GK1901-1BB30-0AB0**
50 units	**6GK1901-1BB30-0AE0**
IE FC RJ45 plug 180	
180° cable outlet	
1 unit	**6GK1901-1BB10-2AA0**
10 units	**6GK1901-1BB10-2AB0**
50 units	**6GK1901-1BB10-2AE0**
PROFIBUS/PROFINET bus components For establishing MPI/PROFIBUS/ PROFINET communication	See catalogs IK PI, CA 01

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

Overview SIPLUS 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)
- The fail-safe I/O modules of ET 200M can be also centrally connected
- The standard modules for non-safety applications can be operated both centrally and locally

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.

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Technical specifications

Article number	**6AG1315-6FF04-2AB0**	**6AG1315-6FF04-2AY0**
Based on	**6ES7315-6FF04-0AB0**	**6ES7315-6FF04-0AB0**
	SIPLUS S7-300 CPU 315F-2DP	SIPLUS S7-300 CPU 315F-2DP EN50155
Ambient conditions		
Ambient temperature in operation		
• Min.	-25 °C	-25 °C; = Tmin
• max.	60 °C	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 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		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	

SIPLUS fail-safe CPUs

Ordering data	Article No.
SIPLUS S7-300 CPU 315F-2 DP	
CPU for SIPLUS S7-300F; 384 KB work memory, 24 V DC supply voltage, MPI, PROFIBUS DP master/slave interface, incl. slot number labels; MMC required	
Extended temperature range and exposure to media	**6AG1315-6FF04-2AB0**
Conforms to EN 50155	**6AG1315-6FF04-2AY0**

	Article No.
Accessories	
SIPLUS Upmiter upstream device	**6AG1305-1AA00-2AA0**
for reliable operation when connected to the battery of combustion engines	
Output current 4 A	
SIPLUS RS 485 repeater for PROFIBUS	**6AG1972-0AA02-7XA0**
Transfer rate up to max. 12 Mbit/s, 24 V DC, enclosure IP20	
for temperature range -25 °C to +70 °C and use when exposed to media (e.g. sulfur chloride atmosphere)	
RS 485 bus connector with 90° cable outlet	
Max. transfer rate 12 Mbit/s	
Extended temperature range and exposure to media	
without PG interface	**6AG1972-0BA12-2XA0**
with PG interface	**6AG1972-0BB12-2XA0**
RS 485 bus connector with axial cable outlet	**6AG1500-0EA02-2AA0**
for SIPLUS OP, for connection to PPI, MPI, PROFIBUS	
Additional accessories	See SIMATIC S7-300 CPU 315F-2 DP, page 5/45

Overview SIPLUS CPU 315F-2 PN/DP

- The CPU with a medium sized program memory and quantity structures 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 and up to category 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)
- The fail-safe I/O modules of ET 200M can be also centrally connected
- The standard modules for non-safety applications can be operated both centrally and locally
- 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.

Technical specifications

Article number	**6AG1315-2FJ14-2AB0**	**6AG1315-2FJ14-2AY0**
Based on	**6ES7315-2FJ14-0AB0**	**6ES7315-2FJ14-0AB0**
	SIPLUS S7-300 CPU315F-2PN/DP	SIPLUS S7-300 CPU315F-2PN/DP EN50155
Ambient conditions		
Ambient temperature in operation		
• Min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN 50155
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 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		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	

SIPLUS fail-safe CPUs

Ordering data	Article No.
SIPLUS S7-300 CPU 315F-2 PN/DP	
CPU for SIPLUS S7-300F; work memory 512 KB, power supply 24 V DC, MPI/PROFIBUS DP master/slave interface, Industrial Ethernet/PROFINET interface; incl. slot number labels	
Extended temperature range and exposure to media	**6AG1315-2FJ14-2AB0**
Conforms to EN 50155	**6AG1315-2FJ14-2AY0**

	Article No.
Accessories	
SIPLUS Upmiter upstream device	**6AG1305-1AA00-2AA0**
for reliable operation when connected to the battery of combustion engines	
Output current 4 A	
SIPLUS RS 485 repeater for PROFIBUS	**6AG1972-0AA02-7XA0**
Transfer rate up to max. 12 Mbit/s, 24 V DC, enclosure IP20	
for temperature range -25 °C to +70 °C and use when exposed to media (e.g. sulfur chloride atmosphere)	
RS 485 bus connector with 90° cable outlet	
Max. transfer rate 12 Mbit/s	
Extended temperature range and exposure to media	
without PG interface	**6AG1972-0BA12-2XA0**
with PG interface	**6AG1972-0BB12-2XA0**
RS 485 bus connector with axial cable outlet	**6AG1500-0EA02-2AA0**
for SIPLUS OP, for connection to PPI, MPI, PROFIBUS	
SIPLUS NET SCALANCE X-200 Industrial Ethernet switches	
Industrial Ethernet switches with integral SNMP access, online diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager (exception: SCALANCE X208PRO); incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM	
• with electrical and optical ports for glass multimode FOC up to 3 km	
• Extended temperature range and exposure to media	
- SIPLUS NET SCALANCE X204-2 with four 10/100 Mbit/s RJ45 ports and two fiber-optic ports	**6AG1204-2BB10-4AA3**
Additional accessories	See SIMATIC S7-300 CPU 315F-2 PN/DP, page 5/45

Overview SIPLUS 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)
- The fail-safe I/O modules of ET 200M can be also centrally connected
- The standard modules for non-safety applications can be operated both centrally and locally

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.

Technical specifications

Article number	**6AG1317-6FF04-2AB0**
Based on	**6ES7317-6FF04-0AB0**
	SIPLUS S7-300 CPU317F-2DP
Ambient conditions	
Ambient temperature in operation	
• Min.	-25 °C; = Tmin
• max.	60 °C; = Tmax
Extended ambient conditions	
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 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	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

SIPLUS fail-safe CPUs

Ordering data	Article No.
SIPLUS S7-300 CPU 315F-2 DP CPU for SIMATIC S7-300F, 1.5 MB work memory, 24 V DC power supply, MPI, PROFIBUS DP master/slave interface; MMC required Extended temperature range and exposure to media	**6AG1317-6FF04-2AB0**

Accessories	Article No.
SIPLUS Upmiter upstream device for reliable operation connected to the battery of combustion engines Output current 4 A	**6AG1305-1AA00-2AA0**
SIPLUS RS 485 repeater for PROFIBUS Transfer rate up to max. 12 Mbit/s, 24 V DC, enclosure IP20 for temperature range -25 °C to +70 °C and use when exposed to media (e.g. sulfur chloride atmosphere)	**6AG1972-0AA02-7XA0**
RS 485 bus connector with 90° cable outlet Max. transfer rate 12 Mbit/s Extended temperature range and exposure to media	
without PG interface	**6AG1972-0BA12-2XA0**
with PG interface	**6AG1972-0BB12-2XA0**
RS 485 bus connector with axial cable outlet for SIPLUS OP, for connection to PPI, MPI, PROFIBUS	**6AG1500-0EA02-2AA0**
Additional accessories	See SIMATIC S7-300 CPU 317F-2 DP, page 5/45

Overview SIPLUS CPU 317F-2 PN/DP

- The failsafe 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
- The fail-safe I/O modules can be locally connected via the integrated PROFINET interface (PROFIsafe) and/or via the integrated PROFIBUS DP interface (PROFIsafe)
- The fail-safe I/O modules of ET 200M can be also centrally connected
- The standard modules for non-safety applications can be operated both centrally and locally
- 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.

Technical specifications

Article number	**6AG1317-2FK14-2AB0**	**6AG1317-2FK14-2AY0**
Based on	**6ES717-2FK14-0AB0**	**6ES717-2FK14-0AB0**
	SIPLUS S7-300 CPU317F-2PN/DP	SIPLUS S7-300 CPU317F-2PN/DP EN50155
Ambient conditions		
Ambient temperature in operation		
• Min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 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		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	

SIPLUS fail-safe CPUs

Ordering data	Article No.
SIPLUS S7-300 CPU 317F-2 PN/DP	
CPU for SIPLUS S7-300F, work memory 1.5 MB, power supply 24 V DC, MPI/PROFIBUS DP master/slave interface; Industrial Ethernet/PROFINET interface; MMC required	
Extended temperature range and exposure to media	**6AG1317-2FK14-2AB0**
Conforms to EN 50155	**6AG1317-2FK14-2AY0**

	Article No.
Accessories	
SIPLUS Upmiter upstream device for reliable operation when connected to the battery of combustion engines Output current 4 A	**6AG1305-1AA00-2AA0**
SIPLUS RS 485 repeater for PROFIBUS Transfer rate up to max. 12 Mbit/s, 24 V DC, enclosure IP20 for temperature range -25 °C to +70 °C and use when exposed to media (e.g. sulfur chloride atmosphere)	**6AG1972-0AA02-7XA0**
RS 485 bus connector with 90° cable outlet Max. transfer rate 12 Mbit/s Extended temperature range and exposure to media	
without PG interface	**6AG1972-0BA12-2XA0**
with PG interface	**6AG1972-0BB12-2XA0**
RS 485 bus connector with axial cable outlet for SIPLUS OP, for connection to PPI, MPI, PROFIBUS	**6AG1500-0EA02-2AA0**
SIPLUS NET SCALANCE X-200 Industrial Ethernet switches Industrial Ethernet switches with integral SNMP access, online diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager (exception: SCALANCE X208PRO); incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM • with electrical and optical ports for glass multimode FOC up to 3 km • Extended temperature range and exposure to media - SIPLUS NET SCALANCE X204-2 with four 10/100 Mbit/s RJ45 ports and two fiber-optic ports	**6AG1204-2BB10-4AA3**
Additional accessories	See SIMATIC S7-300 CPU 317F-2 PN/DP, page 5/45

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 compensation
- 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 operating 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 compensation
- 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 operating 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 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 functionality of the standard CPU 317-2 PN/DP and CPU 317F-2 PN/DP (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 compensation
- 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 operating 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.

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
Product type designation			
General information			
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 DC	Yes	Yes	Yes
Power losses			
Power loss, typ.	7.5 W	7.5 W	8.5 W
Memory			
Work memory			
• Integrated	384 kbyte	1 024 kbyte	1 536 kbyte
• Size of retentive memory for retentive data blocks	128 kbyte	256 kbyte	256 kbyte
Load memory			
• pluggable (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte
CPU processing times			
for bit operations, typ.	0.05 µs	0.025 µs	0.025 µs
for word operations, typ.	0.09 µs	0.03 µs	0.03 µs
for fixed point arithmetic, typ.	0.12 µs	0.04 µs	0.04 µs
for floating point arithmetic, typ.	0.45 µs	0.16 µs	0.16 µs

Technical specifications (continued)

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
Counters, timers and their retentivity			
S7 counter			
• Number	256	512	512
IEC counter			
• present	Yes	Yes	Yes
S7 times			
• Number	256	512	512
IEC timer			
• present	Yes	Yes	Yes
Data areas and their retentivity			
Flag			
• Number, 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 clock)	Yes	Yes	Yes
Operating hours counter			
• Number	1	4	4
Digital outputs			
Integrated high-speed cams			
• Switching accuracy, (+/-)	70 µs	70 µs	70 µs
1st interface			
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485
Functionality			
• MPI	Yes	Yes	Yes
• DP master	Yes	Yes	Yes
• DP slave	Yes	Yes	Yes
• Point-to-point connection	No	No	No
DP master			
• Number of DP slaves, max.	124	124	124
2nd interface			
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485
Functionality			
• MPI	No	No	No
• DP master	Yes; DP(DRIVE)-Master	Yes; DP(DRIVE)-Master	Yes; DP(DRIVE)-Master
• DP slave	No	No	No
DP master			
• Number of DP slaves, max.	64	64	64

Technical specifications (continued)

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
3rd interface			
Interface type	PROFINET	PROFINET	PROFINET
Physics	Ethernet RJ45	Ethernet RJ45	Ethernet RJ45
Number of ports	2	2	2
Functionality			
• MPI	No	No	No
• DP master	No	No	No
• DP slave	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
PROFINET IO Controller			
• Max. number of connectable IO devices for RT	128	128	128
• Number of IO Devices with IRT and the option "high performance", max.	64	64	64
Isochronous mode			
Isochronous operation (application synchronized up to terminal)	Yes; Via PROFIBUS DP or PROFINET interface	Yes; Via PROFIBUS DP or PROFINET interface	Yes; Via PROFIBUS DP or PROFINET interface
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
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
Number of connections			
• overall	16	32	32

Technical specifications (continued)

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
Ambient conditions			
Ambient temperature in 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

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Ordering data	Article No.
CPU 315T-3 PN/DP 384 KB main memory, 24 V DC power supply, 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 main memory, 24 V DC power supply, 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 main memory, 24 V DC power supply, 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 V4.2 SP3 and higher can be used for CPU 315T-3 PN/DP Task: Option package for configuring and programming technology tasks with the SIMATIC S7 CPU 31xT and SIMATIC S7 CPU 317TF Requirement: STEP 7 V5.5 SP5 and higher Delivery form: incl. up-to-date Service Pack; on DVD; incl. documentation for CPU 31xT-2 DP, CPU 317TF-2 DP (also on DVD)	
Floating License	**6ES7864-1CC42-0YA5**
Floating License for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7864-1CC42-0XH5**
Upgrade to V4.2	**6ES7864-1CC42-0YE5**
Trial License	**6ES7864-1CC42-0YA7**

	Article No.
S7 Distributed Safety V5.4 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 Requirement: STEP 7 V5.3 SP3 and higher	
Floating License for 1 user	**6ES7833-1FC02-0YA5**
Floating License for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7833-1FC02-0YH5**
S7 Distributed Safety upgrade from V5.x to V5.4); Floating License for 1 user	**6ES7833-1FC02-0YE5**
SIMATIC Micro Memory Card	
8 MB	**6ES7953-8LP31-0AA0**
MPI cable for connection of SIMATIC S7 and PG via MPI; 5 m in length	**6ES7901-0BF00-0AA0**
Front connectors	
40-pin, with screw contacts	
• 1 unit	**6ES7392-1AM00-0AA0**
• 100 units	**6ES7392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7392-1BM01-0AA0**
• 100 units	**6ES7392-1BM01-1AB0**
Slot number plates	**6ES7912-0AA00-0AA0**
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	**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**
Labeling strips 10 units, spare part	**6ES7392-2XX00-0AA0**
Label cover 10 units, spare part	**6ES7392-2XY00-0AA0**

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

Ordering data

	Article No.
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	**6GK1571-0BA00-0AA0**
for connecting a PG/PC or Notebook to PROFIBUS or MPI; USB cable included in scope of delivery	
PROFIBUS bus components	
PROFIBUS DP bus connector RS 485	
• with 90° cable outlet, max. transfer rate 12 Mbit/s	
- without PG interface	**6ES7972-0BA12-0XA0**
- with PG interface	**6ES7972-0BB12-0XA0**
• with 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbit/s	
- without PG interface, 1 unit	**6ES7972-0BA52-0XA0**
- without PG interface, 100 units	**6ES7972-0BA52-0XB0**
- with PG interface, 1 unit	**6ES7972-0BB52-0XA0**
- with PG interface, 100 units	**6ES7972-0BB52-0XB0**
• with axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS	**6GK1500-0EA02**
PROFIBUS FastConnect bus cable	**6XV1830-0EH10**
Standard type with special design for quick mounting, 2-core, shielded, sold by the meter, max. delivery unit 1000 m, minimum ordering quantity 20 m	
RS 485 repeater for PROFIBUS	**6ES7972-0AA02-0XA0**
Transmission rate up to 12 Mbit/s; 24 V DC; IP20 enclosure	

	Article No.
PROFINET bus components	
IE FC TP Standard Cable GP 2x2	**6XV1840-2AH10**
4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter	
FO Standard Cable GP (50/125)	**6XV1873-2A**
Standard cable, splittable, UL approval, sold by the meter	
SCALANCE X204-2 Industrial Ethernet Switch	**6GK5204-2BB10-2AA3**
Industrial Ethernet Switches with integral SNMP access, Web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbit/s RJ45 ports and two FO ports	
Compact Switch Module CSM 377	**6GK7377-1AA00-0AA0**
Unmanaged Switch for connecting a SIMATIC S7-300, ET200 M and up to three other stations to Industrial Ethernet with 10/100 Mbit/s; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module incl. electronic manual on CD-ROM	
IE FC RJ45 Plugs	
RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
IE FC RJ45 Plug 180	
180° cable outlet	
1 unit	**6GK1901-1BB10-2AA0**
10 units	**6GK1901-1BB10-2AB0**
50 units	**6GK1901-1BB10-2AE0**
PROFIBUS/PROFINET bus components	See catalogs IK PI, CA 01
For establishing MPI/PROFIBUS/ PROFINET communication	

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

SM 321 digital input modules

Overview

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

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, SINK/SOURCE	SM321,16DI, DC24V, 0.05MS INPUT DELAY.
Product type designation					
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 losses					
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
Number of simultaneously controllable inputs					
horizontal installation					
- up to 40 °C, max.	16	16	32	64	16
- up to 60 °C, max.	16	16	16	32	16
vertical installation					
- up to 40 °C, max.	16	16	32	32	16
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 +5V	-5 to +30V	-30 to +5V	-30 to +5V	-30 to +5V
• 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; Typical	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
• Unshielded, max.	600 m	600 m	600 m	600 m	600 m

Technical specifications (continued)

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, SINK/SOURCE	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
Isochronous mode					
Isochronous operation (application synchronized up to terminal)	No	No	No	No	Yes
Interrupts/diagnostics/ status information					
Alarms					
• Alarms	No	No	No	No	No
• Diagnostic alarm	No	No	No	No	No
• Hardware interrupt	No	No	No	No	No
Diagnostic messages					
• Diagnostic functions	No	No	No	No	No
Diagnostics indication LED					
• Status indicator digital input (green)	Yes	Yes	Yes	Yes	Yes
Galvanic isolation					
Galvanic isolation digital inputs					
• between the channels	No	No	No	No	No
• between the channels, in groups of	16	16	16	16	16
• between the channels and the backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
Isolation					
Isolation checked with	500 V DC	500 V DC	500 V DC	500 V DC	500 V DC
Connection method					
required front connector	20-pin	20-pin	40-pin	Cable: 6ES7 392-4Bxx0-0AA0 terminal blocks: 6ES7 392-1xN00-0AA0	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; approx.	200 g

Technical specifications (continued)

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
Product type designation				
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
Power losses				
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			
Number of simultaneously controllable inputs				
horizontal installation				
- up to 40 °C, max.	16	16	8	16
- up to 60 °C, max.	16	16	8; 6 to Ue 146 V	16
vertical installation				
- up to 40 °C, max.	16	16	8	16
Input voltage				
• Type of input voltage	DC	AC/DC	DC	AC
• Rated value (AC)		24 V; AC 24 or 48 V		230 V; 120/230V AC
• Rated value (DC)	24 V	24 V; DC 24 or 48 V	48 V; 48V DC to 125V DC	
• for signal "0"	-30 to +5V	-5 to +5 V AC	DC -146V to DC +15V	0 to 40V
• for signal "1"	13 to 30V	14V AC to 60V AC	30V DC to 146V DC	79 to 264V
• Frequency range		0 to 63 Hz		47 ... 63 Hz
Input current				
• for signal "1", typ.	7 mA	2.7 mA	3.5 mA	6.5 mA; (120V, 60Hz), 16mA (230V, 50Hz)
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
• Unshielded, max.	600 m	600 m	600 m	600 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
Isochronous mode				
Isochronous operation (application synchronized up to terminal)	Yes	No	No	No

Technical specifications (continued)

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
Interrupts/diagnostics/ status information				
Alarms				
• Alarms	Yes	No	No	No
• Diagnostic alarm	Yes; Parameterizable	No	No	No
• Hardware interrupt	Yes; Parameterizable	No	No	No
Diagnostic messages				
• Diagnostic functions	Yes; Parameterizable	No	No	No
Diagnostics indication LED				
• Status indicator digital input (green)	Yes	Yes	Yes	Yes
Galvanic isolation				
Galvanic isolation digital inputs				
• between the channels	No	Yes	No	No
• between the channels, in groups of	16	1	8	4
• between the channels and the backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
Isolation				
Isolation checked with	500 V DC	1500 V AC	1500 V DC	4000 VDC
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
Product type designation			
Load voltage L1			
• Rated value (AC)	120 V	230 V; 120/230V 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 losses			
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		
Number of simultaneously controllable inputs			
horizontal installation			
- up to 40 °C, max.	32		
- up to 60 °C, max.	24	8	8
vertical installation			
- up to 40 °C, max.	32	8	8

Technical specifications (continued)

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
Input voltage			
• Type of input voltage	AC	AC	AC
• Rated value (AC)	120 V	230 V; 120/230V AC	120 V; 120/230V AC
• for signal "0"	0 to 20V	0 to 40V	0 to 40V
• for signal "1"	74 to 132V	79 to 264V	79 to 264V
• Frequency range	47 ... 63 Hz	47 ... 63 Hz	47 ... 63 Hz
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
• Unshielded, max.	600 m	600 m	600 m
Encoder			
Connectable encoders			
• 2-wire sensor	Yes	Yes	Yes
- Permissible quiescent current (2-wire sensor), max.	4 mA	2 mA	2 mA
Isochronous mode			
Isochronous operation (application synchronized up to terminal)	No	No	No
Interrupts/diagnostics/status information			
Alarms			
• Alarms	No	No	No
• Diagnostic alarm	No	No	No
• Hardware interrupt	No	No	No
Diagnostic messages			
• Diagnostic functions	No	No	No
Diagnostics indication LED			
• Status indicator digital input (green)	Yes; per channel	Yes	Yes
Galvanic isolation			
Galvanic isolation digital inputs			
• between the channels	No	No	Yes
• between the channels, in groups of	8	2	1
• between the channels and the backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
Isolation			
Isolation checked with	2500 V DC	4000 VDC	1500 V AC
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

Ordering data

	Article No.
SM 321 digital input modules	
incl. labeling strips, bus connector	
16 inputs, 24 V DC	**6ES7321-1BH02-0AA0**
16 inputs, 24 V DC, active low	**6ES7321-1BH50-0AA0**
32 inputs, 24 V DC	**6ES7321-1BL00-0AA0**
64 inputs, 24 V DC, active high/low	**6ES7321-1BP00-0AA0**
Note: 6ES7392-4...0-0AA0 connection cable and 6ES7392-1.N00-0AA0 terminal blocks necessary.	
16 inputs, 24 to 48 V DC	**6ES7321-1CH00-0AA0**
16 inputs, 48 to 125 V DC	**6ES7321-1CH20-0AA0**
16 inputs, 24 V DC, for isochronous mode	**6ES7321-1BH10-0AA0**
32 inputs, 120 V AC	**6ES7321-1EL00-0AA0**
8 inputs, 120/230 V AC	**6ES7321-1FF01-0AA0**
8 inputs, 120/230 V AC, single root	**6ES7321-1FF10-0AA0**
16 inputs, 120/230 V AC	**6ES7321-1FH00-0AA0**
16 inputs, 24 V DC, for isochronous mode, diagnostics-capable	**6ES7321-7BH01-0AB0**
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**
40-pin, with screw contacts	
• 1 unit	**6ES7392-1AM00-0AA0**
• 100 units	**6ES7392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7392-1BM01-0AA0**
• 100 units	**6ES7392-1BM01-1AB0**
S7-300 connecting cables	
For 64-channel modules; 2 units	
1 m	**6ES7392-4BB00-0AA0**
2.5 m	**6ES7392-4BC50-0AA0**
5 m	**6ES7392-4BF00-0AA0**
Terminal blocks	
For 64-channel modules; 2 units	
With screw contacts	**6ES7392-1AN00-0AA0**
With spring-loaded contacts	**6ES7392-1BN00-0AA0**
Front door, elevated design	**6ES7328-0AA00-7AA0**
e.g. for 32-channel modules; for connecting 1.3 mm^2/16 AWG conductors; circuit diagram and nameplates in petrol	
SIMATIC TOP connect	See page 5/247

	Article No.
Bus connectors	**6ES7390-0AA00-0AA0**
1 unit (spare part)	
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 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**
SIMATIC Manual Collection	**6ES7998-8XC01-8YE0**
Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	
SIMATIC Manual Collection update service for 1 year	**6ES7998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	

SM 322 digital output modules

Overview

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

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
Product type designation						
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 losses						
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
Limitation of inductive shutdown voltage to	L+ (-53 V)	L+ (-53 V)	L+ (-53 V)	L+ (-53 V)	M+ (45 V)	L+ (-45 V)
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 "1" permissible range, min.				2.4 mA	2.4 mA	
• for signal "1" permissible range, max.				0.36 A	0.36 A	
• for signal "1" permissible range for 0 to 40 °C, min.	5 mA	5 mA	5 mA			10 mA
• for signal "1" permissible range for 0 to 40 °C, max.	0.6 A	0.6 A	0.6 A			0.6 A
• for signal "1" permissible range for 40 to 60 °C, min.	5 mA	5 mA	5 mA			10 mA
• for signal "1" permissible range for 40 to 60 °C, max.	0.6 A	0.6 A	0.6 A			0.6 A
• for signal "1" minimum load current	5 mA	5 mA	5 mA			10 mA
• for signal "0" residual current, max.	0.5 mA	0.5 mA	0.5 mA	0.1 mA		0.5 mA

Technical specifications (continued)

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
Aggregate current of 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
Total current of the outputs (per module)						
horizontal installation						
- up to 60 °C, max.				4.8 A	4.8 A	
all other mounting positions						
- up to 40 °C, max.				6.4 A	6.4 A	
Cable length						
• shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
• Unshielded, max.	600 m	600 m	600 m	600 m	600 m	600 m
Interrupts/diagnostics/ status information						
Alarms						
• Diagnostic alarm	No	No	No	No	No	Yes; Parameterizable
Diagnostic messages						
• Diagnostics	No	No	No	No	No	Yes
Galvanic isolation						
Galvanic isolation digital outputs						
• between the channels, in groups of	8	8	8	16	16	8
• between the channels and the backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
Isolation						
Isolation checked with	500 V DC	500 V DC	500 V DC	500 V DC	500 V DC	500 V DC
Connection method						
required front connector	20-pin	20-pin	40-pin	Cable: 6ES7 392-4Bxx0-0AA0 Terminal blocks: 6ES7 392-1xN00-0AA0	Cable: 6ES7 392-4Bxx0-0AA0 Terminal blocks: 6ES7 392-1xN00-0AA0	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

Technical specifications (continued)

Article number	6ES7322-5GH00-0AB0	6ES7322-1CF00-0AA0	6ES7322-1BF01-0AA0	6ES7322-1FF01-0AA0	6ES7322-5FF00-0AB0	6ES7322-1FH00-0AA0
	SM322, 16DO, AC120/230V, 2A	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
Product type designation						
Supply voltage						
Load voltage L+						
• Rated value (DC)	24 V; 24 / 48	48 V; 48V DC to 125V DC	24 V			
Load voltage L1						
• Rated value (AC)				230 V; 120/230V AC	230 V; 120/230V AC	230 V; 120/230V AC
Input current						
from load voltage L+ (without load), max.	200 mA	2 mA	60 mA			2 mA
from load voltage L1 (without load), max.				2 mA	2 mA	3 mA
from backplane bus 5 V DC, max.	100 mA	100 mA	40 mA	100 mA	100 mA	200 mA
Power losses						
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
Limitation of inductive shutdown voltage to		M (-1 V)	L+ (-48 V)			
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 "1" permissible range for 0 to 40 °C, min.		10 mA	5 mA	10 mA	10 mA	10 mA
• for signal "1" permissible range for 0 to 40 °C, max.	0.5 A	1.5 A	2.4 A	2 A	2 A	1 A
• for signal "1" permissible range for 40 to 60 °C, min.		10 mA	5 mA	10 mA	10 mA	10 mA
• for signal "1" permissible range for 40 to 60 °C, max.	0.5 A	1.5 A	2.4 A	1 A	1 A	0.5 A
• for signal "1" minimum load current		10 mA	5 mA	10 mA	10 mA	10 mA
• for signal "1" permissible surge current, max.	1.5 A; for 50 ms, 1 A 2 s one-time	3 A; for 10 ms		20 A; max. 1 AC cycle	20 A; with 2 half waves	20 A; with 2 half waves
• 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

Technical specifications (continued)

Article number	**6ES7322-5GH00-0AB0**	**6ES7322-1CF00-0AA0**	**6ES7322-1BF01-0AA0**	**6ES7322-1FF01-0AA0**	**6ES7322-5FF00-0AB0**	**6ES7322-1FH00-0AA0**
	SM322, 16DO, AC120/230V, 2A	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
Aggregate current of 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
• Unshielded, max.	600 m	600 m	600 m	600 m	600 m	600 m
Interrupts/diagnostics/ status information						
Alarms						
• Diagnostic alarm	Yes; Parameterizable	No	No	No	Yes; Parameterizable	No
Diagnostic messages						
• Diagnostics	Yes; Parameters can be assigned	No	No	Yes	Yes	Yes
Galvanic isolation						
Galvanic isolation digital outputs						
• between the channels, in groups of	1	4	4	4	1	8
• between the channels and the backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
Isolation						
Isolation checked with	1500 V AC	1500 V AC	500 V DC	1500 V AC	1500 V AC	4000 VDC
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

Technical specifications (continued)

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
Product type designation					
Supply voltage					
Load voltage L+					
• Rated value (DC)		24 V	120 V	24 V	120 V
Load voltage L1					
• Rated value (AC)	120 V; 120/230V AC		230 V	230 V	230 V
Input current					
from load voltage L+ (without load), max.		110 mA; Current consumption of relay			
from load voltage L1 (without load), max.	10 mA	110 mA			
from backplane bus 5 V DC, max.	190 mA	40 mA	40 mA	100 mA	100 mA
Power losses					
Power loss, typ.	25 W	3.2 W	4.2 W	3.5 W	4.5 W
Digital outputs					
Number of digital outputs	32	8; Relays	8; Relays	8; Relays	16; Relays
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 "1" permissible range for 0 to 40 °C, min.	10 mA				
• for signal "1" permissible range for 0 to 40 °C, max.	1 A				
• for signal "1" permissible range for 40 to 60 °C, min.	10 mA				
• for signal "1" permissible range for 40 to 60 °C, max.	1 A				
• for signal "1" minimum load current	10 mA	5 mA	5 mA	10 mA	10 mA
• for signal "1" permissible surge current, max.	10 A; per group (for 2 AC cycles)				
• 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
Aggregate current of 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

Technical specifications (continued)

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
Relay outputs					
• Rated input voltage of relay coil L+ (DC)		24 V; 110 mA	24 V		24 V
• Number of operating cycles, max.		300 000; 230 V AC: 100000; 120 V AC: 200000; 24 V DC: 300000 (at 2 A)	300 000; 300000 (24 V DC, at 2 A); 200000 (120 V AC, at 3 A); 100000 (230 V AC, at 3 A)	100 000; 100000 (24 V DC, at 5 A), 100000 (230 V AC, at 5 A)	100 000; 50000 (24 V DC, at 2 A); 700000 (120 V AC, at 2 A); 100000 (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)
Cable length					
• shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
• Unshielded, max.	600 m	600 m	600 m	600 m	600 m
Interrupts/diagnostics/ status information					
Alarms					
• Diagnostic alarm	No	No	No	Yes; Parameterizable	No
Diagnostic messages					
• Diagnostics	Yes	No	No	Yes	No
Galvanic isolation					
Galvanic isolation digital outputs					
• between the channels, in groups of	8	2	1	1	8
• between the channels and the backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
Isolation					
Isolation checked with	4000 VDC	1500 V AC	2000 V AC	1500 V AC	1500 V AC
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

SM 322 digital output modules

Ordering data	Article No.
SM 322 digital output modules	
incl. labeling strips, bus connector	
8 outputs, 24 V DC, 2 A	**6ES7322-1BF01-0AA0**
16 outputs, 24 V DC, 0.5 A	**6ES7322-1BH01-0AA0**
16 outputs, 24 V DC, 0.5 A, high speed	**6ES7322-1BH10-0AA0**
32 outputs, 24 V DC, 0.5 A	**6ES7322-1BL00-0AA0**
64 outputs, 24 V DC, 0.3 A	**6ES7322-1BP00-0AA0**
Note: 6ES7392-4...0-0AA0 connection cable and 6ES7392-1.N00-0AA0 terminal blocks necessary.	
64 outputs, 24 V DC, 0.3 A, sink output	**6ES7322-1BP50-0AA0**
Note: 6ES7392-4...0-0AA0 connection cable and 6ES7392-1.N00-0AA0 terminal blocks necessary.	
8 outputs, 24 V DC, 0.5 A, diagnostics-capable	**6ES7322-8BF00-0AB0**
16 outputs, 24/48 V DC, 0.5 A	**6ES7322-5GH00-0AB0**
8 outputs, 48 to 125 V DC, 1.5 A	**6ES7322-1CF00-0AA0**
8 outputs, 120/230 V AC, 1 A	**6ES7322-1FF01-0AA0**
8 outputs, 120/230 V AC, 2 A	**6ES7322-5FF00-0AB0**
16 outputs, 120/230 V AC, 1 A	**6ES7322-1FH00-0AA0**
32 outputs, 120 V AC, 1 A	**6ES7322-1FL00-0AA0**
8 outputs, relay contacts, 2 A	**6ES7322-1HF01-0AA0**
8 outputs, relay contacts, 5 A	**6ES7322-1HF10-0AA0**
8 outputs, relay contacts, 5 A, with RC filter, overvoltage protection	**6ES7322-5HF00-0AB0**
16 outputs, relay contacts, 8 A	**6ES7322-1HH01-0AA0**
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**
40-pin, with screw contacts	
• 1 unit	**6ES7392-1AM00-0AA0**
• 100 units	**6ES7392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7392-1BM01-0AA0**
• 100 units	**6ES7392-1BM01-1AB0**
S7-300 connecting cables	
For 64-channel modules; 2 units	
1 m	**6ES7392-4BB00-0AA0**
2.5 m	**6ES7392-4BC50-0AA0**
5 m	**6ES7392-4BF00-0AA0**
Terminal blocks	
For 64-channel modules; 2 units	
With screw contacts	**6ES7392-1AN00-0AA0**
With spring-loaded contacts	**6ES7392-1BN00-0AA0**

	Article No.
Front door, elevated design	**6ES7328-0AA00-7AA0**
e.g. for 32-channel modules; for connecting 1.3 mm^2/ 16 AWG conductors	
SIMATIC TOP connect	See page 5/247
Bus connectors	**6ES7390-0AA00-0AA0**
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	**6ES7973-1HD00-0AA0**
10 fuses 6.3 A; for 6ES7 322-1CF00-0AA0	**6ES7973-1GC00-0AA0**
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**
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**
SIMATIC Manual Collection	**6ES7998-8XC01-8YE0**
Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	
SIMATIC Manual Collection update service for 1 year	**6ES7998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	

Overview

- Digital inputs and outputs
- For connecting standard switches, two-wire proximity switches, solenoid valves, contactors, low-power motors, lamps and motor starters

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
Product type designation			
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 losses			
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
Number of simultaneously controllable inputs			
all mounting positions			
- up to 40 °C, max.	8	16	16
- up to 60 °C, max.	8	8	16
Input voltage			
• Type of input voltage	DC	DC	DC
• Rated value (DC)	24 V	24 V	24 V
• for signal "0"	-30 to +5V	-30 to +5V	-30 to +5V
• for signal "1"	13 to 30V	13 to 30V	
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
- at "1" to "0", min.	1.2 ms	1.2 ms	1.2 ms
- at "1" to "0", max.	4.8 ms	4.8 ms	4.8 ms
Cable length			
• shielded, max.	1 000 m	1 000 m	1 000 m
• Unshielded, max.	600 m	600 m	600 m

Technical specifications (continued)

Article number	**6ES7323-1BH01-0AA0**	**6ES7323-1BL00-0AA0**	**6ES7327-1BH00-0AB0**
	SM323, 8DI/8DO, DC24V, 0,5A	SM323, 16DI/DO, DC24V, 0,5A	SM327, 8DI/8DX, DC24V, 0,5A
Digital outputs			
Number of digital outputs	8	16	8; can also be parameterized individually as DI
short-circuit protection	Yes	Yes	Yes
• Response threshold, typ.	1 A	1 A	1 A
Limitation of inductive shutdown voltage to	L+ (-53 V)	L+ (-48 V)	L+ (-54 V)
Controlling a digital input	Yes	Yes	Yes
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 "1" permissible range for 0 to 60 °C, min.	5 mA	5 mA	5 mA
• for signal "1" permissible range for 0 to 60 °C, max.	0.6 A	0.6 A	0.6 A
• for signal "1" minimum load current	5 mA	5 mA	
• for signal "0" residual current, max.	0.5 mA	0.5 mA	0.5 mA
Output delay with resistive load			
• "0" to "1", max.	100 µs	100 µs	350 µs
• "1" to "0", max.	500 µs	500 µs	500 µs
Parallel switching of 2 outputs			
• for increased power	No	No	No
• for redundant control of a load	Yes; only outputs of the same group	Yes; only outputs of the same group	Yes; only outputs of the same group
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
Aggregate current of 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
• Unshielded, max.	600 m	600 m	600 m

Technical specifications (continued)

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
Isochronous mode			
Isochronous operation (application synchronized up to terminal)	No	No	No
Interrupts/diagnostics/ status information			
Alarms			
• Alarms	No	No	No
Diagnostic messages			
• Diagnostic functions	No	No	No
Diagnostics indication LED			
• Status indicator digital output (green)	Yes	Yes	Yes
• Status indicator digital input (green)	Yes	Yes	Yes
Galvanic isolation			
Galvanic isolation digital inputs			
• between the channels	Yes	Yes	No
• between the channels, in groups of	8	16	
• between the channels and the backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
Galvanic isolation digital outputs			
• between the channels	Yes	Yes	No
• between the channels, in groups of	8	8	
• between the channels and the backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
Permissible potential difference			
between different circuits	75V DC/60V AC	75V DC/60V AC	75V DC/60V AC
Isolation			
Isolation checked with	500 V DC	500 V DC	500 V DC
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

SM 323/SM 327 digital input/output modules

Ordering data	Article No.
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	**6ES7327-1BH00-0AB0**
incl. labeling strips, bus connector	
8 inputs, 8 inputs or outputs (can be configured)	
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**
40-pin, with screw contacts	
• 1 unit	**6ES7392-1AM00-0AA0**
• 100 units	**6ES7392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7392-1BM01-0AA0**
• 100 units	**6ES7392-1BM01-1AB0**
Front door, elevated design	**6ES7328-0AA00-7AA0**
e.g. for 32 channel modules; enables connection of 1.3 mm^2/16 AWG wires	
SIMATIC TOP connect	See page 5/247
Bus connectors	**6ES7390-0AA00-0AA0**
1 unit (spare part)	
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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SIMATIC Manual Collection update service for 1 year	**6ES7998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	

Overview

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

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	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 SM321 16DE/24VDC	SIPLUS SM321 32DE/24VDC	SIPLUS S7-300 SM321 16DE/48-125VDC	SIPLUS S7-300 SM321 8DE/120/220VAC	SIPLUS S7-300 SM321 8 DI
Ambient conditions					
Ambient temperature in operation					
• Min.	-40 °C; = Tmin	-40 °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 EN 50155, 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 EN 50155, 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 EN 50155, 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
Extended ambient conditions					
• Relative to ambient temperature-atmospheric pressure-installation 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)	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)	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)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)
Relative humidity					
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance					
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Technical specifications (continued)

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 SM321 16DE/24VDC	SIPLUS PCS7 SM321 16DE
Ambient conditions			
Ambient temperature in operation			
• Min.	-40 °C; = Tmin	-25 °C	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
Extended ambient conditions			

• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at
	1080 hPa ... 795 hPa
	(-1000 m ... +2000 m)
		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)
			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. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	
- With condensation, tested in accordance with IEC 60068-2-38, max.			100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

SIPLUS S7-300 SM 321 digital input modules

Ordering data	Article No.
SIPLUS S7-300 SM 321 digital input modules	
Extended temperature range and exposure to media	
16 inputs, 24 V DC	**6AG1321-1BH02-2AA0**
32 inputs, 24 V DC	**6AG1321-1BL00-2AA0**
16 inputs, 48 to 120 V DC	**6AG1321-1CH20-2AA0**
8 inputs, 120/230 V AC	**6AG1321-1FF01-2AA0**
8 inputs, 120/230 V AC, single root	**6AG1321-1FF10-7AA0**
16 inputs, 120/230 V AC	**6AG1321-1FH00-7AA0**
16 inputs, 24 V DC, diagnostics-capable	**6AG1321-7BH01-2AB0**
Exposure to media	
16 inputs, NAMUR, redundant design possible	**6AG1321-7TH00-4AB0**
Conforms to EN 50155	
16 inputs, 24 V DC	**6AG1321-1BH02-2AA0**
32 inputs, 24 V DC	**6AG1321-1BL00-2AA0**
16 inputs, 48 to 120 V DC	**6AG1321-1CH20-2AA0**
8 inputs, 120/230 V AC	**6AG1321-1FF01-2AA0**
16 inputs, 24 V DC, diagnostics-capable	**6AG1321-7BH01-2AB0**

	Article No.
Accessories	See SIMATIC S7-300 digital input modules, page 5/67

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.

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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 SM322	SIPLUS SM322 8DA/24VDC	SIPLUS SM322 16DA/24VDC	SIPLUS S7-300 DIGITAL OUTPUT SM322
Ambient conditions				
Ambient temperature in operation				
• Min.	-25 °C	-25 °C; = Tmin	-25 °C	-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 EN 50155, 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 EN 50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation 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)	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)	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)	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)
Relative humidity				
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Technical specifications (continued)

Article number	**6AG1322-1CF00-7AA0**	**6AG1322-1HF10-2AA0**	**6AG1322-5HF00-4AB0**	**6AG1322-1FF01-7AA0**
Based on	**6ES7322-1CF00-0AA0**	**6ES7322-1HF10-0AA0**	**6ES7322-5HF00-0AB0**	**6ES7322-1FF01-0AA0**
	SIPLUS S7-300 SM322 8DO 48-125VDC	SIPLUS S7-300 SM322 8DA - RELAIS	SIPLUS S7-300 SM322 8RO	SIPLUS SM322 8DA/120/220VAC
Ambient conditions				
Ambient temperature in operation				
• Min.	-25 °C	-25 °C	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 EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/UL hazardous use applies
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)
Relative humidity				
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Technical specifications (continued)

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 SM322
Ambient conditions			
Ambient temperature in operation			
• Min.	0 °C; = Tmin	-40 °C; = Tmin	-40 °C
• 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
Extended ambient conditions			
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)
Relative humidity			
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS S7-300 SM 322 digital output modules	
Extended temperature range and exposure to media	
8 outputs, 24 V DC, 2 A	**6AG1322-1BF01-2XB0**
16 outputs, 24 V DC, 0.5 A	**6AG1322-1BH01-2AA0**
32 outputs, 24 V DC, 0.5 A	**6AG1322-1BL00-2AA0**
8 outputs, 48 to 125 V DC, 1.5 A	**6AG1322-1CF00-7AA0**
8 outputs, 120/230 V AC, 1 A	**6AG1322-1FF01-7AA0**
16 outputs, 120/230 V AC, 1 A	**6AG1322-1FH00-7AA0**
8 outputs, relay contacts, 5 A	**6AG1322-1HF10-2AA0**
16 outputs, relay contacts, 8 A	**6AG1322-1HH01-2AA0**
8 outputs, 24 V DC, 0.5 A, diagnostics-capable	**6AG1322-8BF00-2AB0**
Exposure to media	
8 outputs, 120/230 V AC, 2 A	**6AG1322-5FF00-4AB0**
8 outputs, relay contacts, 5 A, with RC filter, overvoltage protection	**6AG1322-5HF00-4AB0**
Conforms to EN 50155	
16 outputs, 24 V DC, 0.5 A, high speed	**6AG1322-1BH01-2AA0**
32 outputs, 24 V DC, 0.5 A	**6AG1322-1BL00-2AA0**
8 outputs, relay contacts, 5 A	**6AG1322-1HF10-2AA0**
16 outputs, relay contacts, 8 A	**6AG1322-1HH01-2AA0**
8 outputs, 24 V DC, 0.5 A, diagnostics-capable	**6AG1322-8BF00-2AB0**

	Article No.
Accessories	See SIMATIC S7-300 digital output modules, page 5/74

SIPLUS S7-300 SM 323 digital input/output modules

Overview

- Digital inputs and outputs
- For connection of switches, 2-wire proximity switches (BERO), 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.

Technical specifications

Article number	**6AG1323-1BH01-2AA0**
Based on	**6ES7323-1BH01-0AA0**
	SIPLUS S7-300 SM323 8DE/8DA
Ambient conditions	
Ambient temperature in operation	
• Min.	-40 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Extended ambient conditions	

• Relative to ambient temperature-atmospheric pressure-installation 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)

Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS S7-300 SM 323 digital input/output module	
Extended temperature range and exposure to media	
8 inputs, 8 outputs	**6AG1323-1BH01-2AA0**
Conforms to EN 50155	
8 inputs, 8 outputs	**6AG1323-1BH01-2AA0**
Accessories	See SIMATIC S7-300 digital input/output modules, page 5/78

Overview

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

Technical specifications

Article number	**6ES7331-7KF02-0AB0**	**6ES7331-7HF01-0AB0**	**6ES7331-1KF02-0AB0**	**6ES7331-7KB02-0AB0**
	SM331, 8AI, 9/12/14BIT	SM331, 8AI, 14BIT, 0,052MS/CHANNEL	SM331, 8AI, 13BIT	SM331, 2AI, 9/12/14BIT
Product type designation				
Supply voltage				
Load voltage L+				
• Rated value (DC)	24 V	24 V		24 V
• Reverse polarity protection	Yes	Yes		Yes
Input current				
from load voltage L+ (without load), max.	30 mA	50 mA		80 mA
from backplane bus 5 V DC, max.	50 mA	60 mA	90 mA	50 mA
Power losses				
Power loss, typ.	1 W	1.5 W	0.4 W	1.3 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

Technical specifications (continued)

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), thermoelements				
• Type B	No		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
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

Technical specifications (continued)

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
Analog value creation				
Measurement principle	integrating	Actual value encryption	integrating	integrating
Integration and conversion time/ resolution per channel				
• Resolution with overrange (bit including sign), max.	15 bit; Unipolar: 9/12/12/14 bits; bipolar: 9 bits + sign/ 12 bits + sign/12 bits + sign/ 14 bits + sign	14 bit; Unipolar: 14 bits; bipolar: 13 bits + sign	13 bit	15 bit; Unipolar: 9/12/12/14 bits; bipolar: 9 bits + sign/ 12 bits + sign/12 bits + sign/ 14 bits + 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	10 / 50 / 60 / 400 Hz	none / 400 / 60 / 50 Hz	50 / 60 Hz	10 / 50 / 60 / 400 Hz
Encoder				
Connection of signal encoders				
• 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 limit in overall temperature range				
• Voltage, relative to input area, (+/-)	1 %; ±1% (80 mV); ±0.6% (250 mV to 1 000 mV); ±0.8% (2.5 V to 10 V)	0.4 %	0.6 %; +/-0.6% (+/-5 V, 10 V, 1 to 5 V, 0 to 10 V); +/-0.5% (+/-50 mV, 500 mV, 1 V)	1 %; ±1% (80 mV); ±0.6% (250 mV to 1 000 mV); ±0.8% (2.5 V to 10 V)
• Current, relative to input area, (+/-)	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 area, (+/-)	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 area, (+/-)	0.7 %; +/-0.7% (Pt100/ Ni100); +/-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 %; +/-0.7% (Pt100/ Ni100); +/-0.8% (Pt100 climate)
Basic error limit (operational limit at 25 °C)				
• Voltage, relative to input area, (+/-)	0.6 %; +/-0.4% (250 to 1000 mV); +/-0.6 % (2.5 to 10 mV); +/-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 %; ±0.6% (80 mV, 2.5 V to 10 V); ±0.4% (250 mV to 1 000 mV)
• Current, relative to input area, (+/-)	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 area, (+/-)	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 area, (+/-)	0.6 %; ±0.5% (Pt100/ Ni100), ±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 %; ±0.5% (Pt100/ Ni100), ±0.6% (Pt100 climate)

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Technical specifications (continued)

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
Isochronous mode				
Isochronous operation (application synchronized up to terminal)	No	Yes	No	No
Interrupts/diagnostics/ status information				
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
Diagnostic messages				
• Diagnostic information readable	Yes	Yes	No	Yes
Galvanic isolation				
Galvanic isolation analog inputs				
• between the channels	No	No	No	No
• between the channels and the backplane bus	Yes	Yes	Yes	Yes
Isolation				
Isolation checked with	500 V DC	500 V DC	500 V DC	500 V DC
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	120 mm	120 mm	117 mm	120 mm
Weights				
Weight, approx.	250 g	200 g	250 g	250 g

Article number	6ES7331-7PF01-0AB0 SM331, 8AI, RESIST., PT100/200/1000, ..	6ES7331-7PF11-0AB0 SM331, 8AI, 16BIT, THERMOCOUPLE	6ES7331-7PE10-0AB0 SM331, 6AI, 16BIT, THERMOCOUPLE	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
Product type designation					
Supply voltage					
Load voltage L+					
• Rated value (DC)	24 V	24 V	24 V		24 V
• Reverse polarity protection	Yes	Yes	Yes		Yes
Input current					
from load voltage L+ (without load), max.	240 mA	200 mA	150 mA		200 mA
from backplane bus 5 V DC, max.	100 mA	100 mA	100 mA	130 mA	100 mA
Power losses					
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

Technical specifications (continued)

Article number	**6ES7331-7PF01-0AB0** SM331, 8AI, RESIST., PT100/200/1000, ..	**6ES7331-7PF11-0AB0** SM331, 8AI, 16BIT, THERMOCOUPLE	**6ES7331-7PE10-0AB0** SM331, 6AI, 16BIT, THERMOCOUPLE	**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), 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), thermoelements					
• Type B	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
• Input resistance (Type TXK/TXK(L) to GOST)			10 MΩ		
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

Technical specifications (continued)

Article number	**6ES7331-7PF01-0AB0**	**6ES7331-7PF11-0AB0**	**6ES7331-7PE10-0AB0**	**6ES7331-7NF00-0AB0**	**6ES7331-7NF10-0AB0**
	SM331, 8AI, RESIST., PT100/200/1000, ..	SM331, 8AI, 16BIT, THERMOCOUPLE	SM331, 6AI, 16BIT, THERMOCOUPLE	SM331,8AI, +/-5/10V,1-5V, +/-20MA,0/4-20MA	SM331,8AI, +/-5/10V,1-5V, +/-20MA,0/4-20MA
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 compensations socket		Yes	Yes		
- external temperature compensation with Pt100		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 creation					
Measurement principle	integrating	integrating	integrating	integrating	integrating
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 bits; bipolar: 15 bits + sign/ 15 bits + sign/ 15 bits + sign/ 15 bits + sign	16 bit; Unipolar: 15/15/15/15 bits; bipolar: 15 bits + sign/ 15 bits + sign/ 15 bits + sign/ 15 bits + 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		10 ms (4-channel mode); 95/83/72/23 ms (8-channel mode)
• Integration time (ms)			10 / 16,67 / 20 / 100		
• Interference voltage suppression for interference frequency f1 in Hz	400 / 60 / 50 Hz	400 / 60 / 50 Hz	10 / 50 / 60 / 400 Hz	10 / 50 / 60 / 400 Hz	400 / 60 / 50 Hz, combinations of 400, 60, 50 Hz
Encoder					
Connection of signal encoders					
• for current measurement as 2-wire transducer				Yes; with external transmitter; possible with separate supply for transmitter	Yes; with external transmitter, current supply; possible with separate supply for transmitter
• for current measurement as 4-wire transducer				Yes	Yes
• for resistance measurement with two-wire connection	Yes; without resis-tance correction				
• for resistance measurement with three-wire connection	Yes				
• for resistance measurement with four-wire connection	Yes				

Technical specifications (continued)

Article number	**6ES7331-7PF01-0AB0**	**6ES7331-7PF11-0AB0**	**6ES7331-7PE10-0AB0**	**6ES7331-7NF00-0AB0**	**6ES7331-7NF10-0AB0**
	SM331, 8AI, RESIST., PT100/200/1000, ..	SM331, 8AI, 16BIT, THERMOCOUPLE	SM331, 6AI, 16BIT, THERMOCOUPLE	SM331,8AI, +/-5/10V,1-5V, +/-20MA,0/4-20MA	SM331,8AI, +/-5/10V,1-5V, +/-20MA,0/4-20MA
Errors/accuracies					
Operational limit in overall temperature range					
• Voltage, relative to input area, (+/-)		+/- 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 area, (+/-)				0.3 %; At Ucm = 0 V or ±0.9 % at Ucm = 50 V	0.1 %
• Resistance, relative to input area, (+/-)	0.1 %				
• Resistance thermometer, relative to input area, (+/-)	+/- 1 K				
Basic error limit (operational limit at 25 °C)					
• Voltage, relative to input area, (+/-)			See manual for details	0.05 %	0.05 %
• Current, relative to input area, (+/-)				0.05 %	0.05 %
• Resistance, relative to input area, (+/-)	0.05 %				
• Resistance thermometer, relative to input area, (+/-)	+/- 0,5 K				
Isochronous mode					
Isochronous operation (application synchronized up to terminal)	No	No	No	No	No
Interrupts/diagnostics/ status information					
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)
Diagnostic messages					
• Diagnostic information readable	Yes	Yes	Yes	Yes	Yes
Galvanic isolation					
Galvanic isolation analog inputs					
• between the channels	No	No	Yes	No	No
• between the channels, in groups of	2	2	1	2	2
• between the channels and the backplane bus	Yes	Yes	Yes	Yes	Yes
Isolation					
Isolation checked with	500 V DC	500 V DC	2500 V DC	500 V DC	500 V AC
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	120 mm	120 mm
Weights					
Weight, approx.	272 g	272 g	272 g	272 g	272 g

SM 331 analog input modules

Ordering data	Article No.
SM 331 analog input modules	
Including labeling strips, bus connector, measuring range modules	
8 inputs, 13-bit resolution	**6ES7331-1KF02-0AB0**
8 inputs, resolution 9/12/14 bits	**6ES7331-7KF02-0AB0**
2 inputs, resolution 9/12/14 bits	**6ES7331-7KB02-0AB0**
8 inputs, enhanced resolution 16 bits	**6ES7331-7NF00-0AB0**
8 inputs, enhanced resolution 16 bits, 4-channel mode	**6ES7331-7NF10-0AB0**
8 inputs, resolution 14 bits, for isochronous mode	**6ES7331-7HF01-0AB0**
6 inputs, for thermal elements, resolution 16 bits	**6ES7331-7PE10-0AB0**
8 inputs, for thermal resistors	**6ES7331-7PF01-0AB0**
8 inputs, for thermoelements	**6ES7331-7PF11-0AB0**
Measuring range module for analog inputs	**6ES7974-0AA00-0AA0**
1 module for 2 analog inputs; 2 units (spare part)	
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**
40-pin, with screw contacts	
• 1 unit	**6ES7392-1AM00-0AA0**
• 100 units	**6ES7392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7392-1BM01-0AA0**
• 100 units	**6ES7392-1BM01-1AB0**
Front door, elevated design	**6ES7328-0AA00-7AA0**
e.g. for 32-channel modules; for connecting 1.3 mm^2/16 AWG wires	
SIMATIC TOP connect	See page 5/247
Bus connectors	**6ES7390-0AA00-0AA0**
1 unit (spare part)	
Shield connecting element	**6ES7390-5AA00-0AA0**
80 mm wide, with 2 rows for 4 terminal elements each	

	Article No.
Terminal elements	
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	**6ES7392-2XY00-0AA0**
10 units (spare part), for modules with 20-pin front connector	
Labeling strips	**6ES7392-2XX00-0AA0**
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	**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**
SIMATIC Manual Collection	**6ES7998-8XC01-8YE0**
Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	
SIMATIC Manual Collection update service for 1 year	**6ES7998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	

Overview

- Analog outputs
- For the connection of analog actuators

Technical specifications

Article number	**6ES7332-5HB01-0AB0**	**6ES7332-5HD01-0AB0**	**6ES7332-5HF00-0AB0**	**6ES7332-7ND02-0AB0**
	SM332, 2AA, U/I, 11/12BIT	SM332, 4AA, U/I, 11/12BIT	SM332, 8AA, U/I, 11/12BIT	SM332, 4AA, 0-10V, 0-5V, +/-10V,+/-20MA
Product type designation				
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 losses				
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

Technical specifications (continued)

Article number	**6ES7332-5HB01-0AB0**	**6ES7332-5HD01-0AB0**	**6ES7332-5HF00-0AB0**	**6ES7332-7ND02-0AB0**
	SM332, 2AA, U/I, 11/12BIT	SM332, 4AA, U/I, 11/12BIT	SM332, 8AA, U/I, 11/12BIT	SM332, 4AA, 0-10V, 0-5V, +/-10V,+/-20MA
Analog value creation				
Integration and conversion time/ resolution per channel				
• Resolution with overrange (bit including sign), max.	12 bit; +/-10 V, +/-20 mA, 4 to 20 mA, 1 to 5 V: 11 bits + sign; 0 to 10 V, 0 to 20 mA: 12 bits	12 bit; +/-10 V, +/-20 mA, 4 to 20 mA, 1 to 5 V: 11 bits + sign; 0 to 10 V, 0 to 20 mA: 12 bits	12 bit; +/-10 V, +/-20 mA, 4 to 20 mA, 1 to 5 V: 11 bits + sign; 0 to 10 V, 0 to 20 mA: 12 bits	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
Errors/accuracies				
Operational limit in overall temperature range				
• Voltage, relative to output area, (+/-)	0.5 %	0.5 %	0.5 %	0.12 %
• Current, relative to output area, (+/-)	0.6 %	0.6 %	0.6 %	0.18 %
Basic error limit (operational limit at 25 °C)				
• Voltage, relative to output area, (+/-)	0.4 %	0.4 %	0.4 %	0.02 %
• Current, relative to output area, (+/-)	0.5 %	0.5 %	0.5 %	0.02 %
Interrupts/diagnostics/ status information				
Substitute values connectable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable
Alarms				
• Diagnostic alarm	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable
Diagnostic messages				
• Diagnostic information readable	Yes	Yes	Yes	Yes
Galvanic isolation				
Galvanic isolation analog outputs				
• between the channels and the backplane bus	Yes	Yes	Yes	Yes
Isolation				
Isolation checked with	500 V DC	500 V DC	500 V DC	1500 V DC
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	120 mm	120 mm	120 mm	120 mm
Weights				
Weight, approx.	220 g	220 g	272 g	220 g

Ordering data	Article No.
SM 332 analog output modules	
incl. labeling strips, bus connector	
4 outputs, 11/12 bit	**6ES7332-5HD01-0AB0**
4 outputs, 16 bit	**6ES7332-7ND02-0AB0**
2 outputs, 11/12 bit	**6ES7332-5HB01-0AB0**
8 outputs, 11/12 bit	**6ES7332-5HF00-0AB0**
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**
40-pin, with screw contacts	
• 1 unit	**6ES7392-1AM00-0AA0**
• 100 units	**6ES7392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7392-1BM01-0AA0**
• 100 units	**6ES7392-1BM01-1AB0**
Front door, elevated design	**6ES7328-0AA00-7AA0**
e.g. for 32-channel modules; for connecting 1.3 mm^2/16 AWG wires	
SIMATIC TOP connect	See page 5/247
Bus connectors	
1 unit (spare part)	**6ES7390-0AA00-0AA0**
Shield connecting element	**6ES7390-5AA00-0AA0**
80 mm wide, with 2 rows for 4 terminal elements each	
Terminal elements	
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**

	Article No.
Label cover	**6ES7392-2XY00-0AA0**
10 units (spare part), for modules with 20-pin front connector	
Labeling strips	**6ES7392-2XX00-0AA0**
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	**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**
SIMATIC Manual Collection	**6ES7998-8XC01-8YE0**
Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	
SIMATIC Manual Collection update service for 1 year	**6ES7998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	

SM 334 analog input/output modules

Overview

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

Technical specifications

Article number	**6ES7334-0CE01-0AA0**	**6ES7334-0KE00-0AB0**
	SM334, 4AI, 2AO, NON ISOL.	SM334, 4AI/2AO, 0-10V F.PT100
Product type designation		
Supply voltage		
Load voltage L+		
• Rated value (DC)	24 V	24 V
Input current		
from load voltage L+ (without load), max.	110 mA	80 mA
from backplane bus 5 V DC, max.	55 mA	60 mA
Power losses		
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

Technical specifications (continued)

Article number	**6ES7334-0CE01-0AA0** SM334, 4AI, 2AO, NON ISOL.	**6ES7334-0KE00-0AB0** SM334, 4AI/2AO, 0-10V F.PT100
Analog outputs		
Number of analog outputs	2	2
Voltage output, short-circuit protection	Yes	Yes
Voltage output, short-circuit current, max.	11 mA	10 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
Analog value creation		
Integration and conversion time/ resolution per channel		
• Resolution with overrange (bit including sign), max.	8 bit	12 bit
• Integration time (ms)		16,67 / 20 ms
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 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

Technical specifications (continued)

Article number	**6ES7334-0CE01-0AA0** SM334, 4AI, 2AO, NON ISOL.	**6ES7334-0KE00-0AB0** SM334, 4AI/2AO, 0-10V F.PT100
Errors/accuracies		
Operational limit in overall temperature range		
• Voltage, relative to input area, (+/-)	0.9 %	0.7 %; 0 to 10 V
• Current, relative to input area, (+/-)	0.8 %	
• Resistance, relative to input area, (+/-)		3.5 %; 10 kOhm
• Resistance thermometer, relative to input area, (+/-)		1 %
• Voltage, relative to output area, (+/-)	0.6 %	1 %
• Current, relative to output area, (+/-)	1 %	
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to input area, (+/-)	0.7 %	0.5 %; 0 to 10 V
• Current, relative to input area, (+/-)	0.6 %	
• Resistance, relative to input area, (+/-)		2.8 %; 10 kOhm
• Resistance thermometer, relative to input area, (+/-)		0.8 %
• Voltage, relative to output area, (+/-)	0.5 %	0.85 %
• Current, relative to output area, (+/-)	0.5 %	
Interrupts/diagnostics/ status information		
Alarms		
• Alarms	No	No
Diagnostic messages		
• Diagnostic functions	No	No
Galvanic isolation		
Galvanic isolation analog inputs		
• between the channels and the backplane bus	No	Yes
Galvanic isolation analog outputs		
• between the channels and the backplane bus	No	Yes
Isolation		
Isolation checked with	500 V DC	500 V DC
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.	285 g	200 g

Ordering data

	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 connectors	
20-pin, with screw contacts	
• 1 unit	**6ES7392-1AJ00-0AA0**
• 100 units	**6ES7392-1AJ00-1AB0**
20-pin, with spring-loaded terminals	
• 1 unit	**6ES7392-1BJ00-0AA0**
• 100 units	**6ES7392-1BJ00-1AB0**
Front door, elevated design	**6ES7328-0AA00-7AA0**
e.g. for 32-channel modules; for connecting 1.3 mm^2/16 AWG wires	
SIMATIC TOP connect	See page 5/247
Bus connectors	**6ES7390-0AA00-0AA0**
1 unit (spare part)	
Shield connecting element	**6ES7390-5AA00-0AA0**
80 mm wide, with 2 rows for 4 terminal elements each	
Terminal elements	
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**

	Article No.
Label cover	**6ES7392-2XY00-0AA0**
10 units (spare part), for modules with 20-pin front connector	
Labeling strips	**6ES7392-2XX00-0AA0**
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	**6ES7392-2AX00-0AA0**
light-beige	**6ES7392-2BX00-0AA0**
yellow	**6ES7392-2CX00-0AA0**
red	**6ES7392-2DX00-0AA0**
SIMATIC Manual Collection	**6ES7998-8XC01-8YE0**
Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	
SIMATIC Manual Collection update service for 1 year	**6ES7998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	

SIPLUS S7-300 SM 331 analog input modules

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.

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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 SM331 8AI	SIPLUS SM331 2AE	SIPLUS SM331 8AI
Ambient conditions			
Ambient temperature in operation			
• Min.	-25 °C	-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	70 °C; = Tmax; for use on railway vehicles according to EN 50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies
Extended ambient conditions			

• Relative to ambient temperature-atmospheric pressure-installation 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)		

Relative humidity			
- With condensation, 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			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Technical specifications (continued)

Article number Based on	**6AG1331-7NF00-2AB0** **6ES7331-7NF00-0AB0** SIPLUS S7-300 SM331 8AI	**6AG1331-7NF10-2AB0** **6ES7331-7NF10-0AB0** SIPLUS SM331 8AI - 40POL	**6AG1331-7PF01-4AB0** **6ES7331-7PF01-0AB0** SIPLUS SM331 8AI	**6AG1331-7PF11-4AB0** **6ES7331-7PF11-0AB0** SIPLUS_SM331_8AI
Ambient conditions				
Ambient temperature in 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
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation 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)	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)	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)
Relative humidity				
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)			
- 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				
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

SIPLUS S7-300 SM 331 analog input modules

Ordering data	Article No.
SIPLUS S7-300 SM 331 analog input modules	
Extended temperature range and exposure to media	
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 media	
8 inputs, for thermal resistors	**6AG1331-7PF01-4AB0**
8 inputs, for thermocouples	**6AG1331-7PF11-4AB0**
Conforms to EN 50155	
8 inputs, 9/12/14-bit resolution	**6AG1331-7KF02-2AB0**
8 inputs, enhanced 16-bit resolution	**6AG1331-7NF00-2AB0**

Accessories	Article No.
	See SIMATIC S7-300 analog input modules, page 5/94

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.

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Technical specifications

Article number	**6AG1332-5HD01-7AB0**	**6AG1332-7ND02-4AB0**	**6AG1332-5HB01-2AB0**	**6AG1332-5HF00-2AB0**
Based on	**6AG1332-5HD01-0AB0**	**6AG1332-7ND02-0AB0**	**6AG1332-5HB01-0AB0**	**6AG1332-5HF00-0AB0**
	SIPLUS S7-300 SM332 4AA U/I	SIPLUS SM332 4AA CHANNELS ISOLATED INDIV.	SIPLUS SM332 2AA	SIPLUS S7-300 SM332 8AO
Ambient conditions				
Ambient temperature in 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
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation 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)	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)	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)	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)
Relative humidity				
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

SIPLUS S7-300 SM 332 analog output modules

Ordering data	Article No.
SIPLUS S7-300 SM 332 analog output modules	
Extended temperature range and exposure to media	
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 media	
4 outputs, 16-bit; only medial exposure	**6AG1332-7ND02-4AB0**
Conforms to EN 50155	
2 outputs, 11/12-bit	**6AG1332-5HB01-2AB0**

	Article No.
Accessories	See SIMATIC S7-300 analog output modules, page 5/97

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.

Technical specifications

Article number	**6AG1334-0KE00-7AB0**
Based on	**6ES7334-0KE00-0AB0**
	SIPLUS S7-300 SM334 4AE 2AA
Ambient conditions	
Ambient temperature in operation	
• Min.	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Extended ambient conditions	
Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS S7-300 SM 334 analog input/output modules Extended temperature range and exposure to media 4 inputs, 2 outputs; resistance measurement, Pt 100	**6AG1334-0KE00-7AB0**
Accessories	See SIMATIC S7-300 analog input/output modules, page 5/101

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

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Technical specifications

Article number	**6ES7326-1RF01-0AB0**	**6ES7326-1BK02-0AB0**
	SM326, 8DE, DC24V, FAILSAFE	SM326, F-DI 24 X DC24V, FAILSAFE
Product type designation		
Supply voltage		
Rated value (DC)		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
Type of output voltage	8.2 V DC	
Output current		
• nominal		400 mA
Power losses		
Power loss, typ.		10 W
Digital inputs		
Number of digital inputs	8	24
Number of simultaneously controllable inputs		
all mounting positions		
- up to 40 °C, max.	8	24
- up to 60 °C, max.	8	24; (at 24 V) or 18 (at 28.8 V)
Input voltage		
• Type of input voltage		DC
• Rated value (DC)		24 V
• for signal "0"		-30 to +5V
• for signal "1"		+11 to +30V
Input current		
• for signal "0", max. (permissible quiescent current)	0.35 to 1.2 mA	2 mA
• 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
- at "1" to "0", 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
• Unshielded, max.	100 m	100 m

Technical specifications (continued)

Article number	**6ES7326-1RF01-0AB0**	**6ES7326-1BK02-0AB0**
	SM326, 8DE, DC24V, FAILSAFE	SM326, F-DI 24 X DC24V, FAILSAFE
Encoder		
Connectable encoders		
• 2-wire sensor		Yes; if short-circuit test is deactivated
- Permissible quiescent current (2-wire sensor), max.		2 mA
Interrupts/diagnostics/ status information		
Alarms		
• Diagnostic alarm	Yes; Parameterizable	Yes
Diagnostic messages		
• Diagnostic information readable		Yes
Ex(i) characteristics		
Module for Ex(i) protection	Yes	
Max. values of input circuits (per channel)		
• Co (permissible external capacity), max.	3 µF	
• Io (short-circuit current), max.	13.9 mA	
• Lo (permissible external inductivity), max.	80 mH	
• Po (power of load), max.	33.1 mW	
• Uo (output no-load voltage), max.	10 V	
• Um (fault voltage), max.	60V DC/30V AC	
• Ta (permissible ambient temperature), max.	60 °C	60 °C
Galvanic isolation		
Galvanic isolation digital inputs		
• between the channels	Yes	Yes
• between the channels, in groups of		12
• between the channels and the backplane bus	Yes	Yes
Isolation		
Isolation checked with		500V DC/350V AC
Standards, approvals, certificates		
Highest safety class achievable in safety mode		
• acc. to DIN VDE 0801		AK 6
• acc. to EN 954		Cat. 4
• SIL according to IEC 61508	SIL 2 (single-channel), SIL 3 (two-channel)	SIL 3
Use in hazardous areas		
• Test number KEMA	99 ATEX 2671 X	
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

SM 326 F digital input modules - Safety Integrated

Ordering data	Article No.
SM 326 F digital input modules	
24 inputs, 24 V DC	**6ES7326-1BK02-0AB0**
8 inputs, 24 V DC, NAMUR	**6ES7326-1RF01-0AB0**
S7 Distributed Safety V5.4 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 Requirement: STEP 7 V5.3 SP3 and higher	
Floating License	**6ES7833-1FC02-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7833-1FC02-0YH5**
S7 Distributed Safety upgrade	
From V5.x to V5.4; Floating license for 1 user	**6ES7833-1FC02-0YE5**
STEP 7 Safety Advanced V13 SP1 Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 Professional V13 SP1	
Floating license for 1 user	**6ES7833-1FA13-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7833-1FA13-0YH5**
DIN rail for active bus modules for max. 5 active bus modules for hot swapping function	
• 483 mm (19") long	**6ES7195-1GA00-0XA0**
• 530 mm long	**6ES7195-1GF30-0XA0**
• 620 mm long	**6ES7195-1GG30-0XA0**
• 2000 mm long	**6ES7195-1GC00-0XA0**
Active bus module BM 1 x 80 for 1 module with 80 mm width	**6ES7195-7HC00-0XA0**
SITOP power supply module 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 contacts	
• 1 unit	**6ES7392-1AM00-0AA0**
• 100 units	**6ES7392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7392-1BM01-0AA0**
• 100 units	**6ES7392-1BM01-1AB0**
Front door, higher version, for F-modules For F-modules; for connecting 1.3 mm^2/16 AWG wires; wiring diagram and labels in yellow	**6ES7328-7AA10-0AA0**
Labeling strips For fail-safe modules (spare part); 10 units	**6ES7392-2XX20-0AA0**
Label cover For fail-safe 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 Manual Collection Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	**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

Overview

- Digital outputs for the fail-safe SIMATIC S7 systems
- Two versions (1 x current sourcing, 1 x current sinking)
- 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

Technical specifications

Article number	**6ES7326-2BF10-0AB0**	**6ES7326-2BF41-0AB0**
	SM326, F-DO10XDC24V/2A PP, FAILSAFE	SM 326, F-DO 8 X DC 24V/2A PM
Product type designation		
Supply voltage		
Load voltage L+		
• Rated value (DC)	24 V; 1L+, 2L+, 3L+	24 V; 1L+, 2L+, 3L+
Input current		
from load voltage1L+, max.	100 mA; from supply voltage	75 mA; from supply voltage
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 losses		
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" without series diode, min.		L+ (-1.0 V)
Output current		
• for signal "1" rated value	2 A	2 A
• for signal "1" permissible range for 0 to 40 °C, min.	7 mA	7 mA
• for signal "1" permissible range for 0 to 40 °C, max.	2.4 A	2 A; 2 A for horizontal installation, 1 A for vertical installation
• for signal "1" permissible range for 40 to 60 °C, min.	7 mA	7 mA
• for signal "1" permissible range for 40 to 60 °C, max.	2.4 A	1 A; for horizontal installation
• for signal "0" residual current, max.	0.5 mA	0.5 mA

Technical specifications (continued)

Article number	**6ES7326-2BF10-0AB0**	**6ES7326-2BF41-0AB0**
	SM326, F-DO10XDC24V/2A PP, FAILSAFE	SM 326, F-DO 8 X DC 24V/2A PM
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
Aggregate current of 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 SIL3, AK 6, Cat 4
• Unshielded, max.	600 m	200 m
Interrupts/diagnostics/ status information		
Alarms		
• Diagnostic alarm	Yes	Yes; Parameterizable
Diagnostic messages		
• Diagnostic information readable	Yes	Yes
Galvanic isolation		
Galvanic isolation digital outputs		
• between the channels	Yes	Yes
• between the channels, in groups of	5	4
• between the channels and the backplane bus	Yes	Yes
• between the channels and the power supply of the electronics	Yes	Yes
Isolation		
Isolation checked with	370V for 1 min	500V DC/350V AC
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 according 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

Ordering data	Article No.
SM 326 F digital output modules	
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 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 Requirement: STEP 7 V5.3 SP3 and higher	
Floating License	**6ES7833-1FC02-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7833-1FC02-0YH5**
S7 Distributed Safety upgrade	
From V5.x to V5.4; Floating license for 1 user	**6ES7833-1FC02-0YE5**
STEP 7 Safety Advanced V13 SP1	
Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 Professional V13 SP1	
Floating license for 1 user	**6ES7833-1FA13-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7833-1FA13-0YH5**
DIN rail for active bus modules	
for max. 5 active bus modules, for function "Insertion and removal"	
• 483 mm (19") long	**6ES7195-1GA00-0XA0**
• 530 mm long	**6ES7195-1GF30-0XA0**
• 620 mm long	**6ES7195-1GG30-0XA0**
• 2000 mm long	**6ES7195-1GC00-0XA0**
Active bus modules	
BM 2 x 40 for accepting 2 IO modules each 40 mm wide	**6ES7195-7HB00-0XA0**
BM 1 x 80 for accepting 1 IO module 80 mm wide	**6ES7195-7HC00-0XA0**

	Article No.
SITOP power supply module	**6ES7307-1EA01-0AA0**
for ET 200M; 120/230 V AC, 24 V DC, 5 A; Type PS 307-1E	
Front connectors	
40-pin, with screw contacts	
• 1 unit	**6ES7392-1AM00-0AA0**
• 100 units	**6ES7392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7392-1BM01-0AA0**
• 100 units	**6ES7392-1BM01-1AB0**
Front door, higher version, for F-modules	**6ES7328-7AA10-0AA0**
For F-modules; for connecting 1.3 mm^2/16 AWG wires; wiring diagram and labels in yellow	
Labeling strips	**6ES7392-2XX20-0AA0**
For fail-safe modules (spare part), 10 units	
Label cover	**6ES7392-2XY20-0AA0**
For fail-safe modules (spare part), 10 units	
LK 393 cable guide	**6ES7393-4AA10-0AA0**
For F modules; L+ and M connections, 5 units	
SIMATIC Manual Collection	**6ES7998-8XC01-8YE0**
Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	
SIMATIC Manual Collection update service for 1 year	**6ES7998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	

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

SM 336 F analog input modules - Safety Integrated

Overview

- Analog inputs for the fail-safe SIMATIC S7 systems
- Applicable 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 to 20 mA, 4 to 20 mA
  - Short-circuit proof power supply from 2 or 4-wire transducer via the module
  - External encoder supply possible
  - Applicable in safety mode
  - HART communication
  - Firmware update using HW Config
  - Identification data

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Technical specifications

Article number	**6ES7336-4GE00-0AB0**
	SM 336, F.AI 6 X 0/4 ... 20MA HART
Product type designation	
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• Reverse polarity protection	Yes
Input current	
from backplane bus 5 V DC, max.	90 mA
from supply voltage L+, max.	150 mA; Typical
Power losses	
Power loss, typ.	4.5 W
Analog inputs	
Number of analog inputs	6
permissible input current for current input (destruction limit), max.	40 mA
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
• 4 mA to 20 mA	Yes
Cable length	
• shielded, max.	1 000 m
Analog value generation for the inputs	
Integration and conversion time/ resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit; 15 bits + sign
• Integration time (ms)	20 at 50 Hz 16.7 at 60 Hz
• 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

Article number	**6ES7336-4GE00-0AB0**
	SM 336, F.AI 6 X 0/4 ... 20MA HART
Errors/accuracies	
Operational limit in overall temperature range	
• Current, relative to input area, (+/-)	0.2 %; 40 µA
Basic error limit (operational limit at 25 °C)	
• Current, relative to input area, (+/-)	0.1 %
Interrupts/diagnostics/ status information	
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• Diagnostic information readable	Yes
Galvanic isolation	
Galvanic isolation analog inputs	
• between the channels	Yes
• between the channels and the backplane bus	Yes
• between the channels and the power supply of the electronics	Yes
Isolation	
Isolation checked with	370V for 1 min
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
• acc. to EN 954	4
• SIL according to IEC 61508	SIL 3
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	350 g

Ordering data

	Article No.
SM 336 F analog input modules	
6 inputs, 15 bit, 0/4 - 20 mA HART	**6ES7336-4GE00-0AB0**
S7 Distributed Safety V5.4 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 Requirement: STEP 7 V5.3 SP3 and higher	
Floating License	**6ES7833-1FC02-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7833-1FC02-0YH5**
S7 Distributed Safety upgrade	
From V5.x to V5.4; Floating license for 1 user	**6ES7833-1FC02-0YE5**
STEP 7 Safety Advanced V13 SP1	
Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 Professional V13 SP1	
Floating license for 1 user	**6ES7833-1FA13-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7833-1FA13-0YH5**
DIN rail for active bus modules	
for max. 5 active bus modules for hot swapping function	
• 483 mm long	**6ES7195-1GA00-0XA0**
• 530 mm long	**6ES7195-1GF30-0XA0**
• 620 mm long	**6ES7195-1GG30-0XA0**
• 2000 mm long	**6ES7195-1GC00-0XA0**
Active bus module BM 2x40	**6ES7195-7HB00-0XA0**
Bus module for accepting 2 IO modules each 40 mm wide	
SITOP power supply module	**6ES7307-1EA01-0AA0**
for ET 200M; 120/230 V AC, 24 V DC, 5 A; Type PS 307-1E	
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**
Front door, higher version, for F-modules	**6ES7328-7AA10-0AA0**
For F-modules; for connecting 1.3 mm^2/16 AWG wires; wiring diagram and labels in yellow	
Labeling strips	**6ES7392-2XX20-0AA0**
For fail-safe modules (spare part), 10 units	
Label cover	**6ES7392-2XY20-0AA0**
For fail-safe modules (spare part), 10 units	
LK 393 cable guide	**6ES7393-4AA10-0AA0**
For F modules; L+ and M connections, 5 units	
SIMATIC Manual Collection	**6ES7998-8XC01-8YE0**
Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	
SIMATIC Manual Collection update service for 1 year	**6ES7998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	

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

Isolation module

Overview

- Supports mixed operation of fail-safe signal modules in safety mode and S7-300 standard modules in an ET 200M when Cat. 4 or SIL 3 has to be achieved.
- The isolation module 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 isolation module must be implemented in the following situations:

Application	Isolation module must be used
Central use after CPU 31xF-2 DP or CPU 31xF-2 PN/DP	
• Only fail-safe modules in the tier	Yes, behind the CPU
• Standard and fail-safe modules in the tier	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	Yes, after the IM 36x
• Standard and fail-safe modules in the tier	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	Yes, after the IM 153-2
• Standard and fail-safe modules in the station	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	No
• Standard and fail-safe modules in the station	Yes, after the last standard module and before the first fail-safe module

Technical specifications

Article number	**6ES7195-7KF00-0XA0**
	SEPARATOR MOD. BETW. F- AND STD-MOD.
Product type designation	
Weights	
Weight, approx.	10 g

Ordering data

	Article No.
Isolation module	**6ES7195-7KF00-0XA0**
for simultaneous operation of fail-safe and standard modules in an ET 200M	
Isolation bus module	**6ES7195-7HG00-0XA0**
for accommodating the isolating module in an ET 200M	

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.

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Technical specifications

Article number	**6AG1326-1BK02-2AB0**	**6AG1326-1BK02-2AY0**	**6AG1326-1RF00-4AB0**
Based on	**6ES7326-1BK02-0AB0**	**6ES7326-1BK02-0AB0**	**6ES7326-1RF00-0AB0**
	SIPLUS S7-300 SM326F DI24	SIPLUS S7-300 SM326F DI24	SIPLUS S7-300 SM326F DI8 NAMUR
Ambient conditions			
Ambient temperature in operation			
• Min.	-25 °C; = Tmin	-25 °C; = Tmin	0 °C; = Tmin
• max.	60 °C; = Tmax	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN 50155	60 °C; = Tmax
Extended ambient conditions			
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 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			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

SIPLUS S7-300 SM 326 F digital input modules - Safety Integrated

Ordering data	Article No.
SIPLUS S7-300 SM 326 F digital input	
Extended temperature range and exposure to media	
24 inputs, 24 V DC, failsafe, with diagnostics interrupt	**6AG1326-1BK02-2AB0**
For medial exposure	
8 inputs, 24 V DC, NAMUR, failsafe	**6AG1326-1RF00-4AB0**
Conforms to EN 50155	
24 inputs, 24 V DC, failsafe, with diagnostics interrupt	**6AG1326-1BK02-2AY0**

	Article No.
Accessories	
Active bus modules	
Extended temperature range and exposure to media	
BM 2 x 40 for accepting 2 IO modules, each 40 mm wide	**6AG1195-7HB00-7XA0**
BM 1 x 80 for accepting 1 IO module, 80 mm wide	**6AG1195-7HC00-2XA0**
SIPLUS S7-300 PS 307 load power supply, 5 A	
Extended temperature range and exposure to media	
Incl. connection bracket 120/230 V AC; 24 V DC Output current 5 A (dimensions 60 x 125 x 120)	**6AG1307-1EA01-7AA0**
Additional accessories	See SIMATIC S7-300 SM 326 F digital input, page 5/110

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.

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Technical specifications

Article number	**6AG1326-2BF10-2AB0**	**6AG1326-2BF10-2AY0**	**6AG1326-2BF41-2AB0**	**6AG1326-2BF41-2AY0**
Based on	**6ES7326-2BF10-0AB0**	**6ES7326-2BF10-0AB0**	**6ES7326-2BF41-0AB0**	**6ES7326-2BF41-0AB0**
	SIPLUS S7-300 SM326F 10 DO	SIPLUS S7-300 SM326 10F-DO	SIPLUS S7-300 SM326F DO8	SIPLUS S7-300 SM326 F DO8 EN50155
Ambient conditions				
Ambient temperature in operation				
• Min.	-25 °C	-25 °C; = Tmin	-25 °C	-25 °C; = Tmin
• max.	60 °C	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN 50155	60 °C	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN 50155
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 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				
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	

SIPLUS S7-300 SM 326 F digital output modules - Safety Integrated

Ordering data	Article No.
SIPLUS S7-300 SM 326 F digital output	
Extended temperature range and exposure to media	
10 outputs, 24 V DC, 2 A, failsafe	**6AG1326-2BF10-2AB0**
8 outputs, 24 V DC, 2 A, failsafe, source-sinking output	**6AG1326-2BF41-2AB0**
Conforms to EN 50155	
10 outputs, 24 V DC, 2 A, failsafe	**6AG1326-2BF10-2AY0**
8 outputs, 24 V DC, 2 A, failsafe, source-sinking output	**6AG1326-2BF41-2AY0**

Accessories	Article No.
Active bus modules	
Extended temperature range and exposure to media	
BM 2 x 40 for accepting 2 IO modules each 40 mm wide	**6AG1195-7HB00-7XA0**
BM 1 x 80 for accepting 1 IO module 80 mm wide	**6AG1195-7HC00-2XA0**
SIPLUS S7-300 PS 307 load power supply, 5 A	**6AG1307-1EA01-7AA0**
Extended temperature range and exposure to media	
Incl. connection bracket 120/230 V AC; 24 V DC Output current 5 A (dimensions 60 x 125 x 120)	
Further accessories	See SIMATIC S7-300 SM 326 F digital output, page 5/113

SIPLUS S7-300 SM 336 F analog input modules - Safety Integrated

Overview

F-AI HART analog input module for ET 200M

- 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

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.

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Technical specifications

Article number	**6AG1336-4GE00-4AB0**
Based on	**6ES7336-4GE00-0AB0**
	SIPLUS S7-300 SM336 6AE F
Ambient conditions	
Ambient temperature in operation	
• Min.	0 °C; = Tmin
• max.	60 °C; = Tmax
Extended ambient conditions	
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 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	**6AG1336-4GE00-4AB0**
Based on	**6ES7336-4GE00-0AB0**
	SIPLUS S7-300 SM336 6AE F
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS S7-300 SM 336 F analog input module	
Exposure to media	
6 inputs, 15 bit, 0/4 - 20 mA HART	**6AG1336-4GE00-4AB0**

	Article No.
Accessories	
Active bus modules	
Extended temperature range and exposure to media	
BM 2 x 40 for accepting 2 IO modules, each 40 mm wide	**6AG1195-7HB00-7XA0**
BM 1 x 80 for accepting 1 IO module, 80 mm wide	**6AG1195-7HC00-2XA0**
SIPLUS S7-300 PS 307, 5 A load power supply	**6AG1307-1EA01-7AA0**
Extended temperature range and exposure to media	
Incl. connection bracket 120/230 V AC; 24 V DC Output current 5 A (dimensions 60 x 125 x 120)	
Additional accessories	See SIMATIC S7-300 SM 336 F analog input module, page 5/115

SIPLUS S7-300 isolation modules

Overview

- Permits combined operation of fail-safe signal modules in safety mode and standard S7-300 modules in the same ET 200M system.
- The isolation module 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.

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Technical specifications

Article number	**6AG1195-7KF00-2XA0**
Based on	**6ES7195-7KF00-0XA0** SIPLUS S7-300 ISOLATION MODULE
Ambient conditions	
Ambient temperature in operation	
• Min.	-25 °C; = Tmin
• max.	60 °C; = Tmax
Extended ambient conditions	
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)
Relative humidity	
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

Article number	**6AG1195-7KF00-2XA0**
Based on	**6ES7195-7KF00-0XA0** SIPLUS S7-300 ISOLATION MODULE
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes
- against chemically active substances / conformity with EN 60721-3-3	Yes
- against mechanically active substances / conformity with EN 60721-3-3	Yes

Ordering data

	Article No.
SIPLUS F isolating modules	
for simultaneous operation of fail-safe and standard modules in the same ET 200M	
Extended temperature range and exposure to media	**6AG1195-7KF00-2XA0**
Conforms to EN 50155	**6AG1195-7KF00-2XA0**

	Article No.
Accessories	
SIPLUS ET 200M separator bus module F	**6AG1195-7HG00-2XA0**
for the simultaneous operation of failsafe and standard modules in an ET200 M for the hot swapping function	
Extended temperature range and exposure to media	

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 DIN EN 60947-5-6 and NAMUR, optionally with wired or unwired mechanical contacts
- Diagnostics and diagnostics alarm programmable

Technical specifications

Article number	**6ES7321-7RD00-0AB0**
	SM321, 4DI, DC24V, HAZARDOUS AREAS
Product type designation	
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
Encoder supply	
Type of output voltage	via the inputs
Power losses	
Power loss, typ.	1.1 W
Digital inputs	
Number of NAMUR inputs	4
Input voltage	
• 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"	0.35 to 1.2 mA
- for signal "1"	2.1 to 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)
Cable length	
• Unshielded, max.	200 m
Encoder	
Connectable encoders	
• NAMUR encoder	Yes; Two-wire connection
Interrupts/diagnostics/ status information	
Diagnostic messages	
• Diagnostic information readable	Yes

Article number	**6ES7321-7RD00-0AB0**
	SM321, 4DI, DC24V, HAZARDOUS AREAS
Ex(i) characteristics	
Max. values of input circuits (per channel)	
• Co (permissible external capacity), max.	3 µF
• Io (short-circuit current), max.	14.1 mA
• Lo (permissible external inductivity), max.	100 mH
• Po (power of load), max.	33.7 mW
• Uo (output no-load voltage), max.	10 V
Galvanic isolation	
Galvanic isolation digital inputs	
• Galvanic isolation digital inputs	Yes
• between the channels, in groups of	1
Standards, approvals, certificates	
Use in hazardous areas	
• Type of protection acc. to EN 50020 (CENELEC)	[EEx ib] IIC
• Type of protection acc. to FM	Class II, Division 2, Group A, B, C, D T4
• Test number PTB	Ex-96.D.2094X
Ambient conditions	
Ambient temperature in operation	
• max.	60 °C
Connection method	
required front connector	20-pin
Weights	
Weight, approx.	230 g

Ex digital input modules

Ordering data	Article No.
Ex digital input module 4 inputs, isolated, NAMUR	**6ES7321-7RD00-0AB0**
Front connector 20-pin, with screw contacts	
• 1 unit	**6ES7392-1AJ00-0AA0**
• 100 units	**6ES7392-1AJ00-1AB0**
Front door, elevated design e.g. for 32 channel modules; enables connection of 1.3 mm^2/16 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**

	Article No.
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: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	**6ES7998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	**6ES7998-8XC01-8YE2**

Overview

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

Technical specifications

Article number	**6ES7322-5SD00-0AB0**	**6ES7322-5RD00-0AB0**
	SM322, 4DO, 15V DC,10MA, HAZARDOUS AREAS	SM322, 4DO, 15V DC,20MA, HAZARDOUS AREAS
Product type designation		
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.	70 mA	70 mA
Power losses		
Power loss, typ.	3 W	3 W
Digital outputs		
Number of digital outputs	4	4
short-circuit protection	Yes; Electronic	Yes; Electronic
• Response threshold, typ.	Output current with short-circuit protection, min. 10 mA + 10 %	Output current with short-circuit protection, min. 20.5 mA + 10 %
Load resistance range		
• upper limit	390 Ω; Two-wire connection	200 Ω; Two-wire connection
Output voltage		
• Rated value (DC)	24 V	15 V
Output current		
• for signal "1" permissible range for 0 to 60 °C, max.	10 mA; +/-10 %	20 mA; +/-10 %
Switching frequency		
• with resistive load, max.	100 Hz	100 Hz
Cable length		
• Unshielded, max.	200 m	200 m
Interrupts/diagnostics/ status information		
Diagnostic messages		
• Diagnostic information readable	Yes	Yes
• Short circuit	Yes	Yes
• Group error	Yes	Yes

Ex digital output modules

Technical specifications (continued)

Article number	**6ES7322-5SD00-0AB0** SM322, 4DO, 15V DC,10MA, HAZARDOUS AREAS	**6ES7322-5RD00-0AB0** SM322, 4DO, 15V DC,20MA, HAZARDOUS AREAS
Ex(i) characteristics		
Max. values of output circuits (per channel)		
• Co (permissible external capacity), max.	90 nF	500 nF
• Io (short-circuit current), max.	70 mA	85 mA
• Lo (permissible external inductivity), max.	6.7 mH	5 mH
• Po (power of load), max.	440 mW	335 mW
• Uo (output no-load voltage), max.	25.2 V	15.75 V
Galvanic isolation		
Galvanic isolation digital outputs		
• Galvanic isolation digital outputs	Yes	Yes
• between the channels, in groups of	1	1
Standards, approvals, certificates		
Use in hazardous areas		
• Type of protection acc. to EN 50020 (CENELEC)	[EEx ib] IIC	[EEx ib] IIC
• Type of protection acc. to FM	Class I, Division 2, Group 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 in operation		
• max.	60 °C	60 °C
Connection method		
required front connector	20-pin	20-pin
Weights		
Weight, approx.	230 g	230 g

Ordering data

	Article No.
Ex digital output modules	
4 outputs, isolated, 24 V DC, 10 mA	**6ES7322-5SD00-0AB0**
4 outputs, isolated, 15 V DC, 20 mA	**6ES7322-5RD00-0AB0**
Front connector	
20-pin, with screw contacts	
• 1 unit	**6ES7392-1AJ00-0AA0**
• 100 units	**6ES7392-1AJ00-1AB0**
Front door, elevated design e.g. for 32 channel modules; enables connection of 1.3 mm^2/16 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**

	Article No.
Labeling sheets for machine inscription for modules with 40-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**
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SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	**6ES7998-8XC01-8YE2**

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 DIN 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.

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Technical specifications

Article number	**6AG1321-7RD00-4AB0**
Based on	**6ES7321-7RD00-0AB0** SIPLUS SM321 4DI NAMUR
Ambient conditions	
Ambient temperature in operation	
• Min.	0 °C; = Tmin
• max.	60 °C; = Tmax
Extended ambient conditions	

• Relative to ambient temperature-atmospheric pressure-installation 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)

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**
Based on	**6ES7321-7RD00-0AB0** SIPLUS SM321 4DI NAMUR
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS S7-300 Ex digital input module Exposure to media 4 inputs, isolated, NAMUR	**6AG1321-7RD00-4AB0**

	Article No.
Accessories	See SIMATIC S7-300 Ex digital input modules, page 5/124

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)

5

Technical specifications

Article number	**6ES7331-7RD00-0AB0** SIMATIC S7, SM 331 ANALOG INPUT	**6ES7331-7SF00-0AB0** SIMATIC S7, SM 331 ANALOG INPUT
Product type designation		
Supply voltage		
Load voltage L+		
• Rated value (DC)	24 V	24 V
Input current		
from backplane bus 5 V DC, max.	60 mA	120 mA
from supply voltage L+, max.	150 mA	
Output voltage		
Power supply to the transmitters		
• present	Yes	
• Rated value (DC)	13 V; at 22 mA	
• No-load voltage (DC)	25.2 V	
Power losses		
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), currents		
• 0 to 20 mA	Yes	
• 4 mA to 20 mA	Yes	
Input ranges (rated values), thermoelements		
• 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

Technical specifications (continued)

Article number	**6ES7331-7RD00-0AB0** SIMATIC S7, SM 331 ANALOG INPUT	**6ES7331-7SF00-0AB0** SIMATIC S7, SM 331 ANALOG INPUT
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 creation		
Measurement principle	Sigma Delta	Sigma Delta
Integration and conversion time/ resolution per channel		
• Resolution with overrange (bit including sign), max.	16 bit; 10 to 15 bits + sign	16 bit; 10 to 15 bits + sign
• Integration time, parameterizable	Yes, 2.5 ... 100 ms	Yes, 2.5 ... 100 ms
• Interference voltage suppression for interference frequency f1 in Hz	10 ... 400 Hz	10 ... 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
Errors/accuracies		
Temperature error (relative to input range), (+/-)		Temperature error: 0.001 to 0.002 %/K
Operational limit in overall temperature range		
• Current, relative to input area, (+/-)	0.45 %	
• Resistance thermometer, relative to input area, (+/-)		0.09 to 0.04%
Basic error limit (operational limit at 25 °C)		
• Current, relative to input area, (+/-)	0.1 %	
• Resistance thermometer, relative to input area, (+/-)		0.1 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency		
• Series mode interference (peak value of interference < rated value of input range), min.	60 dB	60 dB
• Common mode interference, min.	130 dB	130 dB
Interrupts/diagnostics/ status information		
Diagnostic messages		
• Diagnostic information readable	Yes	Yes
• Overrange	Yes	Yes
• Wire break in signal transmitter cable	Yes	Yes
• Short circuit of the signal encoder cable	Yes	Yes
Ex(i) characteristics		
Max. values of input circuits (per channel)		
• Co (permissible external capacity), max.	90 nF	43 µF
• Io (short-circuit current), max.	68.5 mA	28.8 mA
• Lo (permissible external inductivity), max.	7.5 mH	40 mH
• Po (power of load), max.	431 mW	41.4 mW
• Ri, max.	50 Ω	
• Uo (output no-load voltage), max.	25.2 V	5.9 V

Ex analog input modules

Technical specifications (continued)

Article number	6ES7331-7RD00-0AB0 SIMATIC S7, SM 331 ANALOG INPUT	6ES7331-7SF00-0AB0 SIMATIC S7, SM 331 ANALOG INPUT
Galvanic isolation		
Galvanic isolation analog inputs		
• Galvanic isolation analog inputs	Yes	Yes
Permissible potential difference		
between the inputs (UCM)	60 V DC/30 V AC when used in the hazardous area; 400 V DC/250 V AC when used in NON-hazardous area	60 V DC/30 V AC when used in the hazardous area; 400 V DC/250 V AC when used in NON-hazardous area
between inputs and MANA (UCM)	60 V DC/30 V AC when used in the hazardous area; 400 V DC/250 V AC when used in NON-hazardous area	60 V DC/30 V AC when used in the hazardous area; 400 V DC/250 V AC when used in NON-hazardous area
Standards, approvals, certificates		
Use in hazardous areas		
• Type of protection acc. to EN 50020 (CENELEC)	[EEx ib] IIC	[EEx ib] IIC
• Type of protection acc. to FM	Class I, Division 2, Group A, B, C, D T4	Class I, Division 2, Group A, B, C, D T4
• Test number PTB	Ex-96.D.2092X	Ex-96.D.2108X
Ambient conditions		
Ambient temperature in operation		
• max.	60 °C	60 °C
Connection method		
required front connector	20-pin	20-pin
Weights		
Weight, approx.	290 g	210 g

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	**6ES7392-1AJ00-0AA0**
• 100 units	**6ES7392-1AJ00-1AB0**
Front door, elevated design	**6ES7328-0AA00-7AA0**
e.g. for 32 channel modules; enables connection of 1.3 mm^2/16 AWG wires	
LK 393 cable guide	**6ES7393-4AA00-0AA0**
Mandatory for operation in Ex-hazard areas	
Labeling strips	**6ES7392-2XX00-0AA0**
10 units (spare part), for modules with 20-pin front connector	
Label cover	**6ES7392-2XY00-0AA0**
10 units (spare part), for modules with 20-pin front connector	

	Article No.
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	**6ES7998-8XC01-8YE0**
Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	
SIMATIC Manual Collection update service for 1 year	**6ES7998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	

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

Technical specifications

Article number	**6ES7332-5RD00-0AB0** SM332, 4AA, 0/4-20MA, HAZARD. AREA
Product type designation	
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
Input current	
from load voltage L+ (without load), max.	180 mA
from backplane bus 5 V DC, max.	80 mA
Power losses	
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
Connection of actuators	
• for current output two-wire connection	Yes
Load impedance (in rated range of output)	
• with current outputs, max.	500 Ω
Cable length	
• shielded, max.	200 m

Article number	**6ES7332-5RD00-0AB0** SM332, 4AA, 0/4-20MA, HAZARD. AREA
Analog value creation	
Integration and conversion time/ resolution per channel	
• Resolution with overrange (bit including sign), max.	15 bit
• Basic conversion time (ms)	2,5 ms
Errors/accuracies	
Operational limit in overall temperature range	
• Current, relative to output area, (+/-)	0.55 %
Basic error limit (operational limit at 25 °C)	
• Current, relative to output area, (+/-)	0.2 %
Interrupts/diagnostics/ status information	
Diagnostic messages	
• Diagnostic information readable	Yes
• Overrange	Yes
• Wire break in actuator cable	Yes
• Group error	Yes
Ex(i) characteristics	
Max. values of output circuits (per channel)	
• Co (permissible external capacity), max.	850 nF
• Io (short-circuit current), max.	70 mA
• Lo (permissible external inductivity), max.	6.6 mH
• Po (power of load), max.	440 mW
• Uo (output no-load voltage), max.	14 V

Ex analog output modules

Technical specifications (continued)

Article number	**6ES7332-5RD00-0AB0** SM332, 4AA, 0/4-20MA, HAZARD. AREA
Galvanic isolation	
Galvanic isolation analog outputs	
• Galvanic isolation analog outputs	Yes
Permissible potential difference	
between outputs and MANA (UCM)	60 V DC/30 V AC when used in the hazardous area; 400 V DC/250 V AC when used in NON-hazardous area
between the outputs (UCM)	60 V DC/30 V AC when used in the hazardous area; 400 V DC/250 V AC when used in NON-hazardous area
Standards, approvals, certificates	
Use in hazardous areas	
• Type of protection acc. to EN 50020 (CENELEC)	[EEx ib] IIC
• Type of protection acc. to FM	Class I, Division 2, Group A, B, C, D T4
• Test number PTB	Ex-96.D.2026X

Article number	**6ES7332-5RD00-0AB0** SM332, 4AA, 0/4-20MA, HAZARD. AREA
Ambient conditions	
Ambient temperature in operation	
• max.	60 °C
Connection method	
required front connector	20-pin
Weights	
Weight, approx.	280 g

Ordering data

	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	**6ES7392-1AJ00-0AA0**
• 100 units	**6ES7392-1AJ00-1AB0**
Front door, elevated design e.g. for 32 channel modules; enables connection of 1.3 mm^2/16 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**

	Article No.
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: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	**6ES7998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	**6ES7998-8XC01-8YE2**

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 (6AG1331-7RD00-2AB0 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.

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Technical specifications

Article number	**6AG1331-7RD00-2AB0**	**6AG1331-7SF00-4AB0**
Based on	**6ES7331-7RD00-0AB0**	**6ES7331-7SF00-0AB0**
	SIPLUS S7-300 SM331 4AE	SIPLUS S7-300 SM331 AI
Ambient conditions		
Ambient temperature in 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
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation 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)
Relative humidity		
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %	100 %
Resistance		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	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	**6AG1331-7RD00-2AB0**
Exposure to media	
8/4 inputs, isolated, for thermocouples and Pt100, Pt200, Ni100; medial exposure only	**6AG1331-7SF00-4AB0**

	Article No.
Accessories	See SIMATIC S7-300 Ex analog input modules, page 5/133

FM 350-1 counter modules

Overview

- One-channel intelligent counter module for simple counting tasks
- For direct connection of incremental encoders
- Comparison function with 2 specifiable comparison values
- Integrated digital outputs to output the response upon reaching the comparison value.
- Operating modes:
  - Continuous counting
  - One-shot counting
  - Periodic counting
- Special functions:
  - Set counter
  - Latch counter
- Start/stop counter with gate function

Note:

Incremental encoders and pre-assembled connecting cables for counting and positioning functions are offered under SIMODRIVE Sensor or Motion Connect 500.

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

Technical specifications

Article number	**6ES7350-1AH03-0AE0** FM350-1, COUNTER MODULE, UP TO 500 KHZ
Product type designation	
Supply voltage	
Aux. voltage 1L+, load voltage 2L+	
• Rated value (DC)	24 V
Permissible range (ripple included)	
- dynamic, lower limit (DC)	18.5 V
- dynamic, upper limit (DC)	30.2 V
- static, lower limit (DC)	20.4 V
- static, upper limit (DC)	28.8 V
non-periodic skip	
- Duration	500 ms
- Recovery time	50 s
- Value	35 V
Input current	
from load voltage 1L+ (without load), max.	40 mA
from backplane bus 5 V DC, max.	160 mA
5 V encoder supply	
• 5 V	Yes; 5.2 V +/-2%
• Output current, max.	300 mA
24 V encoder supply	
• 24 V	Yes; 1L+ (-3 V)
• Output current, max.	400 mA
Power losses	
Power loss, typ.	4.5 W

Article number	**6ES7350-1AH03-0AE0** FM350-1, COUNTER MODULE, UP TO 500 KHZ
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
Output delay with resistive load	
• "0" to "1", max.	300 µs

Technical specifications (continued)

Article number	**6ES7350-1AH03-0AE0** FM350-1, COUNTER MODULE, UP TO 500 KHZ
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
Counting range, description	32 bit or +/-31 bit
Minimum pulse width, adjustable	Yes; 2.5 or 25 µs
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 µs

Article number	**6ES7350-1AH03-0AE0** FM350-1, COUNTER MODULE, UP TO 500 KHZ
Galvanic isolation	
Galvanic isolation digital inputs	
• between the channels and the backplane bus	Yes; Optocoupler
Galvanic isolation digital outputs	
• between the channels and the backplane bus	Yes; Optocoupler
Galvanic isolation counter	
• between the channels and the backplane bus	Yes; Optocoupler
Permissible potential difference	
between different circuits	75V DC/60V AC
Isolation	
Isolation checked with	500 V
Connection method	
required front connector	1x 20-pin
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	250 g

FM 350-1 counter modules

Ordering data	Article No.
FM 350-1 counter module with 1 channel, max. 500 kHz; for incremental encoder	**6ES7350-1AH03-0AE0**
Coding plug - Range card for analog inputs Spare part	**6ES7974-0AA00-0AA0**
Front connector 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**
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 5/263
Slot number label Spare part	**6ES7912-0AA00-0AA0**
Shield connection element 80 mm wide, with 2 rows for 4 terminals each	**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**
Connectable incremental encoders 6FX2 001-2...	Refer to the Industry Mall under SIMODRIVE Sensor or Motion Connect 500 (see also http://www.siemens.com/simatic-technology)

	Article No.				
Signal cable					
Pre-assembled for HTL and TTL encoder, without sub D connector, UL/DESINA	**6FX5002-2CA12-**	■	■	■	**0**
Length code:					
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**	

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 to output the response when the setpoint is reached
- Modes:
  - Continuous/one-off/periodic counting
  - Frequency/speed measurement
  - Cycle duration measurement
  - Dosing

Note:

Incremental encoder and prefabricated connecting cables for counter and positioning function are offered under SIMODRIVE Sensor and Motion Connect 500.

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

Technical specifications

Article number	**6ES7350-2AH01-0AE0**
	FM350-2, COUNTER MOD., 8 CHANNELS, 20KHZ
Product type designation	
Supply voltage	
Aux. voltage 1L+, load voltage 2L+	
• Rated value (DC)	24 V
• permissible range, lower limit (DC)	20.4 V
• permissible range, upper limit (DC)	28.8 V
Input current	
from load voltage L+ (without load), max.	150 mA
from backplane bus 5 V DC, max.	100 mA
Encoder supply	
Type of output voltage	NAMUR-encoder supply: 8.2 V +/-2%
short-circuit protection	Yes
Output current	
• nominal	200 mA
Power losses	
Power loss, typ.	10 W
Digital inputs	
Number of digital 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
Input delay (for rated value of input voltage)	
for standard inputs	
- at "0" to "1", max.	50 µs
Cable length	
• shielded, max.	100 m

Article number	**6ES7350-2AH01-0AE0**
	FM350-2, COUNTER MOD., 8 CHANNELS, 20KHZ
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
Output delay with resistive load	
• "0" to "1", max.	300 µs
Switching frequency	
• with resistive load, max.	500 Hz
• with inductive load, max.	0.5 Hz
Aggregate current of 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
• Unshielded, max.	100 m

Technical specifications (continued)

Article number	**6ES7350-2AH01-0AE0** FM350-2, COUNTER MOD., 8 CHANNELS, 20KHZ
Encoder	
Connectable encoders	
• Incremental encoder (asymmetrical)	Yes
• 24 V initiator	Yes
• 24 V directional element	Yes
• NAMUR encoder	Yes
• 2-wire sensor	Yes
NAMUR encoder	
• Number of NAMUR inputs	8
• Input signal	to DIN 19 234
• Input current for signal "0", max.	1.2 mA
• Input current for signal "1", min.	2.1 mA
• Input delay, max.	50 µs
• Input frequency, max.	20 kHz
• Cable length, shielded, max.	100 m
Interrupts/diagnostics/ status information	
Alarms	
• Diagnostic alarm	Yes; Parameterizable
• Hardware interrupt	Yes; Parameterizable
Diagnostic messages	
• Diagnostic functions	Yes; Diagnostic information readable
Counter input 24 V	
• Number	8; 32 bit or +/-31 bit
• Input voltage, for signal "0"	-3 to +5V
• Input voltage, for signal "1"	11 to 30.2 V
• Input current, for signal "0", max. (permissible quiescent current)	2 mA
• Input current, for signal "1", typ.	9 mA
• Input delay, max.	50 µs
• Counting frequency, max.	20 kHz; Incremental encoder: 10 kHz
• Cable length, max.	100 m

Article number	**6ES7350-2AH01-0AE0** FM350-2, COUNTER MOD., 8 CHANNELS, 20KHZ
Galvanic isolation	
Galvanic isolation digital inputs	
• between the channels and the backplane bus	Yes; and shielding
• between the channels and the backplane bus (NAMUR)	Yes, against backplane bus and shielding
Galvanic isolation digital outputs	
• between the channels and the backplane bus	Yes; and shielding
Galvanic isolation counter	
• between the channels and the backplane bus	Yes; and shielding
Connection method	
required front connector	1x 40-pin
Dimensions	
Width	80 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	460 g

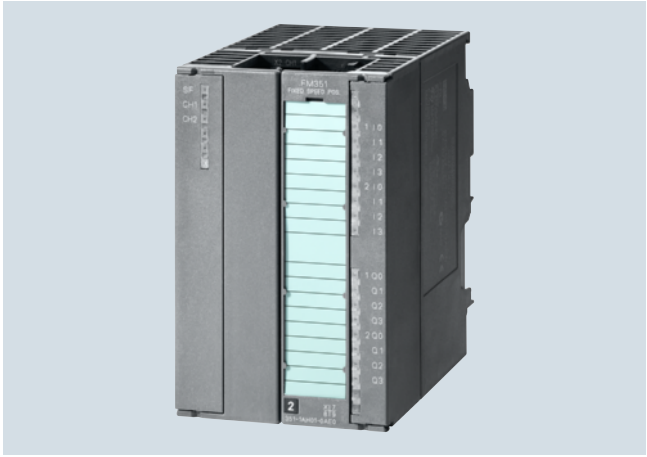
Ordering data	Article No.
FM 350-2 counter module	**6ES7350-2AH01-0AE0**
With 8 channels, max. 20 kHz; for 24 V incremental encoders and NAMUR encoders; incl. configuration package and electronic documentation on CD	
Front connector	
40-pin, with screw contacts	
• 1 unit	**6ES7392-1AM00-0AA0**
• 100 units	**6ES7392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7392-1BM01-0AA0**
• 100 units	**6ES7392-1BM01-1AB0**
Bus connectors	**6ES7390-0AA00-0AA0**
1 unit (spare part)	
Labeling strips	**6ES7392-2XX10-0AA0**
10 units (spare part)	
Labeling sheets for machine inscription	See under "Accessories", page 5/263
Slot number label	**6ES7912-0AA00-0AA0**
Spare part	
Shield connection element	**6ES7390-5AA00-0AA0**
80 mm wide, with 2 rows for 4 terminals each	
Terminal elements	
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**

Article No.				
Signal cable				
Pre-assembled for HTL and TTL encoder, without sub D connector, UL/DESINA	**6FX5002-2CA12-**	■	■	■ **0**
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**

5

FM 351 positioning modules

Overview



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

Note:

SIMODRIVE Sensor/Motion Connect 500 feature position-measuring systems and preassembled connecting cables for counting and positioning functions.

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

5

Technical specifications

Article number	**6ES7351-1AH02-0AE0** FM351 POSITIONING MOD. RAPID/CREEP FEED
Product type designation	
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Load voltage L+	
• Rated value (DC)	24 V
• permissible range, lower limit (DC)	20.4 V
• permissible range, upper limit (DC)	28.8 V
Input current	
Current consumption, max.	350 mA
from backplane bus 5 V DC, max.	150 mA; max.
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

Article number	**6ES7351-1AH02-0AE0** FM351 POSITIONING MOD. RAPID/CREEP FEED
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 2-wire sensor	
- for signal "0", typ.	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

Technical specifications (continued)

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 signal	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
• Message frame 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

Article number	**6ES7351-1AH02-0AE0** FM351 POSITIONING MOD. RAPID/CREEP FEED
Galvanic isolation	
Galvanic isolation digital inputs	
• Galvanic isolation digital inputs	Yes
Galvanic isolation digital outputs	
• Galvanic isolation digital outputs	Yes
Connection method	
required front connector	1x 20-pin
Dimensions	
Width	80 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	550 g

FM 351 positioning modules

Ordering data	Article No.
FM 351 positioning module	**6ES7351-1AH02-0AE0**
for rapid traverse and creep speed drives	
Front connector	
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 5/263
Spare part	
Shield connection element	**6ES7390-5AA00-0AA0**
80 mm wide, with 2 rows for 4 terminals each	
Terminal elements	
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**

	Article No.
Signal cables	
Pre-assembled for HTL encoder, UL/DESINA	**6FX50 ■ 2-2AL00- ■ ■ ■ ■**
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**
0 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**

Overview

- Extremely 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 synchro-serial position decoding

Note:

SIMODRIVE Sensor/Motion Connect 500 feature position-measuring systems and preassembled connecting cables for counting and positioning functions.

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

Technical specifications

Article number	**6ES7352-1AH02-0AE0** FM352 ELECTRON. CAM-OPERATED CONTROL
Product type designation	
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
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
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 +5V
• for signal "1"	+11 to +30V
Input current	
for 2-wire sensor	
- for signal "0", typ.	2 mA
- for signal "1", typ.	7 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

Article number	**6ES7352-1AH02-0AE0** FM352 ELECTRON. CAM-OPERATED CONTROL
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
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 signal	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
• Message frame length, parameterizable	13 or 25 bit
• Clock frequency, max.	1 MHz
• Gray code	1
• Cable length, shielded, max.	320 m; at max. 125 kHz
Galvanic isolation	
Galvanic isolation digital inputs	
• Galvanic isolation digital inputs	No
Galvanic isolation digital outputs	
• Galvanic isolation digital outputs	No

Technical specifications (continued)

Article number	**6ES7352-1AH02-0AE0** FM352 ELECTRON. CAM-OPERATED CONTROL
Connection method	
required front connector	1x 20-pin

Article number	**6ES7352-1AH02-0AE0** FM352 ELECTRON. CAM-OPERATED CONTROL
Dimensions	
Width	80 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	550 g

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 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 5/263
Slot number label Spare part	**6ES7912-0AA00-0AA0**
Shield connection element 80 mm wide, with 2 rows for 4 terminals each	**6ES7390-5AA00-0AA0**
Terminal elements 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**

	Article No.
Signal cables	
Pre-assembled for HTL encoder, UL/DESINA	**6FX50 ■ 2-2AL00- ■ ■ ■ ■**
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**
0 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**

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: Current sinking or current sourcing digital outputs.
- 1 channel for connection of a 24-V incremental encoder, a 5-V incremental encoder (RS 422) or an SSI absolute-value sensor.

Micro memory card required for use of the FM 352-5

Note:

Displacement measuring systems and precut/preassembled cables for counting and positioning functions are available under SIMODRIVE Sensor or Motion Connect 500.

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

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Technical specifications

Article number	**6ES7352-5AH01-0AE0** FM 352-5, BOOLEAN PROCESSOR 12DE/8DA	**6ES7352-5AH11-0AE0** FM 352-5 PNP, BOOLEAN PROCESSOR 12DI/8DO
Product type designation		
Supply voltage		
Rated value (DC)		
• 24 V DC	Yes	Yes
Load voltage L+		
• Rated value (DC)	24 V	24 V
• permissible range, lower limit (DC)	20.4 V	20.4 V
• permissible range, upper limit (DC)	28.8 V	28.8 V
• Reverse polarity protection	Yes	Yes
Input current		
from load voltage1L+, 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 encoder), max.	200 mA; typ. 80 mA	200 mA; typ. 80 mA
from backplane bus 5 V DC, max.	135 mA; Typical	135 mA; Typical
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 losses		
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

Technical specifications (continued)

Article number	**6ES7352-5AH01-0AE0** FM 352-5, BOOLEAN PROCESSOR 12DE/8DA	**6ES7352-5AH11-0AE0** FM 352-5 PNP, BOOLEAN PROCESSOR 12DI/8DO
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 +5V	-30 to +5V
• 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
• Unshielded, max.	100 m; Shielded cable recommended if filtering delay is set to less than 1.6 ms	100 m; Shielded cable recommended if filtering delay is set to less than 1.6 ms
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
• Response threshold, typ.	1.7 to 3.5 A	1.7 to 3.5 A
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
Controlling a digital input	No	Yes
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
Output delay with resistive load		
• "0" to "1", max.	1 µs; 0.6 µs 50 mA / 1.0 µs 0.5 A	1 µs; 0.6 µs 50 mA / 1.0 µs 0.5 A
• "1" to "0", max.	1.5 µs; 1.7 µs 50 mA / 1.5 µs 0.5 A	1.5 µs; 1.7 µs 50 mA / 1.5 µs 0.5 A
Parallel switching of 2 outputs		
• for increased power	Yes; 2	Yes; 2
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
• Unshielded, max.	100 m	100 m

Technical specifications (continued)

Article number	**6ES7352-5AH01-0AE0**	**6ES7352-5AH11-0AE0**
	FM 352-5, BOOLEAN PROCESSOR 12DE/8DA	FM 352-5 PNP, BOOLEAN PROCESSOR 12DI/8DO
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 signal	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.
Encoder signals, absolute encoder (SSI)		
• Data signal	DATA, notDATA	DATA, notDATA
• Clock signal	CK, notCK	CK, notCK
• Message frame 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 and 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		
• 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 errror; SSI message frame overflow	Yes; 1L, 2L, 3L missing; MMC error; output overload (8); encoder supply overload; differential wire break; parameterization errror; SSI message frame overflow
• Hardware interrupt	Yes; 8 available; for generation by user program	Yes; 8 available; for generation by user program
Diagnostic messages		
• Wire break in signal transmitter cable	Yes	Yes
• Overflow/underflow	Yes	Yes
• Missing load voltage	Yes	Yes

Technical specifications (continued)

Article number	**6ES7352-5AH01-0AE0** FM 352-5, BOOLEAN PROCESSOR 12DE/8DA	**6ES7352-5AH11-0AE0** FM 352-5 PNP, BOOLEAN PROCESSOR 12DI/8DO
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
Galvanic isolation		
between 1L and 2L and 3L	Yes; 75V DC/60V AC	Yes; 75V DC/60V AC
between digital I/O and 2L and encoder I/O and 3L	Yes (75 V DC, 60 V AC)	Yes (75 V DC, 60 V AC)
between backplane bus and digital encoder I/O & 1L & 2L & 3L	Yes (75 V DC, 60 V AC)	Yes (75 V DC, 60 V AC)
Galvanic isolation digital inputs		
• Galvanic isolation digital inputs	Yes; Yes CPU, I/O and sensor units are isolated	Yes; Yes CPU, I/O and sensor units are isolated
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)

Ordering data

	Article No.
FM 352-5 high-speed Boolean processor	
with current sinking digital outputs	**6ES7352-5AH01-0AE0**
with current sourcing digital outputs	**6ES7352-5AH11-0AE0**
Micro Memory Card	
128 KB	**6ES7953-8LG30-0AA0**
512 KB	**6ES7953-8LJ30-0AA0**
2 MB	**6ES7953-8LL31-0AA0**
Front connector	
40-pin, with screw contacts	
• 1 unit	**6ES7392-1AM00-0AA0**
• 100 units	**6ES7392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7392-1BM01-0AA0**
• 100 units	**6ES7392-1BM01-1AB0**

	Article No.
Signal cables	
To HTL and TTL encoders, preassembled, without Sub-D connector	**6FX5002-2CA12-■■■0**
To SSI absolute encoders 6FX2 001-5, preassembled, without Sub-D connector	**6FX5002-2CC12-■■■■**
Length code:	See FM 351, page 5/142

Overview

- Positioning module for stepper motors in machines with high clock-pulse rates
- Can be used for simple point-to-point positioning and for complex traversing profiles

Technical specifications

Article number	**6ES7353-1AH01-0AE0** POSITIONING CONTROL FM 353 (FM STEP)
Product type designation	
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Input current	
Current consumption, max.	300 mA
Digital inputs	
Number of digital inputs	4; + 1 input for message signal
Functions	Reference cams, flying actual value setting, flying measurement, start/stop positioning, external block change
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; 6 to 15 mA
Digital outputs	
Number of digital outputs	4
Functions	Position reached: stop, axis travels forward, axis travels back, change M-function M97, change M-function M98, start enable, direct output via data record
short-circuit protection	Yes
Output voltage	
• Rated value (DC)	24 V
• for signal "1", min.	UP -3 V
Output current	
• for signal "1" permissible range for 0 to 55 °C, max.	0.6 A; with UPmax
• for signal "0" residual current, max.	2 mA

Article number	**6ES7353-1AH01-0AE0** POSITIONING CONTROL FM 353 (FM STEP)
Drive interface	
Signal input I	
• Function	"Power section ready"
Signal output I	
• Type	5 V difference signal (phys. RS 422)
• Function	Direction , enable, clock pulse, current control
• Differential output voltage, min.	2 V; RL = 100 Ohm
• Differential output voltage for signal "0", max.	1 V; Io = 20 mA
• Differential output voltage, for signal "1", min.	3.7 V; Io = -20 mA
• Cable length, max.	35 m
Galvanic isolation	
Galvanic isolation digital inputs	
• Galvanic isolation digital inputs	No
Galvanic isolation digital outputs	
• Galvanic isolation digital outputs	No
Connection method	
required front connector	1x 20-pin
Dimensions	
Width	80 mm
Height	125 mm
Depth	118 mm
Weights	
Weight, approx.	500 g

FM 353 positioning modules

Ordering data	Article No.
FM 353 positioning module	**6ES7353-1AH01-0AE0**
For stepper motors; incl. configuration package on CD-ROM (Ge, En, Fr, It) comprising • FM 353 manual, electronic • Standard function blocks (STEP 7 interface software) • Screen form-based configuration software for FM 353 • Standard interactive screen forms for OP7/OP17	
FM 353 manual	
German	**6ES7353-1AH01-8AG0**
English	**6ES7353-1AH01-8BG0**
French	**6ES7353-1AH01-8CG0**
Italian	**6ES7353-1AH01-8EG0**
Edit FM	**6FC5263-0AA03-0AB0**
Program editor for editing, loading and saving NC programs with the standard programming device/PC; German/English, on CD-ROM	
Connecting cables	
To stepper motor power section	**6FX80■2-3AC02-■■■■0**
Length code	See page 5/142
Connecting cables and encoders	See catalog NC 60, CA 01 or in the Industry Mall

	Article No.
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"
Slot number label	**6ES7912-0AA00-0AA0**
Spare part	
Shield connection element	**6ES7390-5AA00-0AA0**
80 mm wide, with 2 rows for 4 terminals each	
Terminal elements	
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**

Overview

- Positioning module for servo motors in machines with high clock pulse rates
- Can be used for point-to-point positioning tasks and for complex traversing patterns

Note:

SIMODRIVE Sensor/Motion Connect 500 feature position-measuring systems and preassembled connecting cables for counting and positioning functions.

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Technical specifications

Article number	**6ES7354-1AH01-0AE0** POSITIONING CONTROL FM 354 (FM POSITION)
Product type designation	
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Input current	
Current consumption, max.	350 mA
Encoder supply	
5 V encoder supply	
• 5 V	Yes
• Output current, max.	220 mA
• Cable length, max.	35 m
24 V encoder supply	
• 24 V	Yes
• Output current, max.	300 mA
• Cable length, max.	100 m
Digital inputs	
Number of digital inputs	4
Functions	Reference cams, flying actual value setting, flying measurement, start/stop positioning, external block change
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; 6 to 15 mA

Article number	**6ES7354-1AH01-0AE0** POSITIONING CONTROL FM 354 (FM POSITION)
Digital outputs	
Number of digital outputs	4
Functions	Position reached: stop, axis travels forward, axis travels back, change M-function M97, change M-function M98, start enable, direct output via data record
short-circuit protection	Yes
Output voltage	
• Rated value (DC)	24 V
• for signal "1", min.	UP -3 V
Output current	
• for signal "1" permissible range for 0 to 55 °C, max.	0.6 A; with UPmax
• for signal "0" residual current, max.	2 mA
Encoder	
Connectable encoders	
• Incremental encoder (symmetrical)	Yes
• Absolute encoder (SSI)	Yes
Encoder signals, incremental encoder (symmetrical)	
• Trace mark signals	A, notA, B, notB
• Zero mark signal	N, notN
• Input signal	5 V difference signal (phys. RS 422)
• Input frequency, max.	1 MHz
Encoder signals, absolute encoder (SSI)	
• Input signal	5 V difference signal (phys. RS 422)
• Data signal	DATA, notDATA
• Clock signal	CL, notCL
• Message frame length, parameterizable	13, 21 or 25 bit
• Clock frequency, max.	1.25 Mbit/s
• Cable length, shielded, max.	100 m; 10 m at 1.25 Mbit/s, 100 m at max. 125 kbit/s

Technical specifications (continued)

Article number	6ES7354-1AH01-0AE0 POSITIONING CONTROL FM 354 (FM POSITION)
Drive interface	
Signal input I	
• Type	Input loop controller message, isolated (optocoupler)
• Function	"Drive ready"
• Input voltage, rated value (DC)	24 V
• Input voltage, for signal "0"	-3 to +5V
• Input current, for signal "1"	2 to 6 mA
Signal output II	
• Type	Output closed-loop controller enable (contact)
• Function	Drive disconnection for operation via contact relay
• Load	1 A/50 V/30 VA DC
Signal output III	
• Type	Analog output
• Function	Setpoint output for drive
• Output current	-3 to +3 mA
• Cable length, max.	35 m

Article number	6ES7354-1AH01-0AE0 POSITIONING CONTROL FM 354 (FM POSITION)
Galvanic isolation	
Galvanic isolation digital inputs	
• Galvanic isolation digital inputs	No
Galvanic isolation digital outputs	
• Galvanic isolation digital outputs	No
Connection method	
required front connector	1x 20-pin
Dimensions	
Width	80 mm
Height	125 mm
Depth	118 mm
Weights	
Weight, approx.	550 g

Ordering data

	Article No.
FM 354 positioning module for servo motors, incl. configuration package on CD-ROM (Ge, En, Fr, It) comprising • FM 354 manual, electronic • Standard function blocks (STEP 7 interface software) • Screen form-based configuration software for FM 354 • Standard interactive screen forms for OP7/OP17	**6ES7354-1AH01-0AE0**
FM 354 manual	
German	**6ES7354-1AH01-8AG0**
English	**6ES7354-1AH01-8BG0**
French	**6ES7354-1AH01-8CG0**
Italian	**6ES7354-1AH01-8EG0**
Edit FM Program editor for editing, loading and saving NC programs with the standard programming device/PC; German/English, on CD-ROM	**6FC5263-0AA03-0AB0**
Connecting cables	
To SSI absolute encoders 6FX2001-5, preassembled	**6FX5 0■2-2CC11-■■■■**
To incremental encoders 6FX2001-1, preassembled	**6FX5 0■2-2CD01-■■■■**
For 24 V incremental encoders, preassembled	**6FX5 0■2-2CD24-■■■■**
To SIMODRIVE 611A, preassembled	**6FX5 0■2-2CJ00-■■■■**
To SIMODRIVE 611U, preassembled	**6FX5 0■2-2CJ10-■■■■**
To SSI absolute encoders 6FX2 001-5, preassembled, without Sub-D connector	**6FX5 002-2CC12-■■■■**
To SSI absolute encoders 6FX2 001-5, preassembled, suitable for trailing	**6FX8 0■2-2CC11-■■■■**
To incremental encoders 6FX2 001-2, preassembled, suitable for trailing	**6FX8 0■2-2CD01-■■■■**
To SIMODRIVE 611A, preassembled, suitable for trailing	**6FX8 0■2-2CJ00-■■■■**
To SIMODRIVE 611U, preassembled, suitable for trailing, 1 free end	**6FX8 0■2-2CJ10-■■■■**
To SIMODRIVE 611A, preassembled, suitable for trailing, free ends	**6FX8 0■2-3AB01-■■■■**
Length code	See page 5/142

	Article No.
Encoders	See catalog NC 60, CA 01 or in the Industry Mall
Front connector	
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 1 unit (spare part)	**6ES7390-0AA00-0AA0**
Labeling strips 10 units (spare part)	**6ES7392-2XX00-0AA0**
Labeling sheets for machine inscription	See "Accessories", page 5/263
Slot number label Spare part	**6ES7912-0AA00-0AA0**
Shield connection element 80 mm wide, with 2 rows for 4 terminals each	**6ES7390-5AA00-0AA0**
Terminal elements	
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**

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FM 357-2 positioning modules

Overview

- Path and positioning control for intelligent motion control of up to 4 axes
- Comprehensive range of application, from independent single positioning axes right up to interpolatory multi-axis path control
- For controlling stepper drives and controlled servo drive axes
- User-friendly commissioning with convenient parameterization tool
- Interface for SIMODRIVE 611U and MASTERDRIVES MC via isochronous PROFIBUS (not for FM 357-2H in conjunction with HT6)

Note:

Position measuring systems and preassembled connecting cables for counting and positioning functions are available under SIMODRIVE Sensor or Motion Connect 500.

Additional information is available on the Internet at:

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

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Technical specifications

Article number	**6ES7357-4AH01-0AE0** PATH & POSITIONING CONTROL FM 357-2
Product type designation	
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Input current	
from backplane bus 5 V DC, max.	100 mA
Encoder supply	
5 V encoder supply	
• 5 V	Yes
• Output current, max.	210 mA
• Cable length, max.	35 m
24 V encoder supply	
• 24 V	Yes
• Output current, max.	300 mA
• Cable length, max.	100 m
Power	
Power consumption, typ.	24 W
Memory	
Type of memory	NC program memory
Memory size	750 kbyte
Digital inputs	
Number of digital inputs	18
Functions	4 Bero, 2 probes, 12 for any use
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; 6 to 30 mA

Article number	**6ES7357-4AH01-0AE0** PATH & POSITIONING CONTROL FM 357-2
Digital outputs	
Number of digital outputs	8
Functions	8 for any purpose
Output voltage	
• Rated value (DC)	24 V
• for signal "1", min.	UP -3 V
Output current	
• for signal "1" permissible range for 0 to 55 °C, max.	0.5 A; with UPmax
• for signal "0" residual current, max.	2 mA
Encoder	
Connectable encoders	
• Incremental encoder (symmetrical)	Yes
• Absolute encoder (SSI)	Yes
Encoder signals, incremental encoder (symmetrical)	
• Trace mark signals	A, notA, B, notB
• Zero mark signal	N, notN
• Input signal	5 V difference signal (phys. RS 422)
• Input frequency, max.	1 MHz
Encoder signals, absolute encoder (SSI)	
• Input signal	5 V difference signal (phys. RS 422)
• Data signal	DATA, notDATA
• Clock signal	CL, notCL
• Message frame length, parameterizable	13, 21 or 25 bit
• Clock frequency, max.	1.5 Mbit/s
• Cable length, shielded, max.	250 m; At max. 187.5 kbit/s

Technical specifications (continued)

Article number	6ES7357-4AH01-0AE0 PATH & POSITIONING CONTROL FM 357-2
Positioning	
Programmable traverse speed, max.	1 000 m/min
Signal output I	
• Type	5 V difference signal (phys. RS 422)
• Function	Direction , enable, clock pulse
• Differential output voltage, min.	2 V; RL = 100 Ohm
• Differential output voltage for signal "0", max.	1 V; Io = 20 mA
• Differential output voltage, for signal "1", min.	3.7 V; Io = -20 mA
• Pulse frequency	750 kHz
• Cable length, max.	50 m; 35 m in hybrid mode with servo axes
Signal output II	
• Type	Controller release (contact), FM-READY output (contact)
• Function	Drive disconnection for operation via contact relay, Data set ready for link with Emergency STOP
• Load	1 A/50 V/30 VA DC
Signal output III	
• Type	Analog output
• Function	Drive interface for analog drives: setpoint output for drive
• Output current	-3 to +3 mA
• Cable length, max.	35 m

Article number	6ES7357-4AH01-0AE0 PATH & POSITIONING CONTROL FM 357-2
Galvanic isolation	
Galvanic isolation digital inputs	
• Galvanic isolation digital inputs	Yes
Galvanic isolation digital outputs	
• Galvanic isolation digital outputs	Yes
Connection method	
required front connector	1x 40-pin
Dimensions	
Width	200 mm
Height	125 mm
Depth	118 mm
Weights	
Weight, approx.	1 200 g

Ordering data

	Article No.
FM 357-2 positioning module Basic unit	**6ES7357-4AH01-0AE0**
System firmware Incl. configuration package on CD-ROM, German, English, French, Italian, consisting of equipment manual (electronic), configuring software (parameterization screen-forms, standard blocks, operator control and monitoring screen-forms for OP17/OP27)	
FM 357-2L system firmware On memory card	**6ES7357-4AH03-3AE0**
FM 357-2LX system firmware With additional functions; on memory card	**6ES7357-4BH03-3AE0**
FM 357-H system firmware With additional functions for the handling sector; on memory card	**6ES7357-4CH03-3AE0**
FM 357-2 manual	
German	**6ES7357-4AH00-8AG0**
English	**6ES7357-4AH00-8BG0**
French	**6ES7357-4AH00-8CG0**
Italian	**6ES7357-4AH00-8EG0**
Edit FM Program editor for editing, loading and saving NC programs with the standard programming device/PC; German/English, on CD-ROM	**6FC5263-0AA03-0AB0**

	Article No.
Connecting cables and encoders	See catalog NC 60, CA 01 or in the Industry Mall
Front connector	
40-pin, with screw contacts	
• 1 unit	**6ES7392-1AM00-0AA0**
• 100 units	**6ES7392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7392-1BM01-0AA0**
• 100 units	**6ES7392-1BM01-1AB0**
Back-up battery Li-Ion, 3.6 V/0.95 Ah	**6ES7971-1AA00-0AA0**
Signal cable	
Pre-assembled for SSI absolute encoder, UL/DESINA	**6FX5 0■2-2CC11-■■■■**
Pre-assembled for TTL encoder 6FX2001-1, UL/DESINA	**6FX5 0■2-2CD01-■■■■**
Pre-assembled for TTL encoder 24 V, UL/DESINA	**6FX5 0■2-2CD24-■■■■**
Length code	See page 5/142

FM 355 controller modules

Overview

- 4-channel closed-loop control 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

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Technical specifications

Article number	**6ES7355-0VH10-0AE0** SIMATIC S7-300, CONTROL MODULE	**6ES7355-1VH10-0AE0** SIMATIC S7-300, CONTROL MODULE
Product type designation		
Supply voltage		
Load voltage L+		
• Rated value (DC)	24 V	24 V
• permissible range, lower limit (DC)	20.4 V	20.4 V
• permissible range, upper limit (DC)	28.8 V	28.8 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 losses		
Power loss, typ.	6.5 W	5.5 W
Power loss, max.	7.8 W	6.9 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
• Unshielded, max.	600 m	600 m
Digital outputs		
Number of digital outputs		8
short-circuit protection		Yes; Electronic
Limitation of inductive shutdown voltage to		L+ (-1.5 V)
Controlling a digital input		Yes
Switching capacity of the outputs		
• on lamp load, max.		5 W
Load resistance range		
• lower limit		240 Ω
• upper limit		4 kΩ

Technical specifications (continued)

Article number	**6ES7355-0VH10-0AE0** SIMATIC S7-300, CONTROL MODULE	**6ES7355-1VH10-0AE0** SIMATIC S7-300, CONTROL MODULE
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
Parallel switching of 2 outputs		
• for logic links		Yes
Switching frequency		
• with resistive load, max.		100 Hz
• with inductive load, max.		0.5 Hz
• on lamp load, max.		100 Hz
Aggregate current of outputs (per group)		
all mounting positions		
- up to 60 °C, max.		400 mA
Cable length		
• shielded, max.		1 000 m
• Unshielded, max.		600 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), thermoelements		
• 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
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

Technical specifications (continued)

Article number	**6ES7355-0VH10-0AE0** SIMATIC S7-300, CONTROL MODULE	**6ES7355-1VH10-0AE0** SIMATIC S7-300, CONTROL MODULE
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 kΩ	
• with voltage outputs, capacitive load, max.	1 µF	
• 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 creation		
Measurement principle	integrating	integrating
Integration and conversion time/ resolution per channel		
• Resolution with overrange (bit including sign), max.	14 bit; 12 or 14 bit, parameterizable	14 bit; 12 or 14 bit, parameterizable
• Conversion time (per channel)	16.67 ms; for 12 bit: 16 2/3 ms for 60 Hz, 20 ms for 50 Hz; for 14 bit: 100 ms for 50 and 60 Hz	16.67 ms; for 12 bit: 16 2/3 ms for 60 Hz, 20 ms for 50 Hz; for 14 bit: 100 ms for 50 and 60 Hz
Settling time		
• for resistive load	0.2 ms	0.1 ms
• for capacitive load	3.3 ms	3.3 ms
• for inductive load	0.5 ms	0.5 ms
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

Technical specifications (continued)

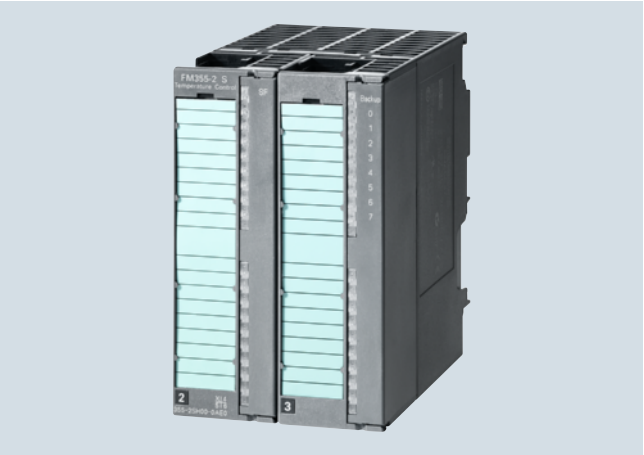
Article number	**6ES7355-0VH10-0AE0** SIMATIC S7-300, CONTROL MODULE	**6ES7355-1VH10-0AE0** SIMATIC S7-300, CONTROL MODULE
Errors/accuracies		
Linearity error (relative to input range), (+/-)	0.05 %	0.05 %
Temperature error (relative to input range), (+/-)	0.005 %/K	0.005 %/K
Linearity error (relative to output range), (+/-)	0.05 %	
Temperature error (relative to output range), (+/-)	0.02 %/K	
Operational limit in overall temperature range		
• Voltage, relative to input area, (+/-)	0.6 %; +/-0.6 to +/-1%	0.6 %; +/-0.6 to +/-1%
• Current, relative to input area, (+/-)	0.6 %; +/-0.6 to +/-1%	0.6 %; +/-0.6 to +/-1%
• Resistance thermometer, relative to input area, (+/-)	0.6 %; +/-0.6 to +/-1%	0.6 %; +/-0.6 to +/-1%
• Voltage, relative to output area, (+/-)	0.5 %	
• Current, relative to output area, (+/-)	0.6 %	
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to input area, (+/-)	0.4 %; 80 mV: +/-0.6%; 250 to 1000 mV: +/-0.4%; 2.5 to 10 V: +/-0.6%; 3.2 to 20 mA: +/-0.5%	0.4 %; 80 mV: +/-0.6%; 250 to 1000 mV: +/-0.4%; 2.5 to 10 V: +/-0.6%; 3.2 to 20 mA: +/-0.5%
• Current, relative to input area, (+/-)	0.4 %; +/-0.4 to +/-0.6 %	0.4 %; +/-0.4 to +/-0.6 %
• Resistance thermometer, relative to input area, (+/-)	0.4 %; +/-0.4 to +/-0.6 %	0.4 %; +/-0.4 to +/-0.6 %
• Voltage, relative to output area, (+/-)	0.3 %	
• Current, relative to output area, (+/-)	0.5 %	
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency		
• Series mode interference (peak value of interference < rated value of input range), min.	40 dB	40 dB
• common mode voltage (USS < 2.5 V) , min.	70 dB	70 dB
Interrupts/diagnostics/ status information		
Substitute values connectable	Yes; Parameterizable	Yes; Parameterizable
Control technology		
Number of closed-loop controllers	4	4
Galvanic isolation		
Galvanic isolation controller		
• between the channels	No	No
• between the channels and the backplane bus	Yes; Optocoupler	Yes; Optocoupler
Permissible potential difference		
between inputs and MANA (UCM)	2.5 V DC	2.5 V DC
between M internally and the inputs	75V DC/60V AC	75V DC/60V AC
Isolation		
Isolation checked with	500 V DC	500 V DC
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

FM 355 controller modules

Ordering data	Article No.
FM 355 C controller module with 4 analog outputs for 4 continuous-action controllers	**6ES7355-0VH10-0AE0**
FM 355 S controller module with 8 digital outputs for 4 step or pulse controllers	**6ES7355-1VH10-0AE0**
Front connector	
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 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 5/263

	Article No.
Slot number label Spare part	**6ES7912-0AA00-0AA0**
Shield connection element 80 mm wide, with 2 rows for 4 terminals each	**6ES7390-5AA00-0AA0**
Terminal elements	
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**

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
- It is possible to continue closed-loop control operation even if the CPU stops or fails

Technical specifications

Article number	**6ES7355-2CH00-0AE0**	**6ES7355-2SH00-0AE0**
	TEMPERATURE CONTROL MOD. FM355-2C	SIMATIC S7-300, TEMPERATURE
Product type designation		
Supply voltage		
Load voltage L+		
• Rated value (DC)	24 V	24 V
• permissible range, lower limit (DC)	20.4 V	20.4 V
• permissible range, upper limit (DC)	28.8 V	28.8 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 losses		
Power loss, typ.	6.5 W	5.5 W
Power loss, max.	7.8 W	6.9 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
• Unshielded, max.	600 m	600 m
Digital outputs		
Number of digital outputs		8
short-circuit protection		Yes; Electronic
Limitation of inductive shutdown voltage to		L+ (-1.5 V)
Controlling a digital input		Yes
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)

Technical specifications (continued)

Article number	**6ES7355-2CH00-0AE0** TEMPERATURE CONTROL MOD. FM355-2C	**6ES7355-2SH00-0AE0** SIMATIC S7-300, TEMPERATURE
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
Parallel switching of 2 outputs		
• for logic links		Yes
Switching frequency		
• with resistive load, max.		100 Hz
• with inductive load, max.		0.5 Hz
• on lamp load, max.		100 Hz
Aggregate current of outputs (per group)		
all mounting positions		
- up to 60 °C, max.		400 mA
Cable length		
• shielded, max.		1 000 m
• Unshielded, max.		600 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), thermoelements		
• 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
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

Technical specifications (continued)

Article number	**6ES7355-2CH00-0AE0** TEMPERATURE CONTROL MOD. FM355-2C	**6ES7355-2SH00-0AE0** SIMATIC S7-300, TEMPERATURE
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 kΩ	
• with voltage outputs, capacitive load, max.	1 µF	
• 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 creation		
Measurement principle	integrating	integrating
Integration and conversion time/ resolution per channel		
• Resolution with overrange (bit including sign), max.	14 bit	14 bit
• Conversion time (per channel)	100 ms; At 50/60 Hz	100 ms; At 50/60 Hz
Settling time		
• for resistive load	0.2 ms	0.1 ms
• for capacitive load	3.3 ms	3.3 ms
• for inductive load	0.5 ms	0.5 ms
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

Technical specifications (continued)

Article number	6ES7355-2CH00-0AE0 TEMPERATURE CONTROL MOD. FM355-2C	6ES7355-2SH00-0AE0 SIMATIC S7-300, TEMPERATURE
Errors/accuracies		
Linearity error (relative to input range), (+/-)	0.05 %	0.05 %
Temperature error (relative to input range), (+/-)	0.005 %/K	0.005 %/K
Linearity error (relative to output range), (+/-)	0.05 %	
Temperature error (relative to output range), (+/-)	0.02 %/K	
Operational limit in overall temperature range		
• Voltage, relative to input area, (+/-)	0.6 %; +/-0.6 to +/-0.7%	0.06 %; +/-0.06 to +/-0.7%
• Current, relative to input area, (+/-)	0.6 %; +/-0.6 to +/-0.7%	0.06 %; +/-0.06 to +/-0.7%
• Resistance thermometer, relative to input area, (+/-)	0.6 %; +/-0.6 to +/-0.7%	0.06 %; +/-0.06 to +/-0.7%
• Voltage, relative to output area, (+/-)	0.5 %	
• Current, relative to output area, (+/-)	0.6 %	
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to input area, (+/-)	0.04 %; +/-0.04 to +/-0.5%	0.04 %; +/-0.04 to +/-0.5%
• Current, relative to input area, (+/-)	0.04 %; +/-0.04 to +/-0.5%	0.04 %; +/-0.04 to +/-0.5%
• Resistance thermometer, relative to input area, (+/-)	0.04 %; +/-0.04 to +/-0.5%	0.04 %; +/-0.04 to +/-0.5%
• Voltage, relative to output area, (+/-)	0.4 %	
• Current, relative to output area, (+/-)	0.5 %	
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency		
• Series mode interference (peak value of interference < rated value of input range), min.	40 dB	40 dB
• common mode voltage (USS < 2.5 V) , min.	70 dB	70 dB
Interrupts/diagnostics/ status information		
Substitute values connectable	Yes; Parameterizable	Yes; Parameterizable
Control technology		
Number of closed-loop controllers	4	4
Galvanic isolation		
Galvanic isolation controller		
• between the channels	No	No
• between the channels and the backplane bus	Yes; Optocoupler	Yes; Optocoupler
Permissible potential difference		
between inputs and MANA (UCM)	2.5 V DC	2.5 V DC
between M internally and the inputs	75V DC/60V AC	75V DC/60V AC
Isolation		
Isolation checked with	500 V DC	500 V DC
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

Ordering data

	Article No.
FM 355-2 C temperature controller module with 4 analog outputs for 4 continuous-action controllers	**6ES7355-2CH00-0AE0**
FM 355-2 S temperature controller module with 8 digital outputs for 4 step or pulse controllers	**6ES7355-2SH00-0AE0**
Front connector	
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 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 5/263

	Article No.
Slot number label Spare part	**6ES7912-0AA00-0AA0**
Shield connection element 80 mm wide, with 2 rows for 4 terminals each	**6ES7390-5AA00-0AA0**
Terminal elements	
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**

SM 338 POS input modules

Overview

- Interface between max. 3 absolute-value sensors (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:

Displacement measuring systems and pre-assembled cables for counting and positioning functions are available under SIMODRIVE Sensor or Motion Connect 500.

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

5

Technical specifications

Article number	**6ES7338-4BC01-0AB0**
	SIMATIC S7-300, SIGNAL. MODULE
Product type designation	
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• permissible range, lower limit (DC)	20.4 V
• permissible range, upper limit (DC)	28.8 V
Input current	
from load voltage L+ (without load), max.	100 mA
from backplane bus 5 V DC, max.	160 mA
24 V encoder supply	
• 24 V	Yes; L+ (-0.8 V)
• Output current, max.	900 mA
Power losses	
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**
	SIMATIC S7-300, SIGNAL. MODULE
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
Galvanic isolation	
Galvanic isolation	No
Connection method	
required front connector	20-pin
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	235 g

Ordering data	Article No.
SM 338 POS input module For position sensing with 3 SSI encoders	**6ES7338-4BC01-0AB0**
Front connector	
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**
Front door, elevated design e.g. for 32-channel modules; for connecting 1.3 mm^2/16 AWG conductors	**6ES7328-0AA00-7AA0**
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	**6ES7998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	**6ES7998-8XC01-8YE2**
Signal cable	
Pre-assembled for SSI absolute encoder 6FX2001-5, without Sub-D connector, UL/DESINA	**6FX5002-2CC12-■■■■**
Length code	See page 5/142

IM 174 PROFIBUS modules

Overview

- For connecting up to 4 drives with analog setpoint interface or pulse-direction interface to a controller
- Operation with isochronous PROFIBUS DP
- Connectable drives:
  - Electrical drives
  - Hydraulic drives
  - Stepper drives
- Can be used with:
  - SIMATIC CPU 41x-2 DP, CPU 31x-2 DP, CPU 31xT-2 DP, WinAC RTX 2008
  - SIMOTION C2xx, SIMOTION P350, SIMOTION D4x5
- Can also be used with external encoders

5

Technical specifications

Article number	**6ES7174-0AA10-0AA0**
	IM 174 FOR CONNECTING ANALOG DRIVES
Product type designation	
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Input current	
Current consumption, max.	500 mA
from backplane bus 5 V DC, max.	100 mA
Encoder supply	
5 V encoder supply	
• 5 V	Yes
• Output current, max.	1.2 A
• Cable length, max.	25 m
24 V encoder supply	
• 24 V	Yes
• Output current, max.	1.4 A
• Cable length, max.	100 m
Absolute encoder (SSI) encoder supply	
• Absolute encoder (SSI)	Yes
• short-circuit protection	Yes
Power losses	
Power loss, typ.	12 W
Digital inputs	
Number of digital inputs	10
Input voltage	
• 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.	8 mA
Input delay (for rated value of input voltage)	
for standard inputs	
- at "0" to "1", min.	15 µs
Cable length	
• shielded, max.	100 m

Article number	**6ES7174-0AA10-0AA0**
	IM 174 FOR CONNECTING ANALOG DRIVES
Digital outputs	
Number of digital outputs	8
short-circuit protection	Yes
Switching capacity of the outputs	
• with resistive load, max.	1 A
• on lamp load, max.	30 W
Output voltage	
• Rated value (DC)	24 V; L+
• for signal "1", min.	L+ (-3 V)
• for signal "1", max.	3 V
Output current	
• for signal "1" permissible range for 0 to 55 °C, min.	5 mA
• for signal "1" permissible range for 0 to 55 °C, max.	300 mA
• for signal "0" residual current, max.	0.4 mA
Output delay with resistive load	
• "0" to "1", max.	500 µs
Switching frequency	
• with resistive load, max.	500 Hz
• with inductive load, max.	0.5 Hz
Relay outputs	
• Number of relay outputs	4
• Number of operating cycles, max.	50 000
Switching capacity of contacts	
- with resistive load, max.	1 A
Cable length	
• shielded, max.	600 m
Analog outputs	
Number of analog outputs	4
Output ranges, voltage	
• -10 V to +10 V	Yes
Analog value creation	
Integration and conversion time/ resolution per channel	
• Resolution with overrange (bit including sign), max.	15 bit

Technical specifications (continued)

Article number	**6ES7174-0AA10-0AA0** IM 174 FOR CONNECTING ANALOG DRIVES
Encoder	
Number of connectable encoders, max.	4
Connectable encoders	
• Incremental encoder (symmetrical)	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 signal	5 V difference signal (phys. RS 422)
• Input frequency, max.	1 MHz
• Cable length, shielded, max.	35 m; 35 m at max. 500 kHz; 10 m at max. 1 MHz
Encoder signals, absolute encoder (SSI)	
• Input signal	5 V difference signal (phys. RS 422)
• Data signal	DATA, notDATA
• Clock signal	CL, notCL
• Message frame length, parameterizable	13, 21, 24 bit
• Clock frequency, max.	1.5 MHz; 187.5 KHz 1.5 MHz (parameterizable)
• Binary code	1
• Gray code	1
• Cable length, shielded, max.	250 m; 250 m at 187.5 kHz, 10 m at 1.5 MHz
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes
shortest clock pulse	1.5 ms
Interrupts/diagnostics/ status information	
Alarms	
• Diagnostic alarm	Yes
Drive interface	
Number of drive interfaces	4
Analog drive	
Setpoint signal	
- Short circuit proof	Yes; max. 45 mA, min. 3.3 kOhm load impedance
- Range of rated voltage	-10.5 V to +10.5 V
- Output current	-3 to +3 mA
Output controller release	
- Number of relay contacts	4
- Switching voltage, max.	30 V
- Switching current, max.	1 A
- Switching capacity, max.	30 V·A
- Number of switching cycles, min.	50 000; at 30 V DC, 1 A
- Cable length (shielded), max.	35 m

Article number	**6ES7174-0AA10-0AA0** IM 174 FOR CONNECTING ANALOG DRIVES
Signal output I	
• Number of relay contacts	2
• Switching voltage, max.	30 V
• Switching current, max.	1 A
• Switching capacity, max.	30 V·A
• Number of switching cycles, min.	50 000; at 30 V DC, 1 A
• Cable length (shielded), max.	35 m
Signal output II	
• Differential output voltage, min.	2 V; R = 100 Ohm
• Differential output voltage for signal "1", min.	3.7 V; 3.7 V at I = -20 mA; 4.5 V at I = -100 µA,
• Differential output voltage for signal "0", max.	1 V; For I = -20 mA
• Load resistance, min.	55 Ω
• Output current, max.	60 mA
Signal output III	
• Pulse frequency	750 kHz
• Cable length (shielded), max.	50 m; in hybrid operation with analog axes 35 m, in asymmetrical transmission 10 m
Galvanic isolation	
Galvanic isolation digital inputs	
• Galvanic isolation digital inputs	Yes; to encoders, analog outputs, DP interface; no to other DI/DOs
Galvanic isolation digital outputs	
• Galvanic isolation digital outputs	Yes; to encoders, analog outputs, DP interface; no to other DI/DOs
Connection method	
required front connector	40-pin
Dimensions	
Width	160 mm
Height	125 mm
Depth	118 mm
Weights	
Weight, approx.	1 kg

IM 174 PROFIBUS modules

Ordering data	Article No.
IM 174 PROFIBUS module	**6ES7174-0AA10-0AA0**
PROFIBUS module for connecting analog drives and stepper drives to a controller	

	Article No.
Setpoint cable	
for the connection between IM 174 and SIMODRIVE 611-A	**6FX2002-3AD01-■■■■**
for the connection between IM 174 with 3 stepper drives and one SIMODRIVE (end of cable cut off)	**6FX2002-3AD02-■■■■**
Length code	See page 5/142

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 possible via the SIMATIC.

Technical specifications

SIWAREX U	
Integration in automation systems	
• S7-300	Direct integration
• S7-400 (H)	Through ET 200M
• PCS 7 (H)	Through ET 200M
• C7	Through IM or ET 200M
• Automation systems from other vendors	Through ET 200M
• Stand-alone (without SIMATIC CPU)	Possible with IM 153-1
Communication interfaces	• SIMATIC S7 (P bus) • RS 232 • TTY
Connection of remote displays (through TTY serial interface)	Gross, channel 1, 2 or default value 1, 2
Adjustment of scales settings	Through SIMATIC (P bus) or PC using SIWATOOL U (RS 232)
Measuring properties	
Error limit to DIN 1319-1 of full-scale value at 20 °C ± 10 K	0.05 %
Internal resolution ADC Data format of weight values	65535 2 byte (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 gages 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 impedance	
• R_{Lmin}	> 40 Ω per channel
• R_{Lmax}	< 4010 Ω
With Ex(i) interface:	
• R_{Lmin}	> 87 Ω per channel
• R_{Lmax}	< 4010 Ω
Permissible load cell characteristic	Up to 4 mV/V
Max. distance of load cells	500 m[2] 150/500 m for gas group IIC 500 m[2] 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. current consumption	150 mA (single-channel) / 240 mA (two-channel)
Current consumption on backplane bus	≤ 100 mA
Certification	ATEX 95, FM, cUL_{US} Haz. Loc.
IP degree of protection to DIN EN 60529; IEC 60529	IP20
Climatic requirements	
$T_{min\ (IND)}$ to $T_{max\ (IND)}$) (operating temperature)	
• Vertical installation	0 ... +60 °C (32 ... 140 °F)
• Horizontal installation	0 ... +40 °C (32 ... 104 °F)
EMC requirements according to	NAMUR NE21, Part 1 EN 61326
Dimensions	40 x 125 x 130 mm (1.58 x 4.92 x 5.12 inch)

[1] Load cell supply changed to 6 V DC as compared to 7MH4601-1AA01 or ... 1BA01.

[2] Up to 1000 m possible under certain conditions, provided the recommended cable is used (see Accessories).

SIWAREX U

Ordering data	Article No.
SIWAREX U for SIMATIC S7 and ET 200M, incl. bus connector, weight 0.3 kg (0.661 lb)	
Single-channel version[1] for connecting one scale	**7MH4950-1AA01**
Two-channel version[2] for connecting two scales	**7MH4950-2AA01**
SIWAREX U Manual Available in a range of languages Free download from the Internet at: http://www.siemens.com/weighing	
SIWAREX U configuration package for SIMATIC S7 version 5.4 or higher on CD-ROM • PC SIWATOOL U software (available in a range of languages), new design • Sample program "Getting started" – ready to use application for SIMATIC S7 • SIWAREX U Manual on CD (in a range of languages), new design • HSP Hardware Support Package for integrating SIWAREX U in STEP 7	**7MH4950-1AK01**
SIWAREX U configuration package for PCS7 S7, version 7.0 and V7.1 suitable for 7MH4950-1AA01 and 7MH4950-2AA01 on CD-ROM • Function block for the CFC • Faceplate • SIWATOOL U commissioning software • Manual	**7MH4950-3AK61**
SIWAREX U configuration package for PCS7, version 8.0 Suitable for 7MH4950-xAA01 • Function block for the CFC • Faceplate • SIWATOOL U commissioning software • Manual	**7MH4950-3AK62**
SIWAREX U APL configuration package for PCS7, version 8.0, Update 1 Suitable for 7MH4950-xAA01 • Function block for the CFC • APL-style faceplate • SIWATOOL U commissioning software • Manual	**7MH4950-3AK65**
SIWATOOL connecting cable from SIWAREX U/CS with serial PC interface, for 9-pin PC interfaces (RS 232), length 3 m (9.84 ft)	**7MH4607-8CA**

[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.

	Article No.
Installation material (mandatory)	
20-pin front plug with screw contacts Required for each SIWAREX module	**6ES7392-1AJ00-0AA0**
Shield contact element Sufficient for two SIWAREX U modules	**6ES7390-5AA00-0AA0**
Shield connection terminal Contents: 2 units (suitable for cable with diameter 4 ... 13 mm) (0.16 ... 0.51 inch) Note: one shield connection terminal each is required for: • Scale connection • RS 485 interface • RS 232 interface	**6ES7390-5CA00-0AA0**
S7 DIN rail	
• 160 mm (6.30 inch)	**6ES7390-1AB60-0AA0**
• 480 mm (18.90 inch)	**6ES7390-1AE80-0AA0**
• 530 mm (20.87 inch)	**6ES7390-1AF30-0AA0**
• 830 mm (32.68 inch)	**6ES7390-1AJ30-0AA0**
• 2000 mm (78.74 inch)	**6ES7390-1BC00-0AA0**
Accessories (optional)	
PS 307 load power supplies (only required if 24 V DC not available) 120/230 V AC; 24 V DC, incl. power connector	
PS 307-1B; 2 A	**6ES7307-1BA00-0AA0**
PS 307-1E; 5 A	**6ES7307-1EA00-0AA0**
PS 307-1K; 10 A	**6ES7307-1KA00-0AA0**
Labeling strips (10 units, spare part)	**6ES7392-2XX00-0AA0**
Remote displays (option) 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 P.O. Box 1180 D-66565 Eppelborn, Germany Tel.: +49 6806/980-0 Fax: +49 6806/980-999 Internet: http://www.siebert-group.com/en Detailed information is available from the manufacturer.	

Ordering data	Article No.
SIWAREX JB junction box, aluminum housing for connecting up to 4 load cells in parallel, and for connecting multiple junction boxes	**7MH4710-1BA**
SIWAREX JB junction box, stainless steel housing for connecting up to 4 load cells in parallel	**7MH4710-1EA**
Ex interface, type SIWAREX IS with ATEX approval, but **without UL and FM approvals**, for intrinsically-safe connection of load cells, including manual, suitable for the SIWAREX U, CS, MS, FTA, FTC and CF weighing modules. **Approved for use in the EU.**	
• With short-circuit current < 199 mA DC	**7MH4710-5BA**
• With short-circuit current < 137 mA DC	**7MH4710-5CA**

	Article No.
Cables (optional)	
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 JBs, 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**
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) - CY, blue sheath To connect 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 sheath, approx. 10.8 mm (0.43 inch) outer diameter, for ambient temperature -40 ... +80 °C (-40 ... +176 °F)	**7MH4702-8AF**
Cable LiYCY 4 x 2 x 0.25 mm² for TTY (connect 2 pairs of conductors in parallel), for connection of a remote display	**7MH4407-8BD0**

SIWAREX FTA

Overview

The 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 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.

Technical specifications

SIWAREX FTA	
Use in automation systems	
S7-300	Directly or 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	
EU type approval as non-automatic weighing machine, trade class III	3 x 6 000 d ≥ 0.5 µV/e
Internal resolution	16 million parts
Internal/external updating rate	400/100 Hz
Several parameterizable digital filters	Critically dampened, Bessel, Butterworth (0.05 ... 20 Hz), mean-value filter
Weighing functions	
Non-automatic weighing machine	OIML R76
Automatic weighing machine	OIML R51, R61, R107
Load cells	Strain gages 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} • R_{Lmax}	 > 56 Ω > 87 Ω with Ex interface ≤ 4 010 Ω

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 • For gases of group IIB	 300 m (984 ft) 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 from 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 • Updating rate	 0/4 ... 20 mA 100 Hz
Approvals	EU type approval (CE, OIML R76)
	EU prototype test to MID (OIML R51, R61, R107)
Degree of protection according to EN 60529; IEC 60529	IP20
Climatic requirements	
$T_{min\ (IND)}$ ... $T_{max\ (IND)}$ (operating temperature) • Vertical installation • Horizontal installation	 -10 ... 60 °C (14 ... 140 °F) -10 ... 40 °C (14 ... 104 °F)
EMC requirements	EN 61326, EN 45501, NAMUR NE21, Part 1
Dimensions	80 x 125 x 130 mm (3.15 x 4.92 x 5.12 inch)
Weight	600 g (0.44 lb)

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

Ordering data	Article No.
SIWAREX FTA Legal-for-trade weighing electronics for automatic scales for S7-300 and ET 200M. EU type approval 3 x 6000 d Applications: proportioning, filling, bagging, loading. Note: Observe approval conditions for applications with obligation of verification. We recommend using our calibration set and contacting our SIWAREX hotline.	**7MH4900-2AA01**
SIWAREX FTA Manual Available in a range of languages Free download from the Internet at: www.siemens.com/weighing	
SIWAREX FTA "Getting started" Sample software shows beginners how to program the scales in STEP 7. Free download from the Internet at: www.siemens.com/weighing	
SIWAREX FTA configuration package for SIMATIC S7 on CD-ROM • HSP Hardware Support Package for integrating SIWAREX FTA/FTC in STEP 7 • SIWAREX FTA "Getting started" • SIWATOOL FTA commissioning software • Flexible software for legal-for-trade display in WinCC flexible • Manual	**7MH4900-2AK01**
SIWAREX FTA configuration package for PCS 7 V7.0 on CD-ROM • HSP hardware support package for integrating SIWAREX FTA/FTC in STEP 7 • Function block for CFC • Faceplate • SIWATOOL FTA commissioning software • Manual	**7MH4900-2AK62**
SIWAREX FTA configuration package 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 the CFC • Faceplate • SIWATOOL FTA commissioning software • Manual	**7MH4900-2AK63**
SIWAREX FTA APL configuration package for SIMATIC PCS 7, Version 8.0, Update 1 on CD-ROM • HSP hardware support package for integrating SIWAREX FTA/FTC in STEP 7 • Function block for the CFC • APL-style faceplate • SIWATOOL FTA commissioning software • Manual	**7MH4900-2AK65**

	Article No.
Calibration set for SIWAREX FTA For verification of up to 5 scales comprising: • 3 x inscription foil for labeling • 1 x protection foil • 10 x EU verification marks (black M on green background) • Guidelines for verification, verification certificates and approvals, adaptable label, SIWAREX FTA Manual on CD-ROM	**7MH4900-2AY10**
SIWAREX Multiscale STEP 7 software for SIWAREX FTA. Control of one or more scales for a scalable number of components and any number of recipes. Applications: batching plants, mixers in production process, CD-ROM	**7MH4900-2AL01**
SIWAREX Multifill STEP 7 software for SIWAREX FTA. Control of filling and bagging processes for one or more filling stations and any number of materials, CD-ROM	**7MH4900-2AM01**
SIWATOOL connecting cable From SIWAREX FTA with serial PC interface, for 9-pin PC interfaces (RS 232)	
• 2 m long (6.56 ft)	**7MH4702-8CA**
• 5 m long (16.40 ft)	**7MH4702-8CB**
Front connector, 40-pin Required for each SIWAREX module	
• With screw contacts	**6ES7392-1AM00-0AA0**
• With spring-loaded terminals	**6ES7392-1BM01-0AA0**
Shield contact element Sufficient for one SIWAREX FTA module	**6ES7390-5AA00-0AA0**
Shield connection terminal Contents: 2 units (suitable for cable with diameter 4 ... 13 mm (0.16 ... 0.51 inch)) Note: One shield connection terminal each is required for: • Scale connection • RS 485 interface • RS 232 interface	**6ES7390-5CA00-0AA0**
S7 DIN rail	
• 160 mm (6.30 inch)	**6ES7390-1AB60-0AA0**
• 480 mm (18.90 inch)	**6ES7390-1AE80-0AA0**
• 530 mm (20.87 inch)	**6ES7390-1AF30-0AA0**
• 830 mm (32.68 inch)	**6ES7390-1AJ30-0AA0**
• 2000 mm (78.74 inch)	**6ES7390-1BC00-0AA0**
PS 307 load power supply (only required if 24 V DC is not available) 120/230 V AC; 24 V DC	
• PS 307-1B; 2 A	**6ES7307-1BA00-0AA0**
• PS 307-1E; 5 A	**6ES7307-1EA00-0AA0**
• PS 307-1K; 10 A	**6ES7307-1KA00-0AA0**
MMC memory For data recording up to 32 MB, only for legal-for-trade applications R76, R51 and R107	**7MH4900-2AY21**

SIWAREX FTA

Ordering data	Article No.
Remote displays (option) The Siebert S102 and S302 remote digital displays can be directly connected to the SIWAREX FTA via an RS 485 interface. Siebert Industrieelektronik GmbH Postfach 1180 D-66565 Eppelborn, Germany Tel.: +49 6806/980-0 Fax: +49 6806/980-999 Internet: http://www.siebert-group.com/en Detailed information available from manufacturer.	
SIWAREX JB junction box, aluminum housing For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes	**7MH4710-1BA**
SIWAREX JB junction box, stainless steel housing For connecting up to 4 load cells in parallel	**7MH4710-1EA**
Ex interface, type SIWAREX IS With ATEX approval, but **without UL or FM approval** for intrinsically-safe connection of load cells, including manual, suitable for the SIWAREX U, CS, MS, FTA, FTC and CF weighing modules. Approved for use in the EU.	
• With short-circuit current < 199 mA DC	**7MH4710-5BA**
• With short-circuit current < 137 mA DC	**7MH4710-5CA**

	Article No.
Cable (optional)	
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 JBs, for fixed laying, occasional bending permitted, 10.8 mm (0.43 inch) outer diameter, for ambient temperature -40 ... +80 °C (-40 ... +176 °C)	**7MH4702-8AG**
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) - CY, blue sheath To connect 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 sheath, approx. 10.8 mm (0.43 inch) outer diameter, for ambient temperature -40 ... +80 °C (-40 ... +176 °C)	**7MH4702-8AF**
Cable LiYCY 4 x 2 x 0.25 mm² For TTY (connect 2 pairs of conductors in parallel), for connection of a remote display	**7MH4407-8BD0**

Overview

The SIWAREX FTC (Flexible Technology for Continuous Weighing) is a versatile and flexible weighing module for conveyor scales, differential proportioning weighers and bulk flow meters. It can also be used to record weights and measure force. The SIWAREX FTC function module is integrated in SIMATIC S7/PCS7, and uses the features of this modern automation system, such as integral communication, diagnostics and configuration tools.

Technical specifications

SIWAREX FTC	
Use in automation systems	
S7-300	Directly or via 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 to EN 45501	3 x 6 000 d ≥ 0.5 µV/e
Internal resolution	+/- 8 million parts
Internal/external updating rate	400/100 Hz
Several parameterizable digital filters	Critically dampened, Bessel, Butterworth (0.05 ... 20 Hz), mean-value filter
Weighing functions	• Non-automatic weighing machine, force measurement • Conveyor scale • Differential proportioning weigher • Bulk flow meter
Load cells	Strain gages 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} • R_{Lmax}	 > 56 Ω > 87 Ω with Ex interface ≤ 4 010 Ω

SIWAREX FTC	
Max. distance of load cells	
When using the recommended cable:	
Standard	1 000 m (3280 ft)
In hazardous area[1)] • For gases of group IIC • For gases of group IIB	 300 m (984 ft) 1 000 m (3280 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 from 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 • Updating rate	 0/4 ... 20 mA 100 Hz
Degree of protection according to EN 60529; IEC 60529	IP20
Climatic requirements $T_{min\ (IND)}$ ... $T_{max\ (IND)}$ (operating temperature) • Vertical installation • Horizontal installation	 -10 ... 60 °C (14 ... 140 °F) -10 ... 40 °C (14 ... 104 °F)
EMC requirements	EN 61326, EN 45501, NAMUR NE21, Part 1
Dimensions	80 x 125 x 130 mm (3.15 x 4.92 x 5.12 inch)
Weight	600 g (0.44 lb)

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

SIWAREX FTC

Ordering data	Article No.
SIWAREX FTC Weighing electronics for S7-300 and ET 200M. Applications: Belt scales, force measurement, loss-in-weight feeders and solids flowmeters	**7MH4900-3AA01**
SIWAREX FTC_B manual for belt scales Available in a range of languages Free download from the Internet at: http://www.siemens.com/weighing	
SIWAREX FTC_L manual for solids flowmeters and loss-in-weight feeders Available in a range of languages Free download from the Internet at: http://www.siemens.com/weighing	
SIWAREX FTC "Getting started" for belt scales Sample software shows beginners how to program the scales in STEP 7 for conveyor scale mode Free download from the Internet at: http://www.siemens.com/weighing	
SIWAREX FTC "Getting started" for solids flowmeters Sample software shows beginners how to program the scales in STEP 7 for bulk flow meter mode Free download from the Internet at: http://www.siemens.com/weighing	
SIWAREX FTC "Getting started" for loss-in-weight feeders Sample software shows beginners how to program scales in STEP 7 for differential proportioning weigher mode Free download from the Internet at: http://www.siemens.com/weighing	
Configuration package SIWAREX FTC_B for the TIA Portal and STEP 7 on CD-ROM (belt scales) • HSP Hardware Support Package for integrating SIWAREX FTA/FTC in STEP 7 • "Getting started" for conveyor scales • Commissioning software SIWATOOL FTC_B for conveyor scales • Manual	**7MH4900-3AK03**
Configuration package SIWAREX FTC_L for the TIA Portal and STEP 7 on CD-ROM (solids flowmeters, loss-in-weight feeders) • HSP hardware support package for integrating SIWAREX FTA/FTC in STEP 7 • "Getting started" for solids flow meters • "Getting started" for loss-in-weight feeders • Commissioning software SIWATOOL_L for bulk flow meters and loss-in-weight feeders • Manual	**7MH4900-3AK04**

Ordering data	Article No.
SIWAREX FTC_B configuration package for PCS 7 Version V7.0 and V7.1 on CD-ROM (conveyor scale) • HSP hardware support package for integrating SIWAREX FTA/FTC in STEP 7 • Function block for CFC • Faceplate • Commissioning software SIWATOOL FTC_B for conveyor scales • Manual	**7MH4900-3AK63**
SIWAREX FTC_B configuration package for PCS 7 Version V8.0 on CD-ROM (conveyor scale) • HSP hardware support package for FTA/FTC package • Function block for the CFC • Faceplate • SIWATOOL commissioning software • Manual	**7MH4900-3AK65**
Configuration package SIWAREX FTC_L for PCS 7 V8.0 on CD-ROM (loss-in-weight feeders) • HSP hardware support package for integrating SIWAREX FTA/FTC in STEP 7 • Function block for the CFC • Faceplate • Commissioning software SIWATOOL FTC_L for solids flowmeters and loss-in-weight feeders • Manual	**7MH4900-3AK66**
SIWAREX FTC_L configuration package for PCS 7 V7.0 and V7.1 on CD-ROM (loss-in-weight scale) • HSP hardware support package for integrating SIWAREX FTA/FTC in STEP 7 • Function block for the CFC • Faceplate • Commissioning software SIWATOOL FTC_L for bulk flow meters and loss-in-weight feeders • Manual	**7MH4900-3AK64**
SIWATOOL 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 plug with screw contacts Required for each SIWAREX module • With screw contacts • With spring-loaded terminals	 **6ES7392-1AM00-0AA0** **6ES7392-1BM01-0AA0**
Shield contact element Sufficient for one SIWAREX FTC module	**6ES7390-5AA00-0AA0**
Shield connection terminal Contents: 2 units (suitable for cable with diameter 4 ... 13 mm) Note: One shield connection terminal each is required for: • Scale connection • RS 485 interface • RS 232 interface	**6ES7390-5CA00-0AA0**

Ordering data	Article No.
S7 DIN rail	
• 160 mm (6.30 inch)	**6ES7390-1AB60-0AA0**
• 480 mm (18.90 inch)	**6ES7390-1AE80-0AA0**
• 530 mm (20.87 inch)	**6ES7390-1AF30-0AA0**
• 830 mm (32.68 inch)	**6ES7390-1AJ30-0AA0**
• 2000 mm (78.74 inch)	**6ES7390-1BC00-0AA0**
PS 307 load power supply (only required if 24 V DC is not available)	
120/230 V AC; 24 V DC	
• PS 307-1B; 2 A	**6ES7307-1BA00-0AA0**
• PS 307-1E; 5 A	**6ES7307-1EA00-0AA0**
• PS 307-1K; 10 A	**6ES7307-1KA00-0AA0**
MMC memory For data recording up to 16 MB	**7MH4900-2AY20**
Remote display (optional)	
The Siebert S102 and S302 remote digital display can be directly connected to the SIWAREX FTC via an RS 485 interface (not suitable for band scale mode)	
Siebert Industrieelektronik GmbH Postfach 1180 D-66565 Eppelborn, Germany Tel.: +49 6806/980-0 Fax: +49 6806/980-999 Internet: http://www.siebert-group.com/en	
Detailed information available from manufacturer.	
SIWAREX JB junction box, aluminum housing	**7MH4710-1BA**
For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes	
SIWAREX JB junction box, stainless steel housing	**7MH4710-1EA**
For connecting up to 4 load cells in parallel	
Ex interface, type SIWAREX IS	
With ATEX approval, but **without UL or FM approval** for intrinsically-safe connection of load cells, including manual, suitable for the SIWAREX U, CS, MS, FTA, FTC and CF weighing modules, Approved for use in the EU.	
• With short-circuit current < 199 mA DC	**7MH4710-5BA**
• With short-circuit current < 137 mA DC	**7MH4710-5CA**

	Article No.
Cable (optional)	
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) - CY, orange sheath	**7MH4702-8AG**
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 JBs, for fixed laying, occasional bending permitted, 10.8 mm (0.43 inch) outer diameter, for ambient temperature -40 ... +80 °C (-40 ... +176 °F)	
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) - CY, blue sheath	**7MH4702-8AF**
To connect 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 sheath, approx. 10.8 mm (0.43 inch) outer diameter, for ambient temperature -40 ... +80 °C (-40 ... +176 °F)	
Cable LiYCY 4 x 2 x 0.25 mm²	**7MH4407-8BD0**
For TTY (connect 2 pairs of conductors in parallel), for connection of a remote display	

SIFLOW FC070

Overview

SIFLOW FC070 is based on the latest developments within the digital processing technology – engineered for high performance, fast flow step response, immunity against process generated noise, easy to install, commission and maintain.

SIFLOW FC070 is available in two versions:

- SIFLOW FC070 Standard
- SIFLOW FC070 Ex CT

The SIFLOW FC070 transmitter delivers true multi-parameter measurements i.e. mass flow, volume flow, density, temperature and fraction.

SIFLOW FC070 is designed for integration in a variety of automation systems, e.g.:

- Centrally mounted in S7-300, C7
- Decentralized in ET 200M for use with S7-300 and S7-400 as PROFIBUS DP/PROFINET masters
- Decentralized in ET 200M for use with any automation system using standardized PROFIBUS DP/PROFINET masters
- Stand-alone via a Modbus RTU master, i.e. SIMATIC PDM

The SIFLOW FC070 transmitter can be connected to all sensors of types MASS 2100, MC2, FCS200 and FC300.

Technical specifications

Measurement of	Mass flow, volume flow, density, sensor temperature, fraction A flow, fraction B flow, fraction A in %
Measurement functions	
• Totalizer 1	Totalization of mass flow, volume flow, fraction A, fraction B
• Totalizer 2	Totalization of mass flow, volume flow, fraction A, fraction B
• Single and 2-stage batch function	Batching function with the use of one or two outputs for dosing in high and low speed
• 4 programmable limits	4 programmable high/low limits for mass flow, volume flow, density, sensor temperature, fraction A flow, fraction B flow, fraction A in %. Limits will generate an alarm if reached.
Digital input	
Functions	Start batch, stop batch, start/stop batch, hold/continue batch, reset totalizer 1, reset totalizer 2, reset totalizer 1 and 2, zero adjust, force frequency output, freeze frequency output
High signal	• Nominal voltage: 24 V DC • Lower limit: 15 V DC • Upper limit: 30 V DC • Current: 2 … 15 mA
Low signal	• Nominal voltage: 0 V DC • Lower limit: -3 V DC • Upper limit: 5 V DC • Current: -15 … +15 mA
Input	Approx. 10 kΩ
Switching	Max. 100 Hz

Digital output 1 and 2	
Functions	• Output 1: Pulse, frequency, redundancy pulse, redundancy frequency 2-stage batch, batch • Output 2: Redundancy pulse, redundancy frequency, 2-stage batch
Voltage supply	3 … 30 V DC (passive output)
Switching current	Max. 30 mA at 30 V DC
Voltage drop	≤ 3 V DC at max. current
Leakage current	≤ 0.4 mA at max. voltage 30 V DC
Load resistance	1 … 10 kΩ
Switching frequency	0 … 12 kHz 50 % duty cycle
Functions	Pulse, frequency, redundancy pulse, redundancy frequency 2-stage batch, batch
Communication	
Modbus RS 232C	• Max. baud rate: 115 200 baud • Max. line length: 15 m at 115 200 baud • Signal level: according to EIA-RS 232C
Modbus RS 485	• Max. baud rate: 115 200 baud • Max. line length: 1200 m at 115 200 baud • Signal level: according to EIA-RS 485 • Bus termination: Integrated. Can be enabled by inserting wire jumpers.
Galvanic isolation	All inputs, outputs and communication interfaces are galvanically isolated. Isolation voltage: 500 V.

Technical specifications (continued)

Power	
Supply	24 V DC nominal
Tolerance	20.4 V DC … 28.8 V DC
Consumption	Max. 7.2 W
Fuse	T1 A/125 V, not replaceable by operator
Environment	
Ambient temperature	• Storage -40 °C … +70 °C (-40 °F … +158 °F)
Operation conditions	Horizontally mounted rail. For SIFLOW FC070 Std.: 0 … 60 °C (32 … 140 °F) For SIFLOW FC070 Ex CT: -40 … +60 °C (-40 … +140 °F) Vertically mounted rail For SIFLOW FC070 Std.: 0 … 45 °C (32 … 113 °F) For SIFLOW FC070 Ex CT: -40 … +45 °C (-40 … +113 °F)
Altitude	• Operation: -1000 … 2000 m (pressure 795 … 1080 hPa)
Enclosure	
Material	Noryl, color: anthracite
Rating	IP20/NEMA 2 according to IEC 60529
Mechanical load	According to SIMATIC standards (S7-300 devices)
Approvals Ex	
SIFLOW FC070 Standard	CE, C-UL, ATEX II 3G Ex nA IIC
SIFLOW FC070 Ex CT	CE, C-UL, UL Haz.Loc., FM Class I, Div. 2 Groups A, B, C, D, ATEX II (1)G [Ex ia] IIC Ga / II 3G Ex nA IIC T4 Gc and IECEx Ex nA [ia] IIC T4

Approvals Custody transfer	
SIFLOW FC070 Ex CT	PTB Germany approval no.: 5.4.11/11.22 OIML R 139 - Compressed gaseous fuel measuring systems for vehicles
Electromagnetic compatibility	Requirements of EMC law;
	Noise immunity according to EN/ IEC 61326-1
	Emitted interference according to EN 55011/CISPR-11
NAMUR	Within the limits according to “General recommendations” with error criteria A in accordance with NE 21
Programming tools	
SIMATIC S7	Configuration through backplane P-BUS, PLC program and WinCC flexible
SIMATIC PCS7	Configuration trough backplane P-BUS and PLC/WinCC faceplates, certified driver
SIMATIC PDM	Through Modbus port RS 232C and RS 485, certified driver

SIFLOW FC070

Ordering data	Article No.
SIFLOW FC070 flow transmitter Remember to order 40-pin front plug connector.	**7ME4120-2DH20-0EA0**
40-pin front plug with screw contacts	**6ES7392-1AM00-0AA0**
40-pin front plug with spring contacts	**6ES7392-1BM01-0AA0**
SIFLOW FC070 Ex flow transmitter Remember to order 20-pin front plug connector.	**7ME4120-2DH21-0EA0**
20-pin front plug with screw contacts	**6ES7392-1AJ00-0AA0**
20-pin front plug with spring contacts	**6ES7392-1BJ00-0AA0**
Operating instructions for SITRANS F C SIFLOW FC070 This device is shipped with a Quick Start guide and a CD containing further SITRANS F literature All literature is also available for free at: http://www.siemens.com/flowdocumentation	
SIFLOW FC070 system manual	
• English	**A5E00924779**
• German	**A5E00924776**
SIFLOW FC070 with S7	
• English	**A5E02254228**
• German	**A5E02665536**
• French	**A5E02591639**
SIFLOW FC070 with PCS 7	
• English	**A5E03694109**

Accessories	Article No.
Cable with multiplug For connecting MASS 2100, FCS200 and FC300 sensors, 5 x 2 x 0.34 mm^2 twisted and screened in pairs. Temperature range -20 °C … +110 °C (-4 °F … +230 °F)	
• 5 m (16.4 ft)	**FDK:083H3015**
• 10 m (32.8 ft)	**FDK:083H3016**
• 25 m (82 ft)	**FDK:083H3017**
• 50 m (164 ft)	**FDK:083H3018**
• 75 m (246 ft)	**FDK:083H3054**
• 150 m (492 ft)	**FDK:083H3055**
Cable without multiplug For connecting MC2 sensors, 5 x 2 x 0.34 mm^2 twisted and screened in pairs. Temperature range -20 °C … +110 °C (-4 °F … +230 °F)	
• 10 m (32.8 ft)	**FDK:083H3001**
• 25 m (82 ft)	**FDK:083H3002**
• 75 m (246 ft)	**FDK:083H3003**
• 150 m (492 ft)	**FDK:083H3004**
SIMATIC S7-300 rail The mechanical mounting rack of the SIMATIC S7-300	
• 160 mm (6.3")	**6ES7390-1AB60-0AA0**
• 482 mm (18.9")	**6ES7390-1AE80-0AA0**
• 530 mm (20.8")	**6ES7390-1AF30-0AA0**
• 830 mm (32.7")	**6ES7390-1AJ30-0AA0**
• 2000 mm (78.7")	**6ES7390-1BC00-0AA0**
SIFLOW FC070 Demo suitcase with MASS 2100 DI 1.5 sensor and SIMATIC HMI TP 177B touch panel	**A5E01075465**
SIMATIC S7-300, stabilized power supply PS307 Input: 120/230 V AC Output: 24 V DC/2 A	**6ES7307-1BA01-0AA0**

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 count
  - Periodic count
- 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.

5

Technical specifications

Article number	**6AG1350-1AH03-2AE0**	**6AG1350-1AH03-2AY0**
Based on	**6ES7350-1AH03-0AE0**	**6ES7350-1AH03-0AE0**
	SIPLUS_FM350-1	SIPLUS_FM350-1_EN50155
Ambient conditions		
Ambient temperature in operation		
• Min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155
Extended ambient conditions		

• Relative to ambient temperature-atmospheric pressure-installation 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)	

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		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS S7-300 FM 350-1 counter module	
With 1 channel, max. 500 kHz; for incremental encoder	
Extended temperature range and exposure to media	**6AG1350-1AH03-2AE0**
Conforms to EN 50155	**6AG1350-1AH03-2AY0**

	Article No.
Accessories	See SIMATIC S7-300 FM 350-1 counter module, page 5/136

SIPLUS S7-300 FM 350-2 counter modules

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.

5

Technical specifications

Article number	**6AG1350-2AH01-4AE0**
Based on	**6ES7350-2AH01-0AE0** SIPLUS S7-300 FM350-2 8 CHANNELS
Ambient conditions	
Ambient temperature in operation	
• Min.	0 °C; = Tmin
• max.	60 °C; = Tmax
Extended ambient conditions	
• Relative to ambient temperature-atmospheric pressure-installation 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)
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	**6AG1350-2AH01-4AE0**
Based on	**6ES7350-2AH01-0AE0** SIPLUS S7-300 FM350-2 8 CHANNELS
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	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 media	**6AG1350-2AH01-4AE0**

	Article No.
Accessories	See SIMATIC S7-300 FM 350-2 counter module, page 5/139

Overview

SIPLUS electronic weighing system SIWAREX U

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.	**6AG1950-2AA01-4AA0**
Article No. based on	**7MH4950-2AA01**
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 if condensation present.

For technical documentation on SIPLUS, see:

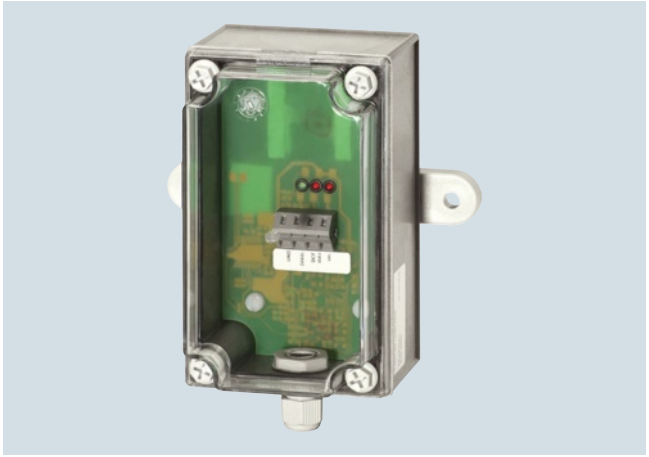
http://www.siemens.com/siplus-extreme

Ordering data

	Article No.
SIPLUS SIWAREX U	
Electronic weighing system for SIPLUS S7 and ET 200M, incl. bus connector	
Exposure to media	**6AG1950-2AA01-4AA0**
Accessories	See SIWAREX U, page 5/172

SIPLUS DCF 77 radio clock modules

Overview



This module can be used to synchronize the real-time clock of the SIMATIC/SIPLUS S7-200, S7-300 and S7-400 automation systems with the official time of the DCF 77 time signal transmitter of the Physikalisch-Technische Bundesanstalt Braunschweig, Germany, (German Federal Testing Laboratory).

The time is received by means of a DCF receiver (antenna with electronics) which is connected via two digital inputs on the SIMATIC PLC and SIPLUS, together with a software driver available as a download (function block FB):

http://www.siemens.com/siplus - Support - Tools and Downloads!

Technical specifications

SIPLUS DCF 77 radio clock module	
Radio frequency	77.5 Hz
Power supply	24 V DC (20.4 to 28.8 DC)
Power consumption, typ.	50 mA
Dimensions (W x H x D)	75 mm x 125 mm[1] x 75 mm

[1] Additionally 25 mm (0.98 in) for heavy duty threaded joint and bending radius for cables

Ordering data

	Article No.
SIPLUS DCF 77 radio clock module For synchronizing SIMATIC S7-200, S7-300 and S7-400 with the official time of the DCF 77 time signal transmitter of the Physikalisch-Technische Bundesanstalt Braunschweig (German Federal Testing Laboratory)	**6AG1057-1AA03-0AA0**

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

Technical specifications

Article number	**6ES7340-1AH02-0AE0**	**6ES7340-1BH02-0AE0**	**6ES7340-1CH02-0AE0**
	SIMATIC S7-300, CP 340	SIMATIC S7-300, CP 340	SIMATIC S7-300, CP 340
Product type designation			
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 losses			
Power loss, typ.	0.6 W	0.85 W	0.6 W
Power loss, max.	0.85 W	0.95 W	0.85 W
Interfaces			
Number of interfaces	1; Isolated	1; Isolated	1; Isolated
Interface physics, 20 mA (TTY)		Yes	
Interface physics, RS 232C (V.24)	Yes		
Interface physics, RS 422/RS 485 (X.27)			Yes
Transmission rate, max.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s
Transmission rate, min.	2.4 kbit/s	2.4 kbit/s	2.4 kbit/s
Point-to-point			
• Cable length, max.	15 m	1 000 m; 100 m active, 1000 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
- RK512	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 (continued)

Article number	6ES7340-1AH02-0AE0 SIMATIC S7-300, CP 340	6ES7340-1BH02-0AE0 SIMATIC S7-300, CP 340	6ES7340-1CH02-0AE0 SIMATIC S7-300, CP 340
Transmission speed, 20 mA (TTY)			
- with 3964 (R) protocol, max.		19.2 kbit/s	
- with ASCII protocol, max.		9.6 kbit/s	
- with printer driver, max.,		9.6 kbit/s	
Transmission speed, RS 422/485			
- with 3964 (R) protocol, max.			19.2 kbit/s
- with ASCII protocol, max.			9.6 kbit/s
- with printer driver, max.,			9.6 kbit/s
Transmission speed, RS232			
- with 3964 (R) protocol, max.	19.2 kbit/s		
- with ASCII protocol, max.	9.6 kbit/s		
- with printer driver, max.,	9.6 kbit/s		
Ambient conditions			
Ambient temperature in operation			
• Min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °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			
Power supply	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

Ordering data

	Article No.
CP 340 communications processor	**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 processor	**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**

	Article No.
CP 340 communications processor	**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**

Overview

- For quick, high-performance 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
- Easy configuration using a parameterization tool integrated in STEP 7

Technical specifications

Article number	**6ES7341-1AH02-0AE0**	**6ES7341-1BH02-0AE0**	**6ES7341-1CH02-0AE0**
	CP 341 RS232C (V.24)	CP341 20MA-INTERFACE (TTY)	CP341 RS422/485-INTERFACE
Product type designation			
Supply voltage			
Rated value (DC)			
• 24 V DC	Yes	Yes	Yes
Input current			
from backplane bus 5 V DC, max.	70 mA	70 mA	70 mA
from supply voltage L+, max.	100 mA	100 mA	100 mA
Power losses			
Power loss, typ.	1.6 W	1.6 W	1.6 W
Power loss, max.	2.4 W	2.4 W	2.4 W
Interfaces			
Number of interfaces	1; Isolated	1; Isolated	1; Isolated
Interface physics, 20 mA (TTY)		Yes	
Interface physics, RS 232C (V.24)	Yes		
Interface physics, RS 422/RS 485 (X.27)			Yes
Transmission rate, max.	115.2 kbit/s	19.2 kbit/s	115.2 kbit/s
Transmission rate, min.	0.3 kbit/s	0.3 kbit/s	0.3 kbit/s
Point-to-point			
• 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
- RK512	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

Technical specifications (continued)

Article number	6ES7341-1AH02-0AE0 CP 341 RS232C (V.24)	6ES7341-1BH02-0AE0 CP341 20MA-INTERFACE (TTY)	6ES7341-1CH02-0AE0 CP341 RS422/485-INTERFACE
Transmission speed, 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 speed, 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, RS232			
- 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 in operation			
• Min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °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			
Power supply	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

Ordering data

	Article No.
CP 341 communication 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 communication 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**

	Article No.
CP 341 communication 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	**6ES7870-1AA01-0YA0**
• Single license, without software or documentation	**6ES7870-1AA01-0YA1**
Modbus slave (RTU format)	
• Single license	**6ES7870-1AB01-0YA0**
• Single license, without software or documentation	**6ES7870-1AB01-0YA1**

Overview

- Drivers for Modbus protocol with RTU message format; communication as master or slave
- Downloadable onto CP 341 and CP 441-2 (6ES7441-2AA04-0AE0)

Technical specifications

Parameterization software	**Loadable drivers for CP 441-2 and CP 341**
Type of license	Simple license, copy license
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
Adjustable parameters	• 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

	Modbus slave
	• 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
Adjustable parameters	• 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

Loadable drivers for CP 441-2 and CP 341

Ordering data	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 Delivery package: 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 Delivery package: Driver program/documentation, English, German, French	
Single license	**6ES7870-1AB01-0YA0**
Single license, without software and documentation	**6ES7870-1AB01-0YA1**

	Article No.
SIMATIC Manual Collection	**6ES7998-8XC01-8YE0**
Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	
SIMATIC Manual Collection update service for 1 year	**6ES7998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	

Overview

CP 343-2P / CP 343-2

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 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 fault, configuration fault) by means of LEDs in the front panel
- Compact enclosure in the design of the SIMATIC S7-300
- Suitable for AS-i Power24V (from product version 2/firmware version 3.1) and for Standard AS-i with 30 V voltage.
- Additionally for CP 343-2P: Supports the configuration of the AS-Interface-network with STEP 7 V5.2 and higher

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 mains voltage
- Lower costs for stock keeping and spare parts inventory because the CP can be used for the SIMATIC S7-300 as well as for the ET 200M
- With CP 343-2P additionally: Improved plant documentation and support for service assignments thanks to a description of the AS-Interface configuration in the STEP 7 project
- 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. For decoupling, an AS-i data decoupling module S22.5 is required (e.g. 3RK1901-1DE12-1AA0), see Catalog IC 10, Chapter 2 "Industrial communication" → "AS-Interface" → "Power supply units and data decoupling modules"
- Operation with AS-Interface power supply unit IP20 (e.g. 3RX9501-0BA00), see Catalog IC 10, Chapter 2 "Industrial communication" → "AS-Interface" → "Power supply units and data decoupling modules" is also possible without restrictions

Application

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

By connecting an AS-Interface, a max. of 248 DI / 248 DO can be accessed per CP when using 62 A/B slaves with 4DI / 4DO respectively.

The integrated analog processing function can be used to easily transfer analog signals (up to 62 A/B analog slaves with a max. of 2 channels each or up to 31 standard analog slaves, each with a max. of 4 channels per CP).

The CP 343-2P is an enhancement to the CP 343-2 and has exactly the same functions. An existing STEP 7 user program for a CP 343-2 can be used for a CP 343-2P without limitations. The two assemblies are merely configured differently in STEP 7 HW Config, whereby the CP 343-2P offers additional possibilities. We recommend the CP 343-2P for these reasons.

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 functional readiness of all connected and active slaves
- Pushbuttons for switching over the master operating state and for adopting the existing ACTUAL configuration of the AS-i slaves as the TARGET configuration

The CP 343-2P / CP 343-2 supports all specified functions of the extended 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 record.

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

For more information, see http://support.automation.siemens.com/WW/view/en/51678777.

Security information

The use of this product requires suitable protective measures (including network segmentation for IT security) in order to ensure safe plant operation;
see www.siemens.com/industrialsecurity.

Overview (continued)

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 V5.2 and higher. 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.

Ordering data

	Article No.
CP 343-2P communications processor • 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 (V5.2 and higher) • Without front connector • Corresponds to AS-Interface specification V3.0 • Dimensions (W × H × 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 × H × D / mm): 40 x 125 x 120	**6GK7343-2AH01-0XA0**
Front connector, 20-pin	
• With screw terminals	**6ES7392-1AJ00-0AA0**
• With spring-type terminals	**6ES7392-1BJ00-0AA0**

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 Mbit/s (including 45.45 kbit)
- Communication services:
  - PROFIBUS DP
  - PG/OP communication (OP multiplexing)
  - S7 communication (client, server)
  - Open communication (SEND/RECEIVE)
- Easy configuration and programming over PROFIBUS
- Cross-network programming device communication through S7 routing
- Modules can be replaced without the need for a PG

Technical specifications

Article number	**6GK7342-5DA03-0XE0**
Product type designation	CP 342-5
Transmission rate	
Transfer rate	
• at the 1st interface acc. to PROFIBUS	9.6 kbit/s ... 12 Mbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	0
Number of electrical connections	
• at the 1st interface acc. to PROFIBUS	1
• for power supply	1
Type of electrical connection	
• at the 1st interface acc. 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 external	24 V
Relative positive tolerance for DC at 24 V	20 %
Relative negative tolerance for DC at 24 V	15 %
Consumed current	
• from backplane bus for DC at 5 V typical	0.15 A
• from external supply voltage for DC at 24 V typical	0.25 A
Active power loss	6.75 W

Article number	**6GK7342-5DA03-0XE0**
Product type designation	CP 342-5
Permitted 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 weight	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.3 kg
Product properties, functions, 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
Amount of data	
• as user data per connection for open communication by means of SEND/RECEIVE blocks maximum	240 byte

Technical specifications (continued)

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 usable	124
Amount of data	
• of the address area of the inputs as DP master total	2 160 byte
• of the address area of the outputs as DP master total	2 160 byte
• of the address area of the inputs per DP slave	244 byte
• of the address area of the outputs per DP slave	244 byte
• of the address area of the diagnostic data per DP slave	240 byte
Service as DP slave	
• DPV0	Yes
Amount of data	
• of the address area of the inputs as DP slave total	240 byte
• of the address area of the outputs as DP slave total	240 byte

Article number	6GK7342-5DA03-0XE0
Product type designation	CP 342-5
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	
Configuration software	
• required	STEP 7 V5.1 SP2 or higher / STEP 7 Professional V12 (TIA Portal) or higher

Ordering data

	Article No.
CP 342-5 communications processor Communications processor for electrical connection of SIMATIC S7-300 to PROFIBUS at up to 12 Mbit/s, with electronic manual on CD-ROM	**6GK7342-5DA03-0XE0**

	Article No.
Accessories	
PROFIBUS FastConnect connection plug RS 485 With 90° cable outlet; insulation displacement technology, max. transmission rate 12 Mbit/s	
• Without PG interface	**6ES7972-0BA52-0XA0**
• With PG interface	**6ES7972-0BB52-0XA0**
PROFIBUS bus connector IP20 With connection to PPI, MPI, PROFIBUS	
• Without PG interface	**6ES7972-0BA12-0XA0**
• With PG interface	**6ES7972-0BB12-0XA0**
PROFIBUS FC Standard Cable 2-core bus cable, shielded, special design for fast mounting, delivery unit: max. 1000 m, minimum order 20 m, sold by the meter	**6XV1830-0EH10**
PROFIBUS bus terminal 12M Bus terminal for connection of PROFIBUS nodes up to 12 Mbps with connecting cable	**6GK1500-0AA10**
SIMATIC S7-300 DM 370 Dummy module; used for module replacement	**6ES7370-0AA01-0AA0**

Note:

You can find order information for software for communication with PC systems in Catalog IK PI.

Overview

DP-M	DP-S	FMS	PG/OP	S7/S5	
●	●		●	●	

- PROFIBUS DP master or slave with optical interface for connecting the SIMATIC S7-300 to PROFIBUS at up to 12 Mbit/s (including 45.45 kbit)
- Direct connection to the optical PROFIBUS network over the integrated fiber-optic interface for plastic and PCF fiber-optic cables
- Communication services:
  - PROFIBUS DP
  - PG/OP communication (OP multiplexing)
  - S7 communication (client, server)
  - Open communication (SEND/RECEIVE)
- Easy configuration and programming over PROFIBUS
- Cross-network programming device communication through S7 routing
- Modules can be replaced without the need for a PG

5

Technical specifications

Article number	**6GK7342-5DF00-0XE0**
Product type designation	CP 342-5 FO
Transmission rate	
Transfer rate	
• at the 1st interface acc. to PROFIBUS	9.6 kbit/s ... 12 Mbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	0
Number of electrical connections	
• for power supply	1
Number of optical interfaces at the 1st interface acc. to PROFIBUS	2
Design of the optical interface at the 1st interface acc. to PROFIBUS	Duplex socket
Type of electrical connection	
• 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
Relative positive tolerance for DC at 24 V	20 %
Relative negative tolerance for DC at 24 V	15 %
Consumed current	
• from backplane bus for DC at 5 V typical	0.15 A
• from external supply voltage for DC at 24 V typical	0.25 A
Active power loss	6 W

Article number	**6GK7342-5DF00-0XE0**
Product type designation	CP 342-5 FO
Permitted 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 weight	
Module format	Compact module
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.3 kg
Mounting type	
• S7-300 rail mounting	Yes
Product properties, functions, components general	
Number of units	
• per CPU maximum	4
Cable length	
• for PCF FOC maximum	300 m
• for POF FOC maximum	50 m
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks	
• maximum	16
Amount of data	
• as user data per connection for open communication by means of SEND/RECEIVE blocks maximum	240 byte

Technical specifications (continued)

Article number	6GK7342-5DF00-0XE0
Product type designation	CP 342-5 FO
Performance data PROFIBUS DP	
Service as DP master	
• DPV0	Yes
Number of DP slaves on DP master usable	124
Amount of data	
• of the address area of the inputs as DP master total	2 160 byte
• of the address area of the outputs as DP master total	2 160 byte
• of the address area of the inputs per DP slave	244 byte
• of the address area of the outputs per DP slave	244 byte
• of the address area of the diagnostic data per DP slave	240 byte
Service as DP slave	
• DPV0	Yes
Amount of data	
• of the address area of the inputs as DP slave total	240 byte
• of the address area of the outputs as DP slave total	240 byte

Article number	6GK7342-5DF00-0XE0
Product type designation	CP 342-5 FO
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	
Configuration software	
• required	STEP 7 V5.1 SP2 or higher / STEP 7 Professional V12 (TIA Portal) or higher

Ordering data

	Article No.
CP 342-5 FO communications processor Communications processor for optical connection of SIMATIC S7-300 to PROFIBUS up to 12 Mbit/s with electronic manual on CD-ROM	6GK7342-5DF00-0XE0

	Article No.
Accessories	
PROFIBUS plastic fiber optic, simplex sonnector/polishing set 100 simplex connectors and 5 polishing sets for assembling PROFIBUS plastic fiber optic cables for the optical PROFIBUS DP	6GK1901-0FB00-0AA0
PROFIBUS plastic fiber optic, stripping tool set Tools for removing the outer sheath or core sheath of plastic fiber optic cables	6GK1905-6PA10
Plug-in adapter For assembling the plastic Simplex connector in combination with CP 342-5 FO, IM 467 FO, IM 153-2 FO and IM 151 FO 50 units	6ES7195-1BE00-0XA0

Note:

You can find order information for software for communication with PC systems in Catalog IK PI.

Overview

DP-M	DP-S	FMS	PG/OP	S7/S5	
		●	●	●	

Connection of SIMATIC S7-300 to PROFIBUS at up to 12 Mbit/s (including 45.45 kbit)

- 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 programming device communication through S7 routing
- Modules can be replaced without the need for a PG

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Technical specifications

Article number	**6GK7343-5FA01-0XE0**
Product type designation	CP 343-5
Transmission rate	
Transfer rate	
• at the 1st interface acc. to PROFIBUS	9.6 kbit/s ... 12 Mbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	0
Number of electrical connections	
• at the 1st interface acc. to PROFIBUS	1
• for power supply	1
Type of electrical connection	
• at the 1st interface acc. 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
Relative positive tolerance for DC at 24 V	20 %
Relative negative tolerance for DC at 24 V	15 %
Consumed current	
• from backplane bus for DC at 5 V typical	0.15 A
• from external supply voltage for DC at 24 V typical	0.25 A
Active power loss	5 W

Article number	**6GK7343-5FA01-0XE0**
Product type designation	CP 343-5
Permitted 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 weight	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.3 kg
Mounting type	
• S7-300 rail mounting	Yes
Product properties, functions, components general	
Number of units	
• per CPU maximum	4

Technical specifications (continued)

Article number	6GK7343-5FA01-0XE0
Product type designation	CP 343-5
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks	
• maximum	16
Amount of data	
• 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
Amount of data 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

Article number	6GK7343-5FA01-0XE0
Product type designation	CP 343-5
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	
Configuration software	
• required	STEP 7 V5.1 SP3 or higher and NCM S7 for PROFIBUS

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**
STEP 7 Version 5.5 Target system: SIMATIC S7-300/400, SIMATIC C7, SIMATIC WinAC Requirements: Windows XP Prof., Windows 7 Professional/Ultimate Type of delivery: German, English, French, Spanish, Italian; including license key on USB stick, with electronic documentation	
• Floating License on DVD	**6ES7810-4CC10-0YA5**
• Rental license for 50 hours	**6ES7810-4CC10-0YA6**
• Software Update Service on DVD (requires current software version)	**6ES7810-4BC01-0YX2**
• Floating License upgrade 3.x/4.x/5.x to V5.4; on DVD	**6ES7810-4CC10-0YE5**
• Trial License STEP 7 V5.4; on DVD, operational for 14 days	**6ES7810-4CC10-0YA7**
PROFIBUS FastConnect bus connector RS 485 With 90° cable outlet; insulation displacement technology, max. transfer rate 12 Mbit/s (1 unit)	
• Without PG interface	**6ES7972-0BA52-0XA0**
• With PG interface	**6ES7972-0BB52-0XA0**

	Article No.
PROFIBUS bus connector IP20 With connection to PPI, MPI, PROFIBUS	
• Without PG interface	**6ES7972-0BA12-0XA0**
• With PG interface	**6ES7972-0BB12-0XA0**
PROFIBUS bus terminal 12M Bus terminal for connection of PROFIBUS nodes at up to 12 Mbit/s with connecting cable	**6GK1500-0AA10**
SIMATIC S7-300 DM 370 Dummy module; used for module replacement	**6ES7370-0AA01-0AA0**
Accessories	
PROFIBUS FastConnect connection plug RS 485 With 90° cable outlet; insulation displacement technology, max. transmission rate 12 Mbit/s	
• Without PG interface	**6ES7972-0BA52-0XA0**
• With PG interface	**6ES7972-0BB52-0XA0**
PROFIBUS bus connector IP20 With connection to PPI, MPI, PROFIBUS	
• Without PG interface	**6ES7972-0BA12-0XA0**
• With PG interface	**6ES7972-0BB12-0XA0**
PROFIBUS bus terminal 12M Bus terminal for connection of PROFIBUS nodes at up to 12 Mbit/s with connecting cable	**6GK1500-0AA10**

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

Technical specifications

Article number	**6GK7343-1CX10-0XE0**
Product type designation	CP 343-1 Lean
Transmission rate	
Transfer rate	
• at the 1st interface	10 ... 100 Mbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	2
Number of electrical connections	
• at the 1st interface acc. to Industrial Ethernet	2
• for power supply	1
Type of electrical connection	
• at the 1st interface acc. to Industrial Ethernet	RJ45 port
• of Industrial Ethernet interface	RJ45 port
• 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
Relative positive tolerance for DC at 24 V	20 %
Relative negative tolerance for DC at 24 V	15 %
Consumed current	
• from backplane bus for DC at 5 V typical	0.2 A
• from external supply voltage for DC at 24 V typical	0.16 A
• from external supply voltage for DC at 24 V maximum	0.2 A
Active power loss	5.8 W

Article number	**6GK7343-1CX10-0XE0**
Product type designation	CP 343-1 Lean
Permitted 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 weight	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.22 kg
Mounting type	
• S7-300 rail mounting	Yes
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks	
• maximum	8
Amount of data	
• 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

Technical specifications (continued)

Article number	6GK7343-1CX10-0XE0
Product type designation	CP 343-1 Lean
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
Performance data PROFINET communication as PN IO-Device	
Product function PROFINET IO device	Yes
Amount of data	
• as user data for input variables as PROFINET IO device maximum	512 byte
• as user data for input 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 input 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	
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&M0 - 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 Diagnosis	
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

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 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	**6GK1901-1BB30-0AA0**
• 1 pack = 10 units	**6GK1901-1BB30-0AB0**
• 1 pack = 50 units	**6GK1901-1BB30-0AE0**
IE FC TP Standard Cable GP 2 x 2 (Type A) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. length 1000 m, minimum order quantity 20 m	**6XV1840-2AH10**
IE FC Stripping Tool Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	**6GK1901-1GA00**
Compact Switch Module CSM 377 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 Mbit/s; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module including electronic manual on CD-ROM	**6GK7377-1AA00-0AA0**

Note:

You can find order information for software for communication with PC systems in Catalog IK PI.

CP 343-1

Overview

ISO	TCP/ UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
●	●	●	●			●	●

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

Technical specifications

Article number	**6GK7343-1EX30-0XE0**
Product type designation	CP 343-1
Transmission rate	
Transfer rate	
• at the 1st interface	10 ... 100 Mbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	2
Number of electrical connections	
• at the 1st interface acc. to Industrial Ethernet	2
• for power supply	1
Type of electrical connection	
• at the 1st interface acc. to Industrial Ethernet	RJ45 port
• of Industrial Ethernet interface	RJ45 port
• 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
Relative positive tolerance for DC at 24 V	20 %
Relative negative tolerance for DC at 24 V	15 %
Consumed current	
• from backplane bus for DC at 5 V typical	0.2 A
• from external supply voltage for DC at 24 V typical	0.16 A
• from external supply voltage for DC at 24 V maximum	0.2 A
Active power loss	5.8 W

Article number	**6GK7343-1EX30-0XE0**
Product type designation	CP 343-1
Permitted 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 weight	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.22 kg
Mounting type	
• S7-300 rail mounting	Yes
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks	
• maximum	16
Amount of data	
• 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

Technical specifications (continued)

Article number	**6GK7343-1EX30-0XE0**
Product type designation	CP 343-1
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 usable total	32
Number of external PN IO lines with PROFINET per rack	1
Amount of data	
• as user data for input variables as PROFINET IO controller maximum	1 Kibyte
• as user data for input 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
Performance data PROFINET communication as PN IO-Device	
Product function PROFINET IO device	Yes
Amount of data	
• as user data for input variables as PROFINET IO device maximum	512 byte
• as user data for input 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 input 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

Article number	**6GK7343-1EX30-0XE0**
Product type designation	CP 343-1
Product functions management, configuration	
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&M0 - device-specific information	Yes
• I&M1 – higher-level designation/ location designation	Yes
Product functions Diagnosis	
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

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Ordering data	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 Mbit/s; 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 CPs/CPUs with Industrial Ethernet interface	
• 1 pack = 1 unit	**6GK1901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1901-1BB10-2AE0**
IE FC RJ45 Plug 145 RJ45 plug 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	**6GK1901-1BB30-0AA0**
• 1 pack = 10 units	**6GK1901-1BB30-0AB0**
• 1 pack = 50 units	**6GK1901-1BB30-0AE0**

	Article No.
IE FC TP Standard Cable GP 2 x 2 (Type A) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. length 1000 m, minimum order quantity 20 m	**6XV1840-2AH10**
IE FC Stripping Tool Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	**6GK1901-1GA00**
Compact Switch Module CSM 377 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 Mbit/s; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module including electronic manual on CD-ROM	**6GK7377-1AA00-0AA0**
SCALANCE X204-2 Industrial Ethernet Switch Industrial Ethernet Switches with integral SNMP access, Web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbit/s RJ45 ports and two FO ports	**6GK5204-2BB10-2AA3**

Note:

You can find order information for software for communication with PC systems in Catalog IK PI.

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 e-mail 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.

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Technical specifications

Article number	**6GK7343-1GX31-0XE0**
Product type designation	CP 343-1 Advanced
Transmission rate	
Transfer rate	
• at the 1st interface	10 ... 1 000 Mbit/s
• at the 2nd interface	10 ... 100 Mbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	3
Number of electrical connections	
• at the 1st interface acc. to Industrial Ethernet	1
• at the 2nd interface acc. to Industrial Ethernet	2
• for power supply	1
Type of electrical connection	
• at the 1st interface acc. to Industrial Ethernet	RJ45 port
• at the 2nd interface acc. to Industrial Ethernet	RJ45 port
• for power supply	2-pole plugable terminal block
design of the removable storage C-PLUG	Yes

Article number	**6GK7343-1GX31-0XE0**
Product type designation	CP 343-1 Advanced
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
Relative positive tolerance for DC at 24 V	20 %
Relative negative tolerance for DC at 24 V	15 %
Consumed current	
• from backplane bus for DC at 5 V typical	0.14 A
• from external supply voltage for DC at 24 V typical	0.48 A
• from external supply voltage for DC at 24 V maximum	0.62 A
Active power loss	14.7 W
Permitted 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

Technical specifications (continued)

Article number	6GK7343-1GX31-0XE0
Product type designation	CP 343-1 Advanced
Design, dimensions and weight	
Module format	Compact module
Width	80 mm
Height	125 mm
Depth	120 mm
Net weight	0.8 kg
Mounting type	
• S7-300 rail mounting	Yes
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks	
• maximum	16
Amount of data	
• 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	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
• as server by means of HTTP maximum	4
• as e-mail client maximum	1
Amount of data 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

Article number	6GK7343-1GX31-0XE0
Product type designation	CP 343-1 Advanced
Performance data PROFINET communication as PN IO-Controller	
Product function PROFINET IO controller	Yes
Number of PN IO devices on PROFINET IO controller usable total	128
Number of PN IO IRT devices on PROFINET IO controller usable	128
Number of external PN IO lines with PROFINET per rack	1
Amount of data	
• as user data for input variables as PROFINET IO controller maximum	4 Kibyte
• as user data for input 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
Performance data PROFINET communication as PN IO-Device	
Product function PROFINET IO device	Yes
Amount of data	
• as user data for input variables as PROFINET IO device maximum	1 024 byte
• as user data for input 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 input 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

Technical specifications (continued)

Article number	6GK7343-1GX31-0XE0
Product type designation	CP 343-1 Advanced
Performance data PROFINET CBA	
Number of remote connection partners with PROFINET CBA	64
Number of connections with PROFINET CBA total	1 000
Amount of data	
• 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 connection with acyclic transmission	
Refresh 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
Amount of data	
• 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
Performance data PROFINET CBA remote connection with cyclic transmission	
Refresh time of the remote interconnections with PROFINET CBA with cyclical transfer	8 ms
Number of remote connections to input variables with PROFINET CBA with cyclical transfer maximum	200
Number of remote connections to output variables with PROFINET CBA with cyclical transfer maximum	200
Amount of data	
• as user data for remote interconnections with input variables with PROFINET CBA with cyclical transfer maximum	2 000 byte
• as user data for remote interconnections with output variables with PROFINET CBA with cyclical transfer maximum	2 000 byte

Article number	6GK7343-1GX31-0XE0
Product type designation	CP 343-1 Advanced
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
Refresh 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
Amount of data as user data for HMI variables in the case of acyclic transmission with PROFINET CBA maximum	8 Kibyte
Performance data PROFINET CBA device-internal connections	
Number of internal connections with PROFINET CBA maximum	256
Amount of data of the internal connections with PROFINET CBA maximum	2 400 byte
Performance data PROFINET CBA connections to constants	
Number of connections with constants with PROFINET CBA maximum	200
Amount of data 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	
Product function MIB support	Yes
Protocol is supported	
• SNMP v1	Yes
• DCP	Yes
• LLDP	Yes
Configuration software	
• required	STEP7 V5.5 SP2 HF1 or higher / STEP 7 Professional V12 (TIA Portal) or higher
• for PROFINET CBA required	SIMATIC iMap V3.0 SP4 and higher
Identification & maintenance function	
• I&M0 - device-specific information	Yes
• I&M1 – higher-level designation/ location designation	Yes

Technical specifications (continued)

Article number	6GK7343-1GX31-0XE0
Product type designation	CP 343-1 Advanced
Product functions Diagnosis	
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

Article number	6GK7343-1GX31-0XE0
Product type designation	CP 343-1 Advanced
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

Ordering data

	Article No.
CP 343-1 Advanced communications processor For connecting the SIMATIC S7-300 CPU to Industrial Ethernet; 1 x 10/100/1000 Mbit/s; 2 x 10/100 Mbit/s (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	**6GK7343-1GX31-0XE0**
• With Security (Firewall + VPN) and PROFIenergy (Controller + Device)	
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	**6GK1901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1901-1BB10-2AE0**
IE FC RJ45 Plug 145 RJ45 plug 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	**6GK1901-1BB30-0AA0**
• 1 pack = 10 units	**6GK1901-1BB30-0AB0**
• 1 pack = 50 units	**6GK1901-1BB30-0AE0**
IE FC RJ45 Plug 4 x 2 RJ45 plug connector for Industrial Ethernet (10/100/1000 Mbit/s) with a sturdy 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	**6GK1901-1BB11-2AA0**
• 1 pack = 10 units	**6GK1901-1BB11-2AB0**
• 1 pack = 50 units	**6GK1901-1BB11-2AE0**
IE FC TP Standard Cable GP 2 x 2 (Type A) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. length 1000 m, minimum order quantity 20 m	**6XV1840-2AH10**
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. quantity 1000 m, minimum order 20 m	
• AWG22, for connection to IE FC RJ45 Modular Outlet	**6XV1870-2E**
• AWG24, for connection to IE FC RJ45 Plug 4 x 2	**6XV1878-2A**
IE FC Stripping Tool Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	**6GK1901-1GA00**
Compact Switch Module CSM 377 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 Mbit/s; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module including electronic manual on CD-ROM	**6GK7377-1AA00-0AA0**
Industrial Ethernet Switch SCALANCE X204-2 Industrial Ethernet Switches with integral SNMP access, Web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbit/s RJ45 ports and two FO ports	**6GK5204-2BB10-2AA3**
Industrial Ethernet Switch SCALANCE X308-2 2 x 1000 Mbit/s multimode fiber-optic cable ports (SC sockets), 1 x 10/100/1000 Mbit/s RJ45 port, 7 x 10/100 Mbit/s RJ45 ports; for glass fiber-optic cable (multimode) up to max. 750 m	**6GK5308-2FL00-2AA3**

Note:

You can find order information for software for communication with PC systems in Catalog IK PI.

CP 343-1 ERPC

Overview

ERPC	TCP/ UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
●	●					●	●

The CP 343-1 ERPC (Enterprise Connect) communications processor for connecting a SIMATIC S7-300 to Industrial Ethernet networks.

The CP supports:

- PG/OP communication
- S7 communication
- Open communication (SEND/RECEIVE)
- ERPC communication

Connection of the SIMATIC S7-300 to various database systems for vertical integration is supported by means of a firmware expansion from ILS-Technology to be ordered separately.

Technical specifications

Article number	**6GK7343-1FX00-0XE0**
Product type designation	CP 343-1 ERPC
Transmission rate	
Transfer rate	
• at the 1st interface	10 ... 1 000 Mbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	1
Number of electrical connections	
• at the 1st interface acc. to Industrial Ethernet	1
• for power supply	1
Type of electrical connection	
• at the 1st interface acc. to Industrial Ethernet	RJ45 port
• 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
Relative positive tolerance for DC at 24 V	20 %
Relative negative tolerance for DC at 24 V	15 %
Consumed current	
• from backplane bus for DC at 5 V typical	0.3 A
• from external supply voltage for DC at 24 V typical	0.16 A
• from external supply voltage for DC at 24 V maximum	0.6 A
Active power loss	14.7 W

Article number	**6GK7343-1FX00-0XE0**
Product type designation	CP 343-1 ERPC
Permitted 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 weight	
Module format	Compact module S7-300 double width
Width	80 mm
Height	125 mm
Depth	120 mm
Net weight	0.8 kg
Mounting type	
• S7-300 rail mounting	Yes

Technical specifications (continued)

Article number	**6GK7343-1FX00-0XE0**
Product type designation	CP 343-1 ERPC
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks	
• maximum	8
Amount of data	
• 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	8
• Note	also 2 PG/OP connections and 1 diagnostics connection
Performance data multi-protocol mode	
Number of active connections with multi-protocol mode	32
Performance data IT functions	
Number of possible connections	
• as server by means of HTTP maximum	4
Number of possible write cycles of the flash memory cells	100 000
Performance data ERPC functions	
Number of possible connections for communication with ERP or MES stations maximum	8
Number of possible logical triggers per CP maximum	8
Number of configurable ERPC symbols for database access	
• per CPU maximum	2 000
• per logical trigger maximum	255
Amount of data as user data and header information per logical trigger	8 Kibyte

Article number	**6GK7343-1FX00-0XE0**
Product type designation	CP 343-1 ERPC
Performance data telecontrol	
Protocol is supported	
• TCP/IP	Yes
Product functions management, configuration	
Product function MIB support	Yes
Protocol is supported	
• SNMP v1	Yes
• DCP	Yes
• LLDP	Yes
Configuration software	
• required	STEP 7 V5.4 SP5 + HSP or higher
Identification & maintenance function	
• I&M0 - device-specific information	Yes
• I&M1 – higher-level designation/ location designation	Yes
Product functions Diagnosis	
Product function Web-based diagnostics	Yes
Product functions switch	
Product feature Switch	No
Product functions Redundancy	
Product function	
• Ring redundancy	No
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

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Ordering data

	Article No.
Communications processor CP 343-1 ERPC (Enterprise Connect) For the connection of SIMATIC S7-300 to Industrial Ethernet and for the support of the database connection of the SIMATIC S7-300 to various databases; TCP/UDP, S7 communication, open communication (SEND/RECEIVE), with and without RFC 1006, multicast, web server, setting of CPU's clock using SIMATIC procedures and NTP, access protection via IP access list, SNMP, DHCP, initialization over LAN 10/100/1000 Mbit/s; with electronic manual on DVD, C-PLUG included in scope of delivery	**6GK7343-1FX00-0XE0**
deviceWISE Embedded Edition for SIMATIC S7 Firmware expansion for database connection of the SIMATIC S7-300 complete with CP 343-1 ERPC to various ERP or MES systems	See Catalog IK PI 2015, Partner solutions / deviceWISE Embedded Edition for SIMATIC S7

Accessories	Article No.
IE FC RJ45 Plug 4 x 2 RJ45 plug connector for Industrial Ethernet (10/100/1000 Mbit/s) with a sturdy 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	**6GK1901-1BB11-2AA0**
• 1 pack = 10 units	**6GK1901-1BB11-2AB0**
• 1 pack = 50 units	**6GK1901-1BB11-2AE0**
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. quantity 1000 m, minimum order 20 m	
• AWG22, for connection to IE FC RJ45 Modular Outlet	**6XV1870-2E**
• AWG24, for connection to IE FC RJ45 Plug 4 x 2	**6XV1878-2A**
IE FC Stripping Tool Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	**6GK1901-1GA00**
Industrial Ethernet Switch SCALANCE X308-2 2 x 1000 Mbit/s multimode fiber-optic cable ports (SC sockets), 1 x 10/100/1000 Mbit/s RJ45 port, 7 x 10/100 Mbit/s RJ45 ports; for glass fiber-optic cable (multimode) up to max. 750 m	**6GK5308-2FL00-2AA3**

Note:

You can find order information for software for communication with PC systems in Catalog IK PI.

Overview

- Unmanaged switch for the connection of a SIMATIC S7-300 with integral PROFINET interface or with an Industrial Ethernet CP or ET 200M to an Industrial Ethernet in an electrical linear, 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 standalone operation of the machines
- Simple, space-saving attachment to S7-300 mounting rail due to design as single-width module in S7-300 format
- Low-cost solution for implementing small, local Ethernet networks
- Rugged, industry-standard node connections with PROFINET-compliant RJ45 connectors that latch onto the enclosure to offer additional strain and bending relief

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Technical specifications

Article number	**6GK7377-1AA00-0AA0**
Product type designation	CSM 377
Transmission rate	
Transfer rate	10 Mbit/s, 100 Mbit/s
Interfaces	
Number of electrical/optical connections	
• for network components or terminal equipment maximum	4
Number of electrical connections	
• for network components or terminal equipment	4
Type of electrical connection	
• for network components or terminal equipment	RJ45 port
Interfaces for communication integrated	
Number of 100 Mbit/s SC ports	
• for multimode	0
Number of 1000 Mbit/s LC ports	
• for multimode	0
Interfaces others	
Number of electrical connections	
• for power supply	1
Type of electrical connection	
• for power supply	2-pole terminal block
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage	
• external	24 V
• external	19.2 ... 28.8 V
Product component fusing at power supply input	Yes
Fuse protection type at input for supply voltage	0.5 A / 60 V
Consumed current maximum	0.07 A
Active power loss	
• for DC at 24 V	1.6 W

Article number	**6GK7377-1AA00-0AA0**
Product type designation	CSM 377
Permitted 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 weight	
Design	SIMATIC S7-300 device design
Width	40 mm
Height	125 mm
Depth	118 mm
Net weight	0.2 kg
Mounting type	
• 35 mm DIN rail mounting	No
• wall mounting	No
• S7-300 rail mounting	Yes
• S7-1500 rail mounting	No
Product functions management, configuration	
Product function	
• multiport mirroring	No
• switch-managed	No

Technical specifications (continued)

Article number	**6GK7377-1AA00-0AA0**
Product type designation	CSM 377
Standards, specifications, approvals	
Standard	
• for FM	FM3611: Class 1, Divison 2, Group A, B, C, D / T.., CL.1, Zone 2, GP. IIC, T.. Ta
• for hazardous zone	EN 60079-15, II 3 G Ex nA II T.., KEMA 06 ATEX 0021 X
• for safety from CSA and UL	UL 508, CSA C22.2 No. 142
• for hazardous zone from CSA and UL	UL 1604 and UL 2279-15 (Hazardous Location)
• for emitted interference	EN 61000-6-4:2001
• for interference immunity	EN 61000-6-2:2001
Certificate of suitability	EN 61000-6-2:2001, EN 61000-6-4:2001
• CE marking	Yes
• C-Tick	Yes
• KC approval	No
Marine classification association	
• American Bureau of Shipping Europe Ltd. (ABS)	No
• Bureau Veritas (BV)	No
• Det Norske Veritas (DNV)	No
• Germanische Lloyd (GL)	No
• Lloyds Register of Shipping (LRS)	No
• Nippon Kaiji Kyokai (NK)	No
• Polski Rejestr Statkow (PRS)	No
MTBF at 40 °C	144 y

Ordering data

	Article No.
Compact Switch Module CSM 377	
Unmanaged switch for connecting a SIMATIC S7-300, ET200 M and up to three further nodes to Industrial Ethernet with 10/100 Mbit/s; 4 x RJ45 ports; external 24 V DC power supply, diagnostics on LEDs, S7-300 module including electronic 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 outlet RJ45/ IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. quantity 1000 m, minimum order 20 m	**6XV1840-2AH10**
IE FC RJ45 Plug 180 2 x 2	
RJ45 plug connector for Industrial Ethernet with a rugged metal housing 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	**6GK1901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1901-1BB10-2AE0**
IE FC stripping tool	**6GK1901-1GA00**
Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	

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 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 frame memory for complete recording of data
- Simple configuration and operation without specialist IT knowledge

Technical specifications

Article number	**6NH7800-3BA00**
Product type designation	TIM 3V-IE
Transmission rate	
Transfer rate	
• for Industrial Ethernet	10 ... 100 Mbit/s
• acc. to RS 232	50 ... 38 400 bit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	1
Number of electrical connections	
• for external data transmission acc. to RS 232	1
• for power supply	1
Type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
• 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
Relative symmetrical tolerance for DC	
• at 5 V	5 %
Relative positive tolerance for DC at 24 V	5 %
Relative negative tolerance for DC at 24 V	5 %
Consumed current	
• from backplane bus for DC at 24 V maximum	0.2 A
• from external supply voltage for DC at 24 V maximum	0.2 A
Active power loss	5.8 W
Product expansion optional Backup battery	No

Article number	**6NH7800-3BA00**
Product type designation	TIM 3V-IE
Permitted 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 weight	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.25 kg
Product properties, functions, components general	
Number of units	
• per CPU maximum	1
• Note	Number of TIMs per S7-300: 1
Cable 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

Technical specifications (continued)

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	
• TCP/IP	Yes
• DNP3	No
• SINAUT ST1 protocol	Yes
• SINAUT ST7 protocol	Yes
Product function data buffering if connection is aborted	Yes
• Note	16,000 data messages
Storage capacity	
• of S7 CPU RAM for TD7onCPU mode data blocks on CPU required	20 Kibyte
• of S7 CPU RAM 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 property 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	
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	
Suitability for operation Virtual Private Network	Yes
Operating mode Virtual Private Network note	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

Ordering data

	Article No.
TIM 3V-IE communications module With an RS 232 interface for SINAUT communication via a conventional WAN or an IP-based network (WAN or LAN)	**6NH7800-3BA00**
SINAUT Engineering Software V5.4 On CD-ROM, comprising • SINAUT Engineering Software V5.4 for the PG • SINAUT TD7 block library • Electronic manual in German and English	**6NH7997-0CA54-0AA0**

	Article No.
Accessories	
IE FC TP Standard Cable GP 2 x 2 (Type A) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. length 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 housing 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	**6GK1901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1901-1BB10-2AE0**
IE FC Stripping Tool Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	**6GK1901-1GA00**
Connecting cable For connecting a TIM (RS 232) with a SINAUT ST7 MD2, MD3 or MD4 (RS 232) modem; cable length 1.5 m	**6NH7701-4AL**
Connecting cable For connecting a TIM (RS 232) with the GSM modem MD720-3; also suitable for third-party modems or radio equipment with standard RS 232 interface; cable length 2.5 m	**6NH7701-5AN**
Connecting cable With one end open for connecting a TIM (RS 232) to a third-party modem or radio unit (RS 232); cable length 2.5 m	**6NH7701-4BN**
Connecting cable For connecting two TIM modules via their RS 232 interface without modems ("null modem"); cable length 6 m	**6NH7701-0AR**

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TIM 3V-IE Advanced

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 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 frame memory for complete recording of data and support of redundant communication paths
- Simple configuration and operation without specialist IT knowledge

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Technical specifications

Article number	**6NH7800-3CA00**
Product type designation	TIM 3V-IE Advanced
Transmission rate	
Transfer rate	
• for Industrial Ethernet	10 ... 100 Mbit/s
• acc. to RS 232	50 ... 38 400 bit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	1
Number of electrical connections	
• for external data transmission acc. to RS 232	1
• for power supply	1
Type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
• 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
Relative symmetrical tolerance for DC	
• at 5 V	5 %
Relative positive tolerance for DC at 24 V	5 %
Relative negative tolerance for DC at 24 V	5 %
Consumed current	
• from backplane bus for DC at 24 V maximum	0.2 A
• from external supply voltage for DC at 24 V maximum	0.2 A
Active power loss	5.8 W
Product expansion optional Backup battery	No

Article number	**6NH7800-3CA00**
Product type designation	TIM 3V-IE Advanced
Permitted 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 weight	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.25 kg
Product properties, functions, components general	
Number of units	
• Note	Number of TIMs per S7-300: multiple, number depends on the connection resources of the S7-300 CPU
Cable 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 (continued)

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	
• TCP/IP	Yes
• DNP3	No
• SINAUT ST1 protocol	Yes
• SINAUT ST7 protocol	Yes
Product function data buffering if connection is aborted	Yes
• Note	32,000 data messages
Storage capacity	
• of S7 CPU RAM for TD7onCPU mode data blocks on CPU required	20 Kibyte
• of S7 CPU RAM 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 property 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	
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	
Suitability for operation Virtual Private Network	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

TIM 3V-IE Advanced

Ordering data	Article No.
TIM 3V-IE Advanced communications module With an RS 232 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 V5.4 On CD-ROM, comprising • SINAUT ST7 Engineering Software V5.4 for the PG • SINAUT TD7 block library • Electronic manual in German and English	**6NH7997-0CA54-0AA0**

Accessories	Article No.
IE FC TP Standard Cable GP 2 x 2 (Type A) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. length 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 housing 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	**6GK1901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1901-1BB10-2AE0**
IE FC Stripping Tool Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	**6GK1901-1GA00**
Connecting cable For connecting a TIM (RS 232) with a SINAUT ST7 MD2, MD3 or MD4 (RS 232) modem; cable length 1.5 m	**6NH7701-4AL**
Connecting cable For connecting a TIM (RS 232) with the GSM modem MD720-3; also suitable for third-party modems or radio equipment with standard RS 232 interface; cable length 2.5 m	**6NH7701-5AN**
Connecting cable With one end open for connecting a TIM (RS 232) to a third-party modem or radio unit (RS 232); cable length 2.5 m	**6NH7701-4BN**
Connecting cable For connecting two TIM modules via their RS 232 interface without modems ("null modem"); cable length 6 m	**6NH7701-0AR**

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 a 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 frame memory for complete recording of data and support of redundant communication paths
- Simple configuration and operation without specialist IT knowledge

Technical specifications

Article number	**6NH7800-4BA00**
Product type designation	TIM 4R-IE
Transmission rate	
Transfer rate	
• for Industrial Ethernet	10 ... 100 Mbit/s
• acc. to RS 232	50 ... 38 400 bit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	2
Number of electrical connections	
• for external data transmission acc. to RS 232	2
• for power supply	1
Type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
• 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
Consumed current	
• from backplane bus for DC at 24 V maximum	0.2 A
• from external supply voltage for DC at 24 V maximum	0.17 A
Active power loss	4.6 W
Product expansion 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
Permitted 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 weight	
Module format	Compact module S7-300 double width
Width	80 mm
Height	125 mm
Depth	120 mm
Net weight	0.4 kg
Product properties, functions, 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
Cable 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

Technical specifications (continued)

Article number	6NH7800-4BA00
Product type designation	TIM 4R-IE
Performance data multi-protocol mode	
Number of active connections with multi-protocol mode	128
Performance data telecontrol	
Suitability for use	
• Node station	Yes
• substation	Yes
• TIM control center	Yes
Protocol is supported	
• TCP/IP	Yes
• DNP3	No
• SINAUT ST1 protocol	Yes
• SINAUT ST7 protocol	Yes
Product function data buffering if connection is aborted	Yes
• Note	56,000 data messages
Storage capacity	
• of S7 CPU RAM for TD7onCPU mode data blocks on CPU required	20 Kibyte
• of S7 CPU RAM 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 property 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	
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	
Suitability for operation Virtual Private Network	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 property 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

Ordering data

	Article No.
TIM 4R-IE communications module With two combined RS 232/RS 485 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 V5.4 On CD-ROM, comprising • SINAUT ST7 Engineering Software V5.4 for the PG • SINAUT TD7 block library • Electronic manual in German and English	**6NH7997-0CA54-0AA0**

	Article No.
Accessories	
Backup 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 Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. length 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 housing 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	**6GK1901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1901-1BB10-2AE0**
IE FC Stripping Tool Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	**6GK1901-1GA00**
Connecting cable For connecting a TIM (RS 232) with a SINAUT ST7 MD2, MD3 or MD4 (RS 232) modem; cable length 1.5 m	**6NH7701-4AL**
Connecting cable For connecting a TIM (RS 485) with a SINAUT ST7 MD2, MD3 or MD4 (RS 485) modem; cable length 1.5 m	**6NH7701-4DL**
Connecting cable For connecting a TIM (RS 232) with the GSM modem MD720-3; also suitable for third-party modems or radio equipment with standard RS 232 interface; cable length 2.5 m	**6NH7701-5AN**
Connecting cable With one end open for connecting a TIM (RS 232) to a third-party modem or radio unit (RS 232); cable length 2.5 m	**6NH7701-4BN**
Connecting cable For connecting two TIM modules via their RS 232 interface without modems ("null modem"); cable length 6 m	**6NH7701-0AR**
SITOP compact 24 V/0.6 A 1-phase power supply with wide-range input 85 … 264 V AC/110 … 300 V DC, stabilized output voltage 24 V, rated output current value 0.6 A, slim design	**6EP1331-5BA00**

TIM 3V-IE DNP3

Overview

In a station for the S7-CPU, the new communication module TIM 3V-IE DNP3 V3.0 (TeleControl Interface Module) handles the data exchange 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 RS 232 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

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Technical specifications

Article number	**6NH7803-3BA00-0AA0**
Product type designation	TIM 3V-IE DNP3
Transmission rate	
Transfer rate	
• for Industrial Ethernet	10 ... 100 Mbit/s
• acc. to RS 232	9 600 ... 38 400 bit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	1
Number of electrical connections	
• for external data transmission acc. to RS 232	1
• for power supply	1
Type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
• 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
Consumed current	
• from backplane bus for DC at 24 V maximum	0.2 A
• from external supply voltage for DC at 24 V maximum	0.2 A
Active power loss	5.8 W
Product expansion optional Backup battery	No

Article number	**6NH7803-3BA00-0AA0**
Product type designation	TIM 3V-IE DNP3
Permitted 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 weight	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.25 kg
Product properties, functions, components general	
Number of units	
• Note	Number of TIMs per S7-300: 1
Cable length	
• with RS 232 interface maximum	6 m
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	3
• with PG connections maximum	2
• with OP connections maximum	1
• Note	only via LAN
Service	
• PG/OP communication	Yes

Technical specifications (continued)

Article number	**6NH7803-3BA00-0AA0**
Product type designation	TIM 3V-IE DNP3
Performance data telecontrol	
Suitability for use	
• Node station	Yes
• substation	Yes
• TIM control center	Yes
Protocol is supported	
• TCP/IP	Yes
• DNP3	Yes
• SINAUT ST1 protocol	No
• SINAUT ST7 protocol	No
• Modbus RTU	Yes
Product function data buffering if connection is aborted	Yes
• Note	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	
Configuration software	
• required	SINAUT ST7 ES
Storage location of TIM configuration data	On the CPU or TIM

Ordering data

	Article No.
TIM 3V-IE DNP3 communications module With an RS 232 interface for SINAUT communication via a conventional WAN and an IP-based network (WAN or LAN)	**6NH7803-3BA00-0AA0**
SINAUT Engineering Software V5.4 On CD-ROM, comprising • SINAUT ST7 Engineering Software V5.4 for the PG • SINAUT TD7 block library • Electronic manual in German and English	**6NH7997-0CA54-0AA0**
Accessories	
IE FC TP Standard Cable GP 2 x 2 (Type A) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. length 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 housing 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	**6GK1901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1901-1BB10-2AE0**
IE FC Stripping Tool Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	**6GK1901-1GA00**
Connecting cable For connecting a TIM (RS 232) with a SINAUT ST7 MD2, MD3 or MD4 (RS 232) modem; cable length 1.5 m	**6NH7701-4AL**
Connecting cable For connecting a TIM (RS 232) with the GSM modem MD720-3; also suitable for third-party modems or radio equipment with standard RS 232 interface; cable length 2.5 m	**6NH7701-5AN**
Connecting cable With one end open for connecting a TIM (RS 232) to a third-party modem or radio unit (RS 232); cable length 2.5 m	**6NH7701-4BN**
Connecting cable For connecting two TIM modules via their RS 232 interface without modems ("null modem"); cable length 6 m	**6NH7701-0AR**

TIM 4R-IE DNP3

Overview

In a station for the S7-CPU, the 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 RS 232/RS 485 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

Technical specifications

Article number	**6NH7803-4BA00-0AA0**
Product type designation	TIM 4R-IE DNP3
Transmission rate	
Transfer rate	
• for Industrial Ethernet	10 ... 100 Mbit/s
• acc. to RS 232	9 600 ... 115 200 bit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	2
Number of electrical connections	
• for external data transmission acc. to RS 232	2
• for power supply	1
Type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
• 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
Consumed current	
• from backplane bus for DC at 24 V maximum	0.2 A
• from external supply voltage for DC at 24 V maximum	0.17 A
Active power loss	4.6 W
Product expansion 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	**6NH7803-4BA00-0AA0**
Product type designation	TIM 4R-IE DNP3
Permitted 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 weight	
Module format	Compact module S7-300 double width
Width	80 mm
Height	125 mm
Depth	120 mm
Net weight	0.4 kg
Product properties, functions, components general	
Number of units	
• Note	Number of TIMs per S7-300 / S7-400: 1
Cable 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
• with PG connections maximum	2
• with OP connections maximum	1
• Note	only via LAN
Service	
• PG/OP communication	Yes

Technical specifications (continued)

Article number	**6NH7803-4BA00-0AA0**
Product type designation	TIM 4R-IE DNP3
Performance data telecontrol	
Suitability for use	
• Node station	Yes
• substation	Yes
• TIM control center	Yes
Protocol is supported	
• TCP/IP	Yes
• DNP3	Yes
• SINAUT ST1 protocol	No
• SINAUT ST7 protocol	No
• Modbus RTU	Yes
Product function data buffering if connection is aborted	Yes
• Note	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

Article number	**6NH7803-4BA00-0AA0**
Product type designation	TIM 4R-IE DNP3
Product functions management, configuration	
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 property 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

TIM 4R-IE DNP3

Ordering data	Article No.
TIM 4R-IE DNP3 communications module With two combined RS 232/RS 485 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 V5.4 On CD-ROM, comprising • SINAUT ST7 Engineering Software V5.4 for the PG • SINAUT TD7 block library • Electronic manual in German and English	**6NH7997-0CA54-0AA0**

Accessories	Article No.
Backup 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 Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. length 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 housing 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	**6GK1901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1901-1BB10-2AE0**
IE FC Stripping Tool Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	**6GK1901-1GA00**
Connecting cable For connecting a TIM (RS 232) with a SINAUT ST7 MD2, MD3 or MD4 (RS 232) modem; cable length 1.5 m	**6NH7701-4AL**
Connecting cable For connecting a TIM (RS 485) with a SINAUT ST7 MD2, MD3 or MD4 (RS 485) modem; cable length 1.5 m	**6NH7701-4DL**
Connecting cable For connecting a TIM (RS 232) with the GSM modem MD720-3; also suitable for third-party modems or radio equipment with standard RS 232 interface; cable length 2.5 m	**6NH7701-5AN**
Connecting cable With one end open for connecting a TIM (RS 232) to a third-party modem or radio unit (RS 232); cable length 2.5 m	**6NH7701-4BN**
Connecting cable For connecting two TIM modules via their RS 232 interface without modems ("null modem"); cable length 6 m	**6NH7701-0AR**
SITOP compact 24 V/0.6 A 1-phase power supply with wide-range input 85 to 264 V AC/110 to 300 V DC, stabilized output voltage 24 V, rated output current value 0.6 A, slim design	**6EP1331-5BA00**

Overview

The ASM 475 is a powerful module for connecting the MOBY D, U, SIMATIC RF200, RF300, RF600 and SIMATIC MV400 identification systems to the S7-300 and ET 200M.

Technical specifications

Article No.	**6GT2002-0GA10**
Product-type designation	**ASM 475 communication module**
Suitability for installation	SIMATIC S7-300, ET200M in conjunction with RF200/300/600, MOBY D/E/I/U, MV
Transmission rate at point-to-point connection serial maximum	115.2 kbit/s
Interfaces	
Design of interface for point-to-point connection	RS422
Number of readers connectable	2
Design of electrical connection	
• of the backplane bus	S7-300 backplane bus
• of the PROFIBUS interface	(according to the head module)
• the Industrial Ethernet Interface	(according to the head module)
• for supply voltage	Screw-type or spring-loaded terminals
Version 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 for DC	
• rated value	24 V
• minimum	20 V
• maximum	30 V
Current consumed at 24 V DC	
• without connected devices typical	0.1 A
• including connected devices maximum	1 A
Permitted ambient conditions	
Ambient temperature	
• during operating	0 … 60 °C
• during storage	-40 … +70 °C
• during transport	-40 … +70 °C
Protection class IP	IP 20
Resistance against shock	According to IEC 61131-2
Resistance against shock	150 m/s^2
Resistance against vibration	10 m/s^2

Article No.	**6GT2002-0GA10**
Product-type designation	**ASM 475 communication module**
Design, dimensions and weight	
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.2 kg
Mounting type	S7-300 rack
Cable length for RS 422 interface maximum	1000 m
Product properties, functions, components general	
Type of display	4 LEDs per reader connection, 2 LEDs for device status
Product function transponder file handler can be addressed	Yes
Protocol is supported S7 communication	Yes
Product functions management, configuration	
Type of parameterization	Object manager, GSD
Type of programming	FB 45, FB 55, FC 56 (FC 45/55 with limited functionality)
Type of computer-mediated communication	acyclic communication
Standards, specifications, approvals	
Verification of suitability	CE, FCC, UL/CSA
Accessories	
Accessories	Front connector with screw-type or spring-loaded terminals

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Ordering data	Article No.
ASM 475 communication module For SIMATIC S7-300 and ET 200M, parameterizable	**6GT2002-0GA10**
Accessories	
Front connector (1 x per ASM 475)	
• with screw terminals	**6ES7392-1AJ00-0AA0**
• with spring-loaded terminals	**6ES7392-1BJ00-0AA0**
SIMATIC RF200 / RF300 / RF600 / MV400 connecting cable Preassembled, between the ASM 475 and RF200 / RF300 / RF600 / MV400, IP65, straight connector, PUR material, suitable for cable carriers, CMG approval, in the following lengths[1]:	
2 m	**6GT2891-4EH20**
5 m	**6GT2891-4EH50**
Extension cable SIMATIC RF200 / RF300 / RF600 / MV400, PUR material, CMG approval, suitable for cable carriers, straight connector	
2 m	**6GT2891-4FH20**
5 m	**6GT2891-4FH50**
10 m	**6GT2891-4FN10**
20 m	**6GT2891-4FN20**
50 m	**6GT2891-4FN50**
MOBY D connecting cable Preassembled, between ASM 475 and reader D1xS, 9-pole Sub-D plug, PUR material, CMG approved, suitable for cable carriers, in the following lengths:	
5 m	**6GT2491-4EH50**
20 m	**6GT2491-4EN20**
50 m	**6GT2491-4EN50**
DVD "RFID Systems Software & Documentation"	**6GT2080-2AA20**

[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.

Overview

- 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**	**6AG1340-1AH02-2AY0**	**6AG1340-1CH02-2AE0**
Based on	**6ES7340-1AH02-0AE0**	**6ES7340-1AH02-0AE0**	**6ES7340-1CH02-0AE0**
	SIPLUS S7-300 CP340 RS 232	SIPLUS CP340 RS 232 EN 50155	SIPLUS CP340 RS 422/485
Ambient conditions			
Ambient temperature in operation			
• Min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN 50155	60 °C; = Tmax
Extended ambient conditions			
• Relative to ambient temperature-atmospheric pressure-installation 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)	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)	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)
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			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

SIPLUS S7-300 CP 340

Ordering data	Article No.
SIPLUS S7-300 CP 340 communications processor	
Extended temperature range and exposure to media	
with 1 RS 232C interface (V.24)	**6AG1340-1AH02-2AE0**
with 1 RS 232C interface (V.24)	**6AG1340-1AH02-2AY0**
with 1 RS 422/485 (X.27) interface	**6AG1340-1CH02-2AE0**
Conforms to EN 50155	
with 1 RS 232C interface (V.24)	**6AG1340-1AH02-2AY0**

	Article No.
Accessories	See SIMATIC S7-300 CP 340, page 5/188

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.

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Technical specifications

Article number	**6AG1341-1AH02-7AE0**	**6AG1341-1CH02-7AE0**
Based on	**6ES7341-1AH02-0AE0**	**6ES7341-1CH02-0AE0**
	SIPLUS_CP341_RS232C	SIPLUS_CP341_RS422/485
Ambient conditions		
Ambient temperature in 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
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation 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)	
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		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS S7-300 CP 341 communications processor	
Extended temperature range and exposure to media	
With RS 232C interface (V.24)	**6AG1341-1AH02-7AE0**
With RS 422/485 (X.27) interface	**6AG1341-1CH02-7AE0**

	Article No.
Accessories	See SIMATIC S7-300 CP 341, page 5/190

SIPLUS CP 343-1 Lean

Overview

ISO	TCP/ UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
	●	●	●			●	●

- Interface for the SIMATIC S7-300 to Industrial Ethernet (not for SINUMERIK)
  - 2 x RJ45 interface for 10/100 Mbit/s full/half duplex connection (with autosensing for automatic switchover and autocrossover function)
  - Integral 2-port real-time switch ERTEC
  - Multi-protocol operation with TCP and UDP transport protocol and PROFINET IO
  - Keep Alive function
- Communication 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 taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS S7-300 CP 343-1 Lean		
Article No.	**6AG1 343-1CX10-2XE0**	**6AG1 343-1CX10-4XE0**
Based on Article No.	**6GK7 343-1CX10-0XE0**	
Ambient temperature range	-25 ... +60 °C	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 if condensation present.	
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal 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!	
Air pressure (depending on the highest positive temperature range specified)	1 080 ... 795 hPa (-1 000 ... +2 000 m) see ambient temperature range 795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K 658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K	

For technical documentation on SIPLUS, see:

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

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 PG, SNMP, initial commissioning over LAN; with electronic manual on CD-ROM Extended temperature range and exposure to media	**6AG1343-1CX10-2XE0**

	Article No.
Accessories	See SIMATIC CP 343-1 Lean communications processor, page 5/203

SIPLUS CP 343-1

Overview

ISO	TCP/ UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
●	●	●	●			●	●

- Connection of SIMATIC S7-300/SINUMERIK 840D powerline to Industrial Ethernet
  - 2 x RJ45 interface for 10/100 Mbit/s full/half-duplex connection with auto-sensing/auto-negotiation and auto-crossover function
  - Integrated 2-port real-time switch ERTEC
  - Multi-protocol operation with ISO, TCP, UDP transport protocol and PROFINET IO
  - Adjustable keep-alive function
- Communication 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 taken from the respective standard products. SIPLUS extreme specific information was added.

SIPLUS CP 343-1	
Article No.	**6AG1 343-1EX30-7XE0**
Based on Article No.	**6GK7 343-1EX30-0XE0**
Ambient temperature range	-25 ... +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 ambient conditions.
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal 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 EN 60068-2-52 (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!
Air pressure (depending on the highest positive temperature range specified)	1 080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3 500 ... +5000 m) derating 20 K

For further technical documentation on SIPLUS, see:

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

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 Mbit/s; with electronic manual on DVD Extended temperature range and exposure to media	**6AG1343-1EX30-7XE0**
Accessories	See SIMATIC CP 343-1 communications processor, page 5/206

Overview

ISO	TCP/ UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
●	●	●	●	●	●	●	●

- 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 Mbit/s, full/half-duplex with auto-sensing capability
  - PROFINET interface with two RJ45 ports with 10/100 Mbit/s full/half-duplex with auto-sensing and auto-crossover functionality via integrated 2-port switch
- Communication 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
- Communication 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
  (including 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 mode:
- IO Controller with IRT and IO device with RT
- IO Controller with RT and IO device using IRT

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 S7-300 CP 343-1 Advanced	
Article No.	**6AG1343-1GX31-4XE0**
Based on Article No.	**6GK7343-1GX31-0XE0**
Ambient temperature range	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 if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal 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!
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1 000 ... +2 000 m) see ambient temperature range 795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K 658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K

For technical documentation on SIPLUS, see:

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

SIPLUS CP 343-1 Advanced

Ordering data	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, e-mail client, CPU clock set via SIMATIC procedure and NTP, access control via IP access list, SNMP, DHCP, initialization over LAN 10/100 Mbit/s; with electronic manual on DVD; C-PLUG included in delivery Exposure to media	**6AG1343-1GX31-4XE0**

Accessories	Article No.
C-PLUG Swap 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, medial exposure	**6AG1900-0AB00-7AA0**
IE FC RJ45 Plug 180 2 x 2 RJ45 plug 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/CPUs with Industrial Ethernet interface • 1 pack = 1 unit -40 ... +70 °C, medial exposure	**6AG1901-1BB10-7AA0**
Additional accessories	See SIMATIC CP 343-1 Advanced communications processor, page 5/211

Overview

- SINAUT communication 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 frame memory 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 taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS TIM 3V-IE	
Article number	**6AG1 800-3BA00-7AA0**
Article number based on	**6NH7 800-3BA00**
Ambient temperature range	-25 … +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 ambient conditions.
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold spores, fungal 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!
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

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

Ordering data

	Article No.
SIPLUS TIM 3V-IE communication module With an RS 232 interface for SINAUT communication via a conventional WAN or an IP-based network (WAN or LAN)	**6AG1800-3BA00-7AA0**
SINAUT Engineering Software V5.3 On CD-ROM, comprising: • SINAUT Engineering Software V5.3 for the PG • SINAUT TD7 block library • Electronic manual in German and English	**6NH7997-0CA53-0AA0**
Accessories	
IE FC RJ45 plug 180 RJ45 plug-in connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface	
• 1 pack = 1 unit, -40 ... +70 °C, medial exposure	**6AG1901-1BB10-7AA0**
• 1 pack = 10 units	**6GK1901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1901-1BB10-2AE0**
Additional accessories	See TIM 3V-IE communication module, page 5/219

SIPLUS TIM 4R-IE for WAN and Ethernet

Overview

- SINAUT communication module SIPLUS TIM with four interfaces for SIMATIC S7-300 or as self-contained unit for the 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 frame memory 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 taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS TIM 4R-IE	
Article number	**6AG1 800-4BA00-7AA0**
Article number based on	**6NH7 800-4BA00**
Ambient temperature range	-25 ... +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 ambient conditions.
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold spores, fungal 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!
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

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

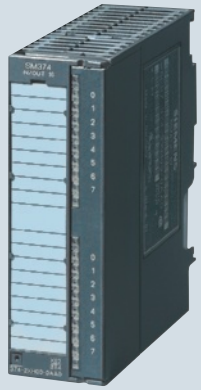
Ordering data

	Article No.
SIPLUS TIM 4R-IE communication module With two combined RS 232/RS 485 interfaces for SINAUT communication via conventional WANs and two RJ45 interfaces for SINAUT communication via IP-based networks (WAN or LAN)	**6AG1800-4BA00-7AA0**
SINAUT Engineering Software V5.3 On CD-ROM, comprising: • SINAUT ST7 Engineering Software V5.3 for the PG • SINAUT TD7 block library • Electronic manual in German and English	**6NH7997-0CA53-0AA0**

	Article No.
Accessories	
IE FC RJ45 plug 180 RJ45 plug-in connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface	
• 1 pack = 1 unit; -40 ... +70 °C, medial exposure	**6AG1901-1BB10-7AA0**
• 1 pack = 10 units	**6GK1901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1901-1BB10-2AE0**
Additional accessories	See TIM 4R-IE communication module, page 5/225

SM 374 simulators

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**
	SIMATIC S7-300,SIMULATOR MODULE
Product type designation	
Input current	
from backplane bus 5 V DC, max.	80 mA
Power losses	
Power loss, typ.	0.35 W
Digital inputs	
Number of digital inputs	16; Switches
Digital outputs	
Number of digital outputs	16; LEDs
Galvanic isolation	
Galvanic isolation digital inputs	
• between the channels and the backplane bus	No
Galvanic isolation digital outputs	
• between the channels and the backplane bus	No

Article number	**6ES7374-2XH01-0AA0**
	SIMATIC S7-300,SIMULATOR MODULE
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**

	Article No.
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**

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**
	SIMATIC S7-300, DUMMY MODULE
Product type designation	
Input current	
from backplane bus 5 V DC, max.	5 mA
Power losses	
Power loss, max.	0.03 W
Digital inputs	
Number of digital inputs	0
Digital outputs	
Number of digital outputs	0

Article number	**6ES7370-0AA01-0AA0**
	SIMATIC S7-300, DUMMY MODULE
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**

	Article No.
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**

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	**6ES7392-1AJ00-0AA0**
• 100 units	**6ES7392-1AJ00-1AB0**
20-pin, with spring-loaded contacts	
• 1 unit	**6ES7392-1BJ00-0AA0**
• 100 units	**6ES7392-1BJ00-1AB0**
40-pin, with screw contacts	
• 1 unit	**6ES7392-1AM00-0AA0**
• 100 units	**6ES7392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7392-1BM01-0AA0**
• 100 units	**6ES7392-1BM01-1AB0**
Front connector 20-pole, crimp version without crimp contacts	
Packaging unit (100 units)	**6ES7921-3AH00-1AA0**
Front connector 40-pole, crimp version without crimp contacts	
Packaging unit (100 units)	**6ES7921-3AH20-1AA0**
Front door, elevated design	**6ES7328-0AA00-7AA0**
E.g. for 32 channel modules; enables connection of 1.3 mm^2/16 AWG wires	
Front door, higher version, for F-modules	**6ES7328-7AA10-0AA0**
For F-modules; for connecting 1.3 mm^2/16 AWG wires; wiring diagram and labels in yellow	
Crimp contacts for front connectors	**6XX3070**
Packaging unit (250 units)	
Crimping tool	**6XX3071**
For crimping the crimp contacts	
Unlocking tool for crimp contacts	**6ES5497-4UC11**

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 the 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.

Further 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:

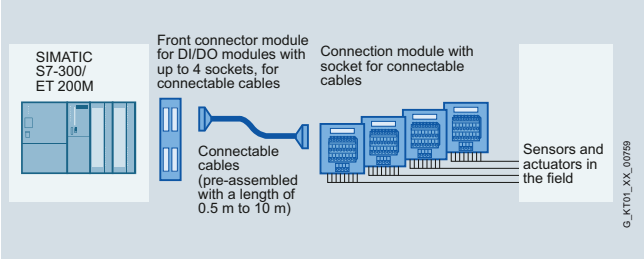
Fully modular connection

Each component is individually inserted.

The system consists of:

- Front connector module
- Connecting cable
- Terminal 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 overhead for the connecting cables is drastically reduced thanks to the use of pre-assembled or easily assembled cables sold by the meter.



SIMATIC TOP connect for S7-300/ ET200 M, fully modular connection

Flexible connection

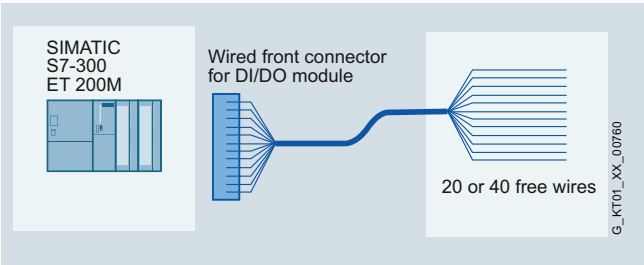
Consisting of:

- 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.

Thus no complex pre-assembly of up to two times 46 single cores per module is necessary.



SIMATIC TOP connect for S7-300/ET 200M, flexible connection

System cabling for SIMATIC S7-300 and ET 200M - Fully modular connection

Overview

The fully modular connection is the standard connection for the SIMATIC S7-300/ET 200M and the fully modular connection allows the peripherals to be conveniently and quickly connected without errors.

Benefits

- Easy plugging in of front connector module, connecting cable and connection module
- Fast and low-cost wiring
- Supply voltage connectable to front connector module or connection module for digital and analog signals
- Reduction in wiring errors, clear control cabinet wiring
- Distribution of digital signals by byte or by double-byte
- Each component can be replaced individually.
- Every cable length can be configured without cutting, or pre-assembled cables can be used

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. The front connector modules are available in many different digital and analog versions. The connecting cables are plugged into these front connector modules.

Connecting cable

The connecting cable is available in two different versions.

As a pre-assembled 16-pole round cable (shielded or unshielded) up to a length of 5 m, or the 16-pole round-sheath ribbon cable (with or without shield), which can be easily assembled by the user, or as 2 x 16-pole round-sheath ribbon cables (without shield).

When assembled, there are one or two insulation displacement connectors (female ribbon connectors) at both ends of the cable.

The round-sheath ribbon cable is assembled by the user with the aid of pliers (can be ordered separately). The cable transmits 8 or 2 x 8 channels over a distance of up to 30 m.

The connecting cable connects the front connector module with the terminal module.

Terminal module

The system has digital and analog terminal modules for connecting the I/O signals. These are snapped onto the standard mounting rail.

Terminal modules are available for two different connection methods: with spring-loaded or screw-type terminals

Basic module:

Terminal modules with basic functionality for getting the signal from the field to the module or from the module to the field quickly and easily. For digital or analog signals.

Signal module:

Expands the digital basic module with LEDs for signaling the active high signal. This makes commissioning easier for you, and you always have an overview of the signal states of your I/O. One LED signals the availability of the supply voltage.

Function module:

Digital terminal modules that are fitted with relays or optocouplers.

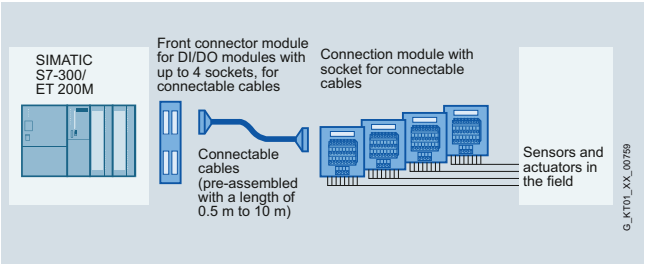
If other voltage or power levels are required in the field, the terminal module for TPRo or TPOo output signals is used. For the TPRo terminal module, relays are used for the implementation. For the TPOo terminal module, optocouplers are used for the implementation. This converts the 24 V DC output signal simply and reliably to another voltage or power level. If 230 V AC input signals have to be transmitted to the controller in the field, a connection module with relay TPRi is available that simply converts the 230 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 here.

Shield plate

The shield plate is latched onto the connection module for 3-core initiators or optionally onto the connection module for analog signals and then snapped onto the mounting rail with the connection module. With the terminal elements, optimal shield connection is achieved between the shielded round-sheath ribbon cable or the shielded field cables and the grounded mounting rail.



SIMATIC TOP connect for S7-300/ ET200 M, fully modular connection

Technical specifications Front connector module

Technical data of front connector module	
Rated operating voltage	24 VDC
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 the 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	No	
• flexible cables with/without wire end ferrule	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	6 mm	
• with insulating collar	-	
Wire-end ferrules in acc. with DIN 46228		
• without insulating collar	Form A; 5 to 7 mm long	
• with insulating collar 0.25 to 1.0 mm^2	-	
• with insulating collar 1.5 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	No	
• flexible cables with/without wire end ferrule	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	6 mm	
• with insulating collar	-	
Wire-end ferrules in acc. with DIN 46228		
• without insulating collar	Form A; 5 to 7 mm long	
• with insulating collar 0.25 to 1.0 mm^2	-	
• with insulating collar 1.5 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 Connecting 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. aggregate 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
Outer diameter of round-sheath ribbon cable in mm 16-pole/2 x 16-pole	approx. 9.5/11.5

System cabling for SIMATIC S7-300 and ET 200M - Fully modular connection

Ordering data

Front connector modules

	Article No.
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	**6ES7921-3AA00-0AA0**
• Screw terminals	**6ES7921-3AB00-0AA0**
Front connector module (digital 4 x 8 I/O)	
Power supply via	
• Spring-loaded terminals	**6ES7921-3AA20-0AA0**
• Screw terminals	**6ES7921-3AB20-0AA0**

	Article No.
Front connector module (1 x 8 outputs) for 2 ampere digital outputs	
Power supply via	
• Spring-loaded terminals	**6ES7921-3AC00-0AA0**
• Screw terminals	**6ES7921-3AD00-0AA0**
Front connector module 20-pin (analog)	
Power supply via	
• Spring-loaded terminals	**6ES7921-3AF00-0AA0**
• Screw terminals	**6ES7921-3AG00-0AA0**
Front connector module 40-pin (analog)	
Power supply via	
• Spring-loaded terminals	**6ES7921-3AF20-0AA0**
• Screw terminals	**6ES7921-3AG20-0AA0**

Connecting cable

	Article No.
Pre-assembled round cable	
16-pole, 0.14 mm^2	
unshielded	
• 0.5 m	**6ES7923-0BA50-0CB0**
• 1.0 m	**6ES7923-0BB00-0CB0**
• 1.5 m	**6ES7923-0BB50-0CB0**
• 2.0 m	**6ES7923-0BC00-0CB0**
• 2.5 m	**6ES7923-0BC50-0CB0**
• 3.0 m	**6ES7923-0BD00-0CB0**
• 4.0 m	**6ES7923-0BE00-0CB0**
• 5.0 m	**6ES7923-0BF00-0CB0**
• 6.5 m	**6ES7923-0BG50-0CB0**
• 8.0 m	**6ES7923-0BJ00-0CB0**
• 10.0 m	**6ES7923-0CB00-0CB0**
shielded	
• 1.0 m	**6ES7923-0BB00-0DB0**
• 2.0 m	**6ES7923-0BC00-0DB0**
• 2.5 m	**6ES7923-0BC50-0DB0**
• 3.0 m	**6ES7923-0BD00-0DB0**
• 4.0 m	**6ES7923-0BE00-0DB0**
• 5.0 m	**6ES7923-0BF00-0DB0**
• 6.5 m	**6ES7923-0BG50-0DB0**
• 8.0 m	**6ES7923-0BJ00-0DB0**
• 10.0 m	**6ES7923-0CB00-0DB0**

	Article No.
Round-sheath ribbon cable	
16-pole, 0.14 mm^2	
Unshielded	
• 30 m	**6ES7923-0CD00-0AA0**
• 60 m	**6ES7923-0CG00-0AA0**
Shielded	
• 30 m	**6ES7923-0CD00-0BA0**
• 60 m	**6ES7923-0CG00-0BA0**
Round-sheath ribbon cable	
2 x 16-pole, 0.14 mm^2	
Unshielded	
• 30 m	**6ES7923-2CD00-0AA0**
• 60 m	**6ES7923-2CG00-0AA0**
Connector (female ribbon connector)	**6ES7921-3BE10-0AA0**
16-pole, insulation displacement system, with strain relief devices; packing unit: 8 connectors and 8 cable grips	
Accessories	
Manual pliers	**6ES7928-0AA00-0AA0**
For preparing the connectors (female ribbon connector)	

Ordering data

Terminal modules (for 16-pin connecting cables)

	Article No.
Terminal module TP1	
for 1-wire connection	
• Push-in terminals without LEDs	**6ES7924-0AA20-0AC0**
• Screw-type terminals without LEDs	**6ES7924-0AA20-0AA0**
• Push-in terminals with LEDs	**6ES7924-0AA20-0BC0**
• Screw-type terminals with LEDs	**6ES7924-0AA20-0BA0**
Terminal module TP3	
for 3-wire connection	
• Push-in terminals without LEDs	**6ES7924-0CA20-0AC0**
• Screw-type terminals without LEDs	**6ES7924-0CA20-0AA0**
• Push-in terminals with LEDs	**6ES7924-0CA20-0BC0**
• Screw-type terminals with LEDs	**6ES7924-0CA20-0BA0**
• Push-in terminals with LEDs and one isolating terminal per channel	**6ES7924-0CH20-0BC0**
• Screw-type terminals with LEDs and one isolating terminal per channel	**6ES7924-0CH20-0BA0**
• Push-in terminals with LED and fuse per channel	**6ES7924-0CL20-0BC0**
• Push-in terminals with LED and fuse per channel	**6ES7924-0CL20-0BA0**
Terminal module TPRo	
Relay module for 8 outputs, relay as normally open contact	
• Push-in terminals with LEDs	**6ES7924-0BD20-0BC0**
• Screw-type terminals with LEDs	**6ES7924-0BD20-0BA0**
Terminal module TPRi	
Relay module for 8 outputs (110 V AC), relay as normally open contact	
• Push-in terminals with LEDs	**6ES7924-0BG20-0BC0**
• Screw-type terminals with LEDs	**6ES7924-0BG20-0BA0**
Terminal module TPRi	
Relay module for 8 outputs (230 V AC), relay as normally open contact	
• Push-in terminals with LEDs	**6ES7924-0BE20-0BC0**
• Screw-type terminals with LEDs	**6ES7924-0BE20-0BA0**

	Article No.
Terminal module TPOo	
Optocoupler module for 8 outputs (max. 24 V DC/4 A)	
• Push-in terminals with LEDs	**6ES7924-0BF20-0BC0**
• Screw-type terminals with LEDs	**6ES7924-0BF20-0BA0**
Connection modules for digital output modules 2 A	
Terminal module TP2	
• Push-in terminals without LEDs	**6ES7924-0BB20-0AC0**
• Screw-type terminals without LEDs	**6ES7924-0BB20-0AA0**
Terminal module for analog modules (for S7-300 only)	
Terminal module TPA	
• Push-in terminals without LEDs	**6ES7924-0CC20-0AC0**
• Screw-type terminals without LEDs	**6ES7924-0CC20-0AA0**
Accessories	
ID labels for terminal modules in S7-1500 design	
ID labels, insertable PU = 340 units	**3RT1900-1SB20**
Shield for analog terminal module	
PU = 4 units (for connection of 16-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 - Flexible connection

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.

Wire cross-sections of 0.5 mm^2 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 cores for 16-channel digital modules SIMATIC S7-300, 20 x 0.5 mm^2	
Core type H05V-K	
Screw-type version	
Packaging unit: 1 unit Length:	
• 2.5 m	**6ES7922-3BC50-0AB0**
• 3.2 m	**6ES7922-3BD20-0AB0**
• 5 m	**6ES7922-3BF00-0AB0**
• Custom lengths	On request
Packaging unit: 5 units Length:	
• 2.5 m	**6ES7922-3BC50-5AB0**
• 3.2 m	**6ES7922-3BD20-5AB0**
• 5.0 m	**6ES7922-3BF00-5AB0**
Crimp version	
Packaging unit: 1 unit Length:	
• 2.5 m	**6ES7922-3BC50-0AF0**
• 3.2 m	**6ES7922-3BD20-0AF0**
• 5.0 m	**6ES7922-3BF00-0AF0**
• Custom lengths	On request
Core type UL/CSA-certified	
Screw-type version	
Packaging unit: 1 unit Length:	
• 3.2 m	**6ES7922-3BD20-0UB0**
• 5.0 m	**6ES7922-3BF00-0UB0**
Front connector with single cores for 32-channel digital modules SIMATIC S7-300, 40 x 0.5 mm^2	
Core type H05V-K	
Screw-type version	
Packaging unit: 1 unit Length:	
• 2.5 m	**6ES7922-3BC50-0AC0**
• 3.2 m	**6ES7922-3BD20-0AC0**
• 5.0 m	**6ES7922-3BF00-0AC0**
• Custom lengths	On request
Packaging unit: 5 units Length:	
• 2.5 m	**6ES7922-3BC50-5AC0**
• 3.2 m	**6ES7922-3BD20-5AC0**
• 5.0 m	**6ES7922-3BF00-5AC0**
Crimp version	
Packaging unit: 1 unit Length:	
• 2.5 m	**6ES7922-3BC50-0AG0**
• 3.2 m	**6ES7922-3BD20-0AG0**
• 5.0 m	**6ES7922-3BF00-0AG0**
• Custom lengths	On request
Core type UL/CSA-certified	
Screw version	
Packaging unit: 1 unit Length:	
• 3.2 m	**6ES7922-3BD20-0UC0**
• 5.0 m	**6ES7922-3BF00-0UC0**

Overview

The design and functionality of the SIMATIC PS 307 single-phase load power supply (system and load current supply) with automatic range switchover of the input voltage is an optimal match to the SIMATIC S7-300 PLC. 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).

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					
Input	1-phase AC	DC voltage	1-phase AC	1-phase AC	1-phase AC
Supply voltage					
• 1 with AC Rated value	120 V		120 V	120 V	120 V
• 2 with AC Rated value	230 V		230 V	230 V	230 V
• for DC		24 ... 110 V			
• Note	Automatic range selection		Automatic range selection	Set by means of selector switch on the device	Automatic range selection
Input voltage					
• 1 with AC	85 ... 132 V		85 ... 132 V	93 ... 132 V	85 ... 132 V
• 2 with AC	170 ... 264 V		170 ... 264 V	187 ... 264 V	170 ... 264 V
• for DC		16.8 ... 138 V			
Wide-range input	No	Yes	No	No	No
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms	154 V; 0.1 s	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	20 ms; at V_{in} = 93/187 V	10 ms; at $V_{in\ rated}$	20 ms; at V_{in} = 93/187 V	20 ms; at V_{in} = 93/187 V	20 ms; at V_{in} = 93/187 V
Rated line frequency	50 ... 60 Hz		50 ... 60 Hz	50 ... 60 Hz	50 ... 60 Hz
Rated line range	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
• at rated input voltage 24 V		2.4 A			
• at rated input voltage 110 V		0.6 A			
Switch-on current limiting (+25 °C), max.	22 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^2t, max.	1 $A^2 \cdot s$	5 $A^2 \cdot s$	1.2 $A^2 \cdot s$	1.8 $A^2 \cdot s$	3.3 $A^2 \cdot s$
Built-in incoming fuse	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)
Protection in the mains power input (IEC 898)	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

Technical specifications (continued)

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
Output					
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V	24 V	24 V	24 V	24 V
Total tolerance, static ±	3 %	3 %	3 %	3 %	3 %
Static mains compensation, approx.	0.1 %	0.2 %	0.1 %	0.2 %	0.1 %
Static load balancing, approx.	0.2 %	0.4 %	0.5 %	0.4 %	0.5 %
Residual ripple peak-peak, max.	50 mV	150 mV	50 mV	150 mV	50 mV
Residual ripple peak-peak, typ.	5 mV	30 mV	10 mV	40 mV	15 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	150 mV	240 mV	150 mV	240 mV	150 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	20 mV	150 mV	20 mV	90 mV	60 mV
Product function Output voltage adjustable	No	No	No	No	No
Output voltage setting	-	-	-	-	-
Status display	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
On/off behavior	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)
Startup delay, max.	2 s	3 s	2 s	3 s	2 s
Voltage rise, typ.	10 ms	5 ms	10 ms	100 ms	10 ms
Rated current value $I_{out\ rated}$	2 A	2 A	5 A	5 A	10 A
Current range	0 ... 2 A	0 ... 3 A	0 ... 5 A	0 ... 5 A	0 ... 10 A
• Note		3 A up to +60°C at V_{in} > 24 V			
Active power supplied 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
Parallel switching for enhanced performance	Yes	Yes	Yes	No	Yes
Numbers of parallel switchable units for enhanced performance	2	2			
Efficiency					
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	84 %	75 %	87 %	84 %	90 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	9 W	16 W	18 W	23 W	27 W
Closed-loop control					
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.1 %	0.3 %	0.1 %	0.3 %	0.1 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	0.8 %	2.5 %	1 %	3 %	2 %
Load step setting time 50 to 100%, typ.	0.5 ms	2.5 ms	0.3 ms	0.2 ms	
Load step setting time 100 to 50%, typ.	0.5 ms	2.5 ms	0.3 ms	0.2 ms	
Setting time maximum	1 ms	5 ms		5 ms	0.1 ms

Technical specifications (continued)

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
Protection and monitoring					
Output 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
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
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
Overload/short-circuit indicator	-	-			-
Safety					
Primary/secondary isolation	Yes	Yes	Yes	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra low output voltage V_{out} according to EN 60950-1 and EN 50178, creepage distances and clearances > 5 mm	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra low output voltage V_{out} according to EN 60950-1 and EN 50178, creepage distances and clearances > 5 mm	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
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
CE mark	Yes	Yes	Yes	Yes	Yes
UL/CSA approval	Yes	Yes	Yes	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289	UL-Listed (UL 508), File E143289, CSA (CSA C22.2 No. 142)	cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289	UL-Listed (UL 508), File E143289, CSA (CSA C22.2 No. 142)	cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289
Explosion protection	ATEX (EX) II 3G Ex nA II T4; cULus (ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T4, File E330455	-	ATEX (EX) II 3G Ex nA II T4; cULus (ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T4, File E330455	-	ATEX (EX) II 3G Ex nA II T4; cULus (ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T4, File E330455
Certificate of suitability IECEx	No	No	No	No	No
Certificate of suitability NEC Class 2	No	No	No	No	No
FM approval	Class I, Div. 2, Group ABCD, T4	-	Class I, Div. 2, Group ABCD, T4	-	Class I, Div. 2, Group ABCD, T4
CB approval	No	No	No	No	No
Marine approval	In S7-300 system	-	In S7-300 system	-	In S7-300 system
Degree of protection (EN 60529)	IP20	IP20	IP20	IP20	IP20
EMC					
Emitted interference	EN 55022 Class B	EN 55011 Class A	EN 55022 Class B	EN 55011 Class A	EN 55022 Class B
Supply harmonics limitation	not applicable	not applicable	EN 61000-3-2	-	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data					
Ambient temperature					
• during operation	0 ... 60 °C	-25 ... +70 °C	0 ... 60 °C	-25 ... +70 °C	0 ... 60 °C
- Note	with natural convection	with natural convection	with natural convection	with natural convection	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
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K5, transient condensation permitted	Climate class 3K3, no condensation	Climate class 3K5, transient condensation permitted	Climate class 3K3, no condensation

1-phase, 24 V DC (for S7-300 and ET 200M)

Technical specifications (continued)

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
Mechanics					
Connection technology	screw-type terminals	screw-type terminals	screw-type terminals	screw-type terminals	screw-type terminals
Connections					
• Supply input	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm² single-core/finely stranded	L+1, M1, PE: 1 screw terminal each for 0.5 ... 2.5 mm² single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm² single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm² single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm² single-core/finely stranded
• Output	L+, M: 2 screw terminals each for 0.5 ... 2.5 mm²	L+, M: 3 screw terminals each for 0.5 ... 2.5 mm²	L+, M: 3 screw terminals each for 0.5 ... 2.5 mm²	L+, M: 3 screw terminals each for 0.5 ... 2.5 mm²	L+, M: 4 screw terminals each for 0.5 ... 2.5 mm²
• Auxiliary	-	-	-	-	-
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
Depth of the enclosure	120 mm	120 mm	120 mm	120 mm	120 mm
Weight, approx.	0.4 kg	0.57 kg	0.6 kg	0.57 kg	0.8 kg
Product property of the enclosure housing for side-by-side mounting	Yes	Yes	Yes	Yes	Yes
Installation	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)
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)

Ordering data

	Article No.
Load current supply PS 307, 2A	
incl. connecting comb	
120/230 V AC; 24 V DC	
Output current 2 A (dimensions 40 x 125 x 120)	**6ES7307-1BA01-0AA0**
SIMATIC S7-300 Outdoor, 2A	**6ES7305-1BA80-0AA0**
Stabilized power supply PS305 Input: 24 … 110 V DC Output: 24 V DC/2 A	
PS 307 load power supply, 5 A	**6ES7307-1EA01-0AA0**
incl. connecting comb	
120/230 V AC; 24 V DC	
Output current 5 A (dimensions 60 x 125 x 120)	
SIMATIC S7-300 Outdoor, 5A	**6ES7307-1EA80-0AA0**
Stabilized power supply PS307 Input: 120/230 V AC Output: 24 V DC/5 A	
PS 307 load power supply, 10 A	**6ES7307-1KA02-0AA0**
incl. connecting comb	
120/230 V AC; 24 V DC	
Output current 10 A (dimensions 80 x 125 x 120)	

	Article No.
Accessories	
SIMATIC S7-300 mounting adapter	**6EP1971-1BA00**
For snapping the new PS 307 onto a 35 mm DIN rail (EN 60715)	
Spare part	
SIMATIC S7-300 mounting adapter	**6ES7390-6BA00-0AA0**
for snapping the PS307 onto 35 mm DIN rails	

Overview

Note:

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

SIPLUS S7-300 PS 305	
Article No.	**6AG1 305-1BA80-2AA0**
Based on Article No.	**6ES7 305-1BA80-0AA0**
Conformal coating	Coating of the printed circuit boards and the electronic components
Ambient temperature range	-25 … +70 °C
Ambient conditions	Suitable for exceptional exposure to media (e.g. chlorine sulfur atmosphere)
Technical data	The technical data of the standard product applies except for the ambient conditions.
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	yes
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal 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!
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

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

Ordering data

	Article No.
SIPLUS S7-300 PS 305 load power supply Stabilized power supply PS305 Input: 24 ... 110 V DC Output: 24 V DC/2 A Extended temperature range and exposure to media conforms to EN 50155	**6AG1305-1BA80-2AA0**
Accessories	See PS 307, page 5/256

SIPLUS S7-300 PS 307, 5 A

Overview

Note:

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

SIPLUS S7-300 PS 307, 5 A	
Article No.	**6AG1 307-1EA01-7AA0**
Based on Article No.	**6ES7 307-1EA01-0AA0**
Conformal coating	Coating of the printed circuit boards and the electronic components
Ambient temperature range	-25 ... +70 °C
Technical data	The technical data of the standard product applies except for the ambient conditions.
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	yes
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal 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!
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

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

Ordering data

	Article No.
SIPLUS S7-300 PS 307 load power supply, 5 A Input: 120/230 V AC Output: 24 V DC/5 A Extended temperature range and exposure to media	**6AG1307-1EA01-7AA0**
Accessories	See PS 307, page 5/256

Overview

Note:

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

SIPLUS S7-300 PS 307 10 A	
Article No.	**6AG1 307-1KA02-7AA0**
Based on Article No.	**6ES7 307-1KA02-0AA0**
Conformal coating	Coating of the printed circuit boards and the electronic components
Ambient temperature range	-25 ... +70 °C
Technical data	The technical data of the standard product applies except for the ambient conditions.
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	No
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal 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!
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

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

Ordering data

	Article No.
SIPLUS S7-300 PS 307 load power supply, 10 A Input: 120/230 V AC Output: 24 V DC/10 A Extended temperature range and exposure to media	**6AG1307-1KA02-7AA0**
Accessories	See PS 307, page 5/256

IM 360/361/365 interface modules

Overview

- For connecting mounting racks in multi-tier SIMATIC S7-300 configurations
- IM 365:
  For design of central controller and max. 1 expansion unit.
  Limited use of modules in the expansion unit
  (e.g. no CPs or FMs)
- IM 360/IM 361:
  For design of central controller and max. 3 expansion units.
  No limitation in selection of modules in the expansion unit

Technical specifications

Article number	6ES7360-3AA01-0AA0 SIMATIC S7-300, INTERFACE MODULE	6ES7361-3CA01-0AA0 IM 361 INTERFACE MODULE IN ER, WITH K-BUS	6ES7365-0BA01-0AA0 SIMATIC S7-300, INTERFACE MODULE
Product type designation			
Supply voltage			
Rated value (DC)			
• 24 V DC		Yes	
Input current			
from backplane bus 5 V DC, max.	350 mA		100 mA
from supply voltage L+, max.		500 mA	
Power losses			
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

Ordering data

	Article No.
IM 360 interface module for expanding the S7-300 with max. 3 EUs; can be plugged into CC	**6ES7360-3AA01-0AA0**
IM 361 interface module for expanding the S7-300 with max. 3 EUs; can be plugged into 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**

	Article No.
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	**6ES7998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	**6ES7998-8XC01-8YE2**

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.

Technical specifications

Article number	**6AG1365-0BA01-2AA0**
Based on	**6ES7365-0BA01-0AA0**
	SIPLUS IM365
Ambient conditions	
Ambient temperature in operation	
• Min.	-25 °C; = Tmin
• max.	60 °C; = Tmax
Extended ambient conditions	
• Relative to ambient temperature-atmospheric pressure-installation 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)
Relative humidity	
- With condensation, max.	100 %; condensation/frost permissible (no commissioning if condensation present)

Article number	**6AG1365-0BA01-2AA0**
Based on	**6ES7365-0BA01-0AA0**
	SIPLUS IM365
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS S7-300 IM 365 interface module for expanding the S7-300 with max. 1 EU; 2 modules with permanent connecting cable (1 m) Extended temperature range and exposure to media	**6AG1365-0BA01-2AA0**

Overview

- The mechanical SIMATIC S7-300 rack
- For accommodating the modules
- Can be attached to walls

Ordering data

	Article No.
DIN rail	
160 mm	**6ES7390-1AB60-0AA0**
482 mm	**6ES7390-1AE80-0AA0**
530 mm	**6ES7390-1AF30-0AA0**
830 mm	**6ES7390-1AJ30-0AA0**
2000 mm	**6ES7390-1BC00-0AA0**

Overview

Labeling sheets

- Film sheets for the application-specific labeling of I/O modules of the SIMATIC S7-300 using standard laser printers
- Plain color films, tear-resistant, dirt-repellent
- Simple handling:
  - perforated label 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 label 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

Technical specifications

Labeling sheets for S7-300	
Dimensions	DIN A4
Labeling strips per sheet, pre-perforated	10
Weight, approx.	0.1 kg

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**

Notes