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SIMATIC S7-300

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Brochures

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S7-300/S7-300F

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

SIPLUS S7-300

- The controller for use in the toughest environmental conditions
- Features an extended temperature range of -40/-25 °C to +60/70 °C
- Suitable for medial exposure (harmful gas atmosphere)
- Condensation and increased mechanical stress is permissible
- Features the proven PLC technology of the S7-300
- Easy to handle, program, maintain, and service
- Ideal for use in automotive engineering, environmental engineering, mining, chemical plants, material handling, food industry, etc.
- The replacement for expensive custom solutions

For further information, please go to:

www.siemens.com/siplus-extreme

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

www.siemens.com/simatic/printmaterial

Technical specifications

General technical data SIMATIC S7-300/S7-300F	
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

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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	
Relative humidity	5 ... 100%, condensation allowed
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA–S71.04 severity level G1; G2; G3; GX [1)2)]
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including conductive sand, dust [2)]
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
Compliant with the standard for electronic equipment used on railway rolling stock (EN 50155, temperature T1, category 1)	Yes

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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.

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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.

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Standard CPUs

Overview CPU 317-2 PN/DP

- The CPU with a large program memory and quantity framework for demanding applications
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- High processing 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.

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Technical specifications

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0
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				
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
1st interface				
Type of 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
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

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Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0
2nd interface				
Type of interface			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
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				
Operating temperature				
• Min.	0 °C	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C	60 °C

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Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0
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
Weight				
Weight, approx.	270 g	280 g	290 g	340 g

	6ES7 317-2AK14-0AB0	6ES7 317-2EK14-0AB0	6ES7 318-3EL01-0AB0
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			
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

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Technical specifications (continued)

	6ES7 317-2AK14-0AB0	6ES7 317-2EK14-0AB0	6ES7 318-3EL01-0AB0
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			
Type of interface	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
2nd interface			
Type of interface	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			
Type of interface			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

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Technical specifications (continued)

	6ES7 317-2AK14-0AB0	6ES7 317-2EK14-0AB0	6ES7 318-3EL01-0AB0
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
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			
Operating temperature			
• 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
Weight			
Weight, approx.	360 g	340 g	1 250 g

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Standard CPUs

Ordering data	Order No.
CPU 312 32 KB main memory, 24 V DC power supply, MPI; MMC required	**6ES7 312-1AE14-0AB0**
CPU 314 128 KB main memory, 24 V DC power supply, MPI; MMC required	**6ES7 314-1AG14-0AB0**
CPU 315-2 DP 256 KB main memory, 24 V DC power supply, MPI, PROFIBUS DP master/slave interface, MMC required	**6ES7 315-2AH14-0AB0**
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	**6ES7 315-2EH14-0AB0**
CPU 317-2 DP Main memory 1 MB, power supply 24 V DC, MPI, PROFIBUS DP master/slave interface, MMC required	**6ES7 317-2AK14-0AB0**
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	**6ES7 317-2EK14-0AB0**
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	**6ES7 318-3EL01-0AB0**
SIMATIC Micro Memory Card	
64 KB	**6ES7 953-8LF20-0AA0**
128 KB	**6ES7 953-8LG20-0AA0**
512 KB	**6ES7 953-8LJ30-0AA0**
2 MB	**6ES7 953-8LL31-0AA0**
4 MB	**6ES7 953-8LM20-0AA0**
8 MB	**6ES7 953-8LP20-0AA0**
MPI cable for connection of SIMATIC S7 and PG via MPI; 5 m in length	**6ES7 901-0BF00-0AA0**
Slot number plates	**6ES7 912-0AA00-0AA0**
S7-300 manual Design, CPU data, module data, instruction list	
German	**6ES7 398-8FA10-8AA0**
English	**6ES7 398-8FA10-8BA0**

	Order 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	**6ES7 998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	**6ES7 998-8XC01-8YE2**
Power supply connector 10 units, spare part	**6ES7 391-1AA00-0AA0**
SIMATIC S7 training case With mounting components for mounting S7-200 and S7-300	**6ES7 910-3AA00-0XA0**
PC adapter USB A2 For connecting a PG/PC or notebook to PROFIBUS or MPI, USB cable included in scope of supply	**6GK1 571-0BA00-0AA0**
PROFIBUS bus components	
PROFIBUS DP bus connector RS 485	
• With 90° cable outlet, max. transfer rate 12 Mbit/s	
- Without PG interface	**6ES7 972-0BA12-0XA0**
- With PG interface	**6ES7 972-0BB12-0XA0**
• With 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbit/s	
- Without PG interface, 1 unit	**6ES7 972-0BA52-0XA0**
- Without PG interface, 100 units	**6ES7 972-0BA52-0XB0**
- With PG interface, 1 unit	**6ES7 972-0BB52-0XA0**
- With PG interface, 100 units	**6ES7 972-0BB52-0XB0**
• With axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS	**6GK1 500-0EA02**
PROFIBUS Fast Connect 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	**6XV1 830-0EH10**
RS 485 repeater for PROFIBUS Transmission rate up to 12 Mbit/s; 24 V DC; IP20 enclosure	**6ES7 972-0AA02-0XA0**

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Ordering data	Order 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	**6XV1 840-2AH10**
FO Standard Cable GP (50/125) Standard cable, splittable, UL approval, sold by the meter	**6XV1 873-2A**
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	**6GK5 204-2BB10-2AA3**
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	**6GK7 377-1AA00-0AA0**

	Order 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	**6GK1 901-1BB30-0AA0**
10 units	**6GK1 901-1BB30-0AB0**
50 units	**6GK1 901-1BB30-0AE0**
IE FC RJ45 Plug 180 180° cable outlet	
1 unit	**6GK1 901-1BB10-2AA0**
10 units	**6GK1 901-1BB10-2AB0**
50 units	**6GK1 901-1BB10-2AE0**
PROFIBUS/PROFINET bus components For establishing MPI/PROFIBUS/ PROFINET communication	See catalogs IK PI, CA 01

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SIPLUS standard CPUs

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 Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS CPU 314		
Order No.	**6AG1 314-1AG14-2AY0**	**6AG1 314-1AG14-7AB0**
Order number based on	**6ES7 314-1AG14-0AB0**	**6ES7 314-1AG14-0AB0**
Ambient temperature range	-25 ... +60 °C	-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	
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	Yes	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 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)	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	

The technical documentation on SIPLUS can be found here:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS CPU 314	
(extended temperature range and medial exposure)	
Main memory 128 KB, power supply 24 V DC, MPI; MMC required	**6AG1 314-1AG14-7AB0**
Additional conformance with EN 50155	**6AG1 314-1AG14-2AY0**
Accessories	See SIMATIC CPU 314, page 5/12

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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 the CPU.

Note:

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

SIPLUS CPU 315-2 DP		
Order No.	**6AG1 315-2AH14-2AY0**	**6AG1 315-2AH14-7AB0**
Order number based on	**6ES7 315-2AH14-0AB0**	**6ES7 315-2AH14-0AB0**
Ambient temperature range	-25 ... +60 °C	-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	
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	Yes	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 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)	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	

The technical documentation on SIPLUS can be found here:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS CPU 315-2 DP	
(extended temperature range and medial exposure)	
Work memory 256 KB, power supply 24 V DC, MPI, PROFIBUS DP master/slave interface, MMC required	**6AG1 315-2AH14-7AB0**
Additional conformance with EN 50155	**6AG1 315-2AH14-2AY0**
Accessories	See SIMATIC CPU 315-2 DP, page 5/12

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SIPLUS Standard CPUs

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 Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS CPU 315-2 PN/DP		
Order No.	**6AG1 315-2EH14-2AY0**	**6AG1 315-2EH14-7AB0**
Order number based on	**6ES7 315-2EH14-0AB0**	**6ES7 315-2EH14-0AB0**
Ambient temperature range	-25 ... +60 °C	-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	
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	Yes	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 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)	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	

The technical documentation on SIPLUS can be found here:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS CPU 315-2 PN/DP	
(extended temperature range and medial exposure)	
Work memory 384 KB, power supply 24 V DC, combined MPI/PROFIBUS DP master/slave interface, Ethernet/ PROFINET interface with 2-port switch; MMC required	**6AG1 315-2EH14-7AB0**
Additional conformance with EN 50155	**6AG1 315-2EH14-2AY0**
Accessories	See SIMATIC CPU 315-2 PN/DP, page 5/12

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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 Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS CPU 317-2 PN/DP		
Order number	**6AG1 317-2EK14-7AB0**	**6AG1 317-2EK14-2AY0**
Order number based on	**6ES7 317-2EK14-0AB0**	**6ES7 317-2EK14-0AB0**
Ambient temperature range	-25 ... +70 °C	
Conforms with standard for electronic equipment used on rolling stock (EN 50155)	No	Yes
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)	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:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS CPU 317-2 PN/DP	
(extended temperature range and medial exposure)	
Main memory 1 MB, power supply 24 V DC, combined MPI/PROFIBUS DP master/slave interface, Ethernet/ PROFINET interface; MMC required	**6AG1 317-2EK14-7AB0**
Additional conformance with EN 50155	**6AG1 317-2EK14-2AY0**
Accessories	See SIMATIC CPU 317-2 PN/DP, page 5/12

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Compact CPUs

Overview CPU 312C

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

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 313C-2 PtP

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

SIMATIC Micro Memory Card required for operation of 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.

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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.

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Technical specifications

	6ES7 312-5BF04-0AB0	6ES7 313-5BG04-0AB0	6ES7 313-6BG04-0AB0	6ES7 313-6CG04-0AB0
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				
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
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		

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Technical specifications (continued)

	6ES7 312-5BF04-0AB0	6ES7 313-5BG04-0AB0	6ES7 313-6BG04-0AB0	6ES7 313-6CG04-0AB0
Analog outputs				
Integrated channels (AO)	0	2	0	0
Output ranges, voltage				
• 0 to 10 V		Yes		
• -10 to +10 V		Yes		
Output ranges, current				
• 0 to 20 mA		Yes		
• -20 to +20 mA		Yes		
• 4 to 20 mA		Yes		
1st interface				
Type of 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
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				
Type of interface			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

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Technical specifications (continued)

	6ES7 312-5BF04-0AB0	6ES7 313-5BG04-0AB0	6ES7 313-6BG04-0AB0	6ES7 313-6CG04-0AB0
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				
Operating temperature				
• 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
Weight				
Weight, approx.	410 g	660 g	500 g	500 g

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Technical specifications (continued)

	6ES7 314-6BH04-0AB0	6ES7 314-6CH04-0AB0	6ES7 314-6EH04-0AB0
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			
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
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

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Technical specifications (continued)

	6ES7 314-6BH04-0AB0	6ES7 314-6CH04-0AB0	6ES7 314-6EH04-0AB0
Analog outputs			
Integrated channels (AO)	2	2	2
Output ranges, voltage			
• 0 to 10 V	Yes	Yes	Yes
• -10 to +10 V	Yes	Yes	Yes
Output ranges, current			
• 0 to 20 mA	Yes	Yes	Yes
• -20 to +20 mA	Yes	Yes	Yes
• 4 to 20 mA	Yes	Yes	Yes
1st interface			
Type of interface	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			
Type of interface	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
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

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Technical specifications (continued)

	6ES7 314-6BH04-0AB0	6ES7 314-6CH04-0AB0	6ES7 314-6EH04-0AB0
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			
Operating temperature			
• 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
Weight			
Weight, approx.	680 g	680 g	730 g

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Compact CPUs

Ordering data	Order No.
CPU 312C	**6ES7 312-5BF04-0AB0**
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	
CPU 313C	**6ES7 313-5BG04-0AB0**
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	
CPU 313C-2 PtP	**6ES7 313-6BG04-0AB0**
Compact CPU, 128 KB, 24 V DC power supply, 16 DI/16 DO integrated, integrated functions, MPI, RS 422/485 interface; MMC required	
CPU 313C-2 DP	**6ES7 313-6CG04-0AB0**
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	
CPU 314C-2 PtP	**6ES7 314-6BH04-0AB0**
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	
CPU 314C-2 DP	**6ES7 314-6CH04-0AB0**
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	
CPU 314C-2 PN/DP	**6ES7 314-6EH04-0AB0**
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	
SIMATIC Micro Memory Card	
64 KB	**6ES7 953-8LF20-0AA0**
128 KB	**6ES7 953-8LG20-0AA0**
512 KB	**6ES7 953-8LJ30-0AA0**
2 MB	**6ES7 953-8LL31-0AA0**
4 MB	**6ES7 953-8LM20-0AA0**
8 MB	**6ES7 953-8LP20-0AA0**

	Order No.
MPI cable	**6ES7 901-0BF00-0AA0**
For connection of SIMATIC S7 and PG via MPI; 5 m in length	
Point-to-point link cable	
For connection to CPU 31xC-2 PtP	
5 m	**6ES7 902-3AB00-0AA0**
10 m	**6ES7 902-3AC00-0AA0**
50 m	**6ES7 902-3AG00-0AA0**
Front connector (1 unit)	
For compact CPUs	
40-pin, with screw contacts	
• 1 unit	**6ES7 392-1AM00-0AA0**
• 100 units	**6ES7 392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BM01-0AA0**
• 100 units	**6ES7 392-1BM01-1AB0**
SIMATIC TOP connect	See page 5/224; for information about which components can be used for the respective module, see Industry Mall
Slot number plates	**6ES7 912-0AA00-0AA0**
S7-300 manual	
Design, CPU data, module data, instruction list	
German	**6ES7 398-8FA10-8AA0**
English	**6ES7 398-8FA10-8BA0**
SIMATIC Manual Collection	**6ES7 998-8XC01-8YE0**
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	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	
Power supply connector	**6ES7 391-1AA00-0AA0**
10 units, spare part	
Labeling strips	**6ES7 392-2XX00-0AA0**
10 units, spare part	
Label cover	**6ES7 392-2XY00-0AA0**
10 units, spare part	

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Ordering data	Order No.
Labeling sheets for machine inscription	
For 32-channel signal modules, DIN A4, for printing with laser printer; 10 units	
petrol	**6ES7 392-2AX10-0AA0**
light-beige	**6ES7 392-2BX10-0AA0**
yellow	**6ES7 392-2CX10-0AA0**
red	**6ES7 392-2DX10-0AA0**
PC adapter USB A2	**6GK1 571-0BA00-0AA0**
For connecting a PG/PC or notebook to PROFIBUS or MPI, USB cable included in scope of supply	
PROFIBUS DP bus connector RS 485	
• With 90° cable outlet, max. transfer rate 12 Mbit/s	
- without PG interface	**6ES7 972-0BA12-0XA0**
- with PG interface	**6ES7 972-0BB12-0XA0**
• With 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbit/s	
- without PG interface, 1 unit	**6ES7 972-0BA52-0XA0**
- without PG interface, 100 units	**6ES7 972-0BA52-0XB0**
- with PG interface, 1 unit	**6ES7 972-0BB52-0XA0**
- with PG interface, 100 units	**6ES7 972-0BB52-0XB0**
• With axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS	**6GK1 500-0EA02**
PROFIBUS Fast Connect bus cable	**6XV1 830-0EH10**
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	**6ES7 972-0AA02-0XA0**
Transmission rate up to 12 Mbit/s; 24 V DC; IP20 enclosure	

	Order No.
PROFINET bus components	
IE FC TP Standard Cable GP 2x2	**6XV1 840-2AH10**
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)	**6XV1 873-2A**
Standard cable, splittable, UL approval, sold by the meter	
SCALANCE X204-2 Industrial Ethernet Switch	**6GK5 204-2BB10-2AA3**
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	
CSM 377 Compact Switch Module	**6GK7 377-1AA00-0AA0**
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	**6GK1 901-1BB10-2AA0**
10 units	**6GK1 901-1BB10-2AB0**
50 units	**6GK1 901-1BB10-2AE0**
PROFIBUS/PROFINET bus components	See catalogs IK PI, CA 01
For establishing MPI/PROFIBUS/ PROFINET communication	

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SIPLUS compact CPUs

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 Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS CPU 312C		
Order No.	**6AG1 312-5BF04-7AB0**	**6AG1 312-5BF04-2AY0**
Order No. based on	**6ES7 312-5BF04-0AB0**	**6ES7 312-5BF04-0AB0**
Ambient temperature range	-25 ... +70 °C	-25 ... +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	
Conforms with standard for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	No	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 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)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K	

Technical documentation on SIPLUS can be found here:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS CPU 312C	
(extended temperature range and medial exposure)	
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	**6AG1 312-5BF04-7AB0**
Additional conformance with EN 50155	**6AG1 312-5BF04-2AY0**
Accessories	See SIMATIC CPU 312C, page 5/26

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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 Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table.

SIPLUS CPU 313C		
Order No.	**6AG1 313-5BG04-2AY0**	**6AG1 313-5BG04-7AB0**
Order No. based on	**6ES7 313-5BG04-0AB0**	**6ES7 313-5BG04-0AB0**
Ambient conditions		
Operating temperature		
• 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
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/maximum/ tested in accordance with IEC 60068-2-38	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	
• Resistance		
- to biologically active substances	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!	
- to chemically active substances	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	
- to mechanically active substances	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	

Ordering data	**Order No.**
SIPLUS CPU 313C	
(extended temperature range and medial exposure)	
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	**6AG1 313-5BG04-7AB0**
Additional conformance with EN 50155	**6AG1 313-5BG04-2AY0**
Accessories	See SIMATIC CPU 313C, page 5/26

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SIPLUS compact CPUs

Overview SIPLUS CPU 313C-2DP

- 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 Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS CPU 313C-2 DP		
Order No.	**6AG1 313-6CG04-7AB0**	**6AG1 313-6CG04-2AY0**
Order No. based on	**6ES7 313-6CG04-0AB0**	**6ES7 313-6CG04-0AB0**
Ambient temperature range	-25 ... +70 °C	-25 ... +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	
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	No	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 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 (-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	

Technical documentation on SIPLUS can be found here:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS CPU 313C-2 DP	
(extended temperature range and medial exposure)	
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	**6AG1 313-6CG04-7AB0**
Additional conformance with EN 50155	**6AG1 313-6CG04-2AY0**
Accessories	See SIMATIC CPU 313C-2 DP, page 5/26

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SIPLUS compact CPUs

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 Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS CPU 314C-2 PtP	
Order No.	**6AG1 314-6BH04-7AB0**
Order No. based on	**6ES7 314-6BH04-0AB0**
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)	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

Technical documentation on SIPLUS can be found here:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS CPU 314C-2 PtP (extended temperature range and medial exposure) 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	**6AG1 314-6BH04-7AB0**
Accessories	See SIMATIC CPU 314C-2 PtP, page 5/26

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SIPLUS compact CPUs

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 Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

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SIPLUS CPU 314C-2 DP		
Order No.	**6AG1 314-6CH04-7AB0**	**6AG1 314-6CH04-2AY0**
Order No. based on	**6ES7 314-6CH04-0AB0**	**6ES7 314-6CH04-0AB0**
Ambient temperature range	-25 ... +70 °C	-25 ... +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	
Conforms with standard for electronic equipment used on rolling stock (EN 50155).	No	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 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 (-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	

Technical documentation on SIPLUS can be found here:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS CPU 314C-2 DP	
(extended temperature range and medial exposure)	
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	**6AG1 314-6CH04-7AB0**
Additional conformance with EN 50155	**6AG1 314-6CH04-2AY0**
Accessories	See SIMATIC CPU 314C-2 DP, page 5/26

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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 up to SIL 3 according to IEC 61508 and up to Cat. 4 according to EN 954-1
- Distributed fail-safe I/O modules can be connected through the integral PROFIBUS DP interface (PROFIsafe)
- Fail-safe 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 up to SIL 3 according to IEC 61508, PL e according to ISO 13849, and up to Cat. 4 according to EN 954-1
- 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
- Satisfies safety requirements up to SIL 3 acc. to IEC 61508 and up to Cat. 4 acc. to EN 954-1
- Fail-safe I/O modules can be connected in a distributed configuration to both integral PROFIBUS DP interfaces (PROFIsafe)
- Fail-safe 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

SIMATIC Micro Memory Card required for operation of CPU.

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Fail-safe CPUs

Overview CPU 317F-2 PN/DP

- Based on CPU 317-2 PN/DP
- The fail-safe CPU with a large program memory and quantity framework for demanding applications; for setting up a fail-safe automation system in plants with increased safety requirements.
- Complies with safety requirements up to SIL 3 according to IEC 61508, PL e according to ISO 13849-1, and up to Cat. 4 according to EN 954-1
- 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 up to SIL 3 according to IEC 61508, PL e according to 13849-1, and up to Cat. 4 according to EN 954-1
- 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.

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Technical specifications

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-6FF04-0AB0	6ES7 317-2FK14-0AB0	6ES7 318-3FL01-0AB0
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					
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

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Technical specifications (continued)

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-6FF04-0AB0	6ES7 317-2FK14-0AB0	6ES7 318-3FL01-0AB0
1st interface					
Type of interface	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					
Type of interface	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	
3rd interface					
Type of interface					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

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Technical specifications (continued)

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-6FF04-0AB0	6ES7 317-2FK14-0AB0	6ES7 318-3FL01-0AB0
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
Ambient conditions					
Operating temperature					
• 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
Weight					
Weight, approx.	290 g	340 g	360 g	340 g	1 250 g

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Fail-safe CPUs

Ordering data	Order No.
CPU 315F-2 DP	**6ES7 315-6FF04-0AB0**
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	
CPU 317F-2 DP	**6ES7 317-6FF04-0AB0**
Main memory 1.5 MB, power supply 24 V DC, MPI, PROFIBUS DP master/slave interface, MMC required	
CPU 315F-2 PN/DP	**6ES7 315-2FJ14-0AB0**
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	
CPU 317F-2 PN/DP	**6ES7 317-2FK14-0AB0**
Main memory 1.5 MB, 24 V DC power supply, MPI/PROFIBUS DP master/slave interface, Industrial Ethernet/PROFINET interface; MMC required	
CPU 319F-3 PN/DP	**6ES7 318-3FL01-0AB0**
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	
Distributed Safety V5.4 programming tool	
Task: Software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, ET 200S Requirement: STEP 7 V5.3 SP3 and higher	
Floating license	**6ES7 833-1FC02-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7 833-1FC02-0YH5**
Distributed Safety Upgrade	
From V5.x to V5.4; Floating license for 1 user	**6ES7 833-1FC02-0YE5**
STEP 7 Safety Advanced V11	
Task: Engineering tool 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 Professional V11 SP1	
Floating license for 1 user	**6ES7 833-1FA11-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7 833-1FA11-0YH5**

	Order No.
STEP 7 Safety Advanced Upgrade	
Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V11 for parallel use; incl. software on CD; Combo License for 1 user	**6ES7 833-1FA11-0YE5**
Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V11 for parallel use; includes software on CD; combo license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7 833-1FA11-0YK5**
SIMATIC Micro Memory Card	
64 KB	**6ES7 953-8LF20-0AA0**
128 KB	**6ES7 953-8LG20-0AA0**
512 KB	**6ES7 953-8LJ30-0AA0**
2 MB	**6ES7 953-8LL31-0AA0**
4 MB	**6ES7 953-8LM20-0AA0**
8 MB	**6ES7 953-8LP20-0AA0**
MPI cable	**6ES7 901-0BF00-0AA0**
for connection of SIMATIC S7 and PG via MPI; 5 m in length	
Slot number plates	**6ES7 912-0AA00-0AA0**
S7-300 manual	
Design, CPU data, module data, instruction list	
German	**6ES7 398-8FA10-8AA0**
English	**6ES7 398-8FA10-8BA0**
SIMATIC Manual Collection	**6ES7 998-8XC01-8YE0**
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	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	
Power supply connector	**6ES7 391-1AA00-0AA0**
10 units, spare part	
PC adapter USB A2	**6GK1 571-0BA00-0AA0**
For connecting a PG/PC or notebook to PROFIBUS or MPI; USB cable included in scope of delivery	

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

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Ordering data	Order No.
PROFIBUS bus components	
PROFIBUS DP bus connector RS 485	
• with 90° cable outlet, max. transfer rate 12 Mbit/s	
- without PG interface	**6ES7 972-0BA12-0XA0**
- with PG interface	**6ES7 972-0BB12-0XA0**
• with 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbit/s	
- without PG interface, 1 unit	**6ES7 972-0BA52-0XA0**
- without PG interface, 100 units	**6ES7 972-0BA52-0XB0**
- with PG interface, 1 unit	**6ES7 972-0BB52-0XA0**
- with PG interface, 100 units	**6ES7 972-0BB52-0XB0**
• with axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS	**6GK1 500-0EA02**
PROFIBUS Fast Connect 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	**6XV1 830-0EH10**
RS 485 repeater for PROFIBUS Transmission rate up to 12 Mbit/s; 24 V DC; IP20 enclosure	**6ES7 972-0AA02-0XA0**

	Order 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	**6XV1 840-2AH10**
FO Standard Cable GP (50/125) Standard cable, splittable, UL approval, sold by the meter	**6XV1 873-2A**
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	**6GK5 204-2BB10-2AA3**
CSM 377 Compact Switch Module 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	**6GK7 377-1AA00-0AA0**
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	**6GK1 901-1BB30-0AA0**
10 units	**6GK1 901-1BB30-0AB0**
50 units	**6GK1 901-1BB30-0AE0**
IE FC RJ45 plug 180 180° cable outlet	
1 unit	**6GK1 901-1BB10-2AA0**
10 units	**6GK1 901-1BB10-2AB0**
50 units	**6GK1 901-1BB10-2AE0**
PROFIBUS/PROFINET bus components For establishing MPI/PROFIBUS/ PROFINET communication	See catalogs IK PI, CA 01

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SIPLUS fail-safe CPUs

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 CPU operation.

Note:

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

	SIPLUS CPU 315F-2 DP	SIPLUS CPU 315F-2 DP (EN 50155)
Order number	**6AG1 315-6FF04-2AB0**	**6AG1 315-6FF04-2AY0**
Order number based on	**6ES7 315-6FF04-0AB0**	**6ES7 315-6FF04-0AB0**
Ambient temperature range	-25 ... +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.	
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	No	Yes
Ambient conditions		
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.	

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

Ordering data	Order No.
SIPLUS CPU 315F-2 DP	
(extended temperature range and medial exposure)	
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	**6AG1 315-6FF04-2AB0**
Additional conformance with EN 50155	**6AG1 315-6FF04-2AY0**
Accessories	See SIMATIC CPU 315F-2 DP, page 5/38

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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 Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS CPU 315F-2 PN/DP		
Order No.	**6AG1 315-2FJ14-2AB0**	**6AG1 315-2FJ14-2AY0**
Order No. based on	**6ES7 315-2FJ14-0AB0**	**6ES7 315-2FJ14-0AB0**
Ambient temperature range	-25 ... +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.	
Compliant with the standards for electronic equipment used on railway rolling stock (EN 50155, temperature T1, category 1).	No	Yes
Ambient conditions		
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.	

Technical documentation on SIPLUS can be found here:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
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	**6AG1 315-2FJ14-2AB0**
Additional conformance with EN 50155	**6AG1 315-2FJ14-2AY0**
Accessories	See SIMATIC CPU 315F-2 PN/DP, page 5/38

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SIPLUS fail-safe CPUs

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 Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS CPU 317F-2 DP	
Order No.	**6AG1 317-6FF04-2AB0**
Order No. based on	**6ES7 317-6FF04-0AB0**
Ambient temperature range	-25 ... +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.
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	No
Technical data	The technical data are identical with those of the based-on modules.
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.

Technical documentation on SIPLUS can be found here:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS CPU 317F-2 DP	
(extended temperature range and medial exposure)	
Main memory 1.5 MB, power supply 24 V DC, MPI, PROFIBUS DP master/slave interface; MMC required	**6AG1 317-6FF04-2AB0**
Accessories	See SIMATIC CPU 317F-2 DP, page 5/38

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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 the CPU.

Note:

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

SIPLUS CPU 317F-2 PN/DP		
Order No.	**6AG1 317-2FK14-2AB0**	**6AG1 317-2FK14-2AY0**
Order number based on	**6ES7 317-2FK14-0AB0**	**6ES7 317-2FK14-0AB0**
Ambient temperature range	-25 ... +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.	
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	No	Yes
Ambient conditions		
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.	

Technical documentation on SIPLUS can be found here:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS CPU 317F-2 PN/DP	
(extended temperature range and medial exposure)	
Main memory 1.5 MB, power supply 24 V DC, MPI/PROFIBUS DP master/slave interface; Industrial Ethernet/PROFINET interface; MMC required	**6AG1 317-2FK14-2AB0**
Additional conformance with EN 50155	**6AG1 317-2FK14-2AY0**
Accessories	See SIMATIC CPU 317F-2 PN/DP, page 5/38

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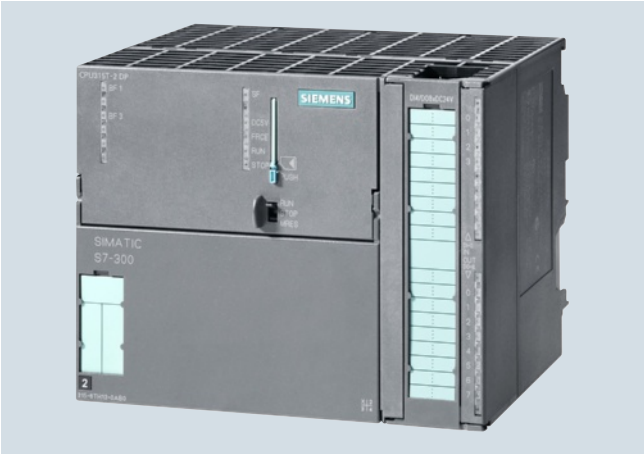
Technology CPUs

Overview CPU 315T-2 DP



- SIMATIC CPU with integral Technology/Motion Control functionality
- With full standard CPU 315-2 DP functionality
- 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 or print mark compensation
- 3D path interpolation with standard 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
- One common S7 user program for control and motion control tasks (no additional programming language necessary for motion control)
- "S7-Technology" option package required

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

Overview CPU 317T-2 DP

- SIMATIC CPU with integral Technology/Motion Control functionality
- With full standard CPU 317-2 DP functionality
- 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
- Distributed intelligence in Component Based Automation (CBA) on PROFIBUS DP
- 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
- One common S7 user program for control and motion control tasks (no additional programming language necessary for motion control)
- "S7-Technology" option package required

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

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Overview CPU 317TF-2 DP

- Failsafe SIMATIC CPU with integral Technology/Motion Control functionality
- With full functionality of the standard CPU 317-2 DP and CPU 317F-2 DP
- 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
- Used as central controller in production lines with central and distributed I/O
- Distributed intelligence in Component Based Automation (CBA) on PROFIBUS DP
- 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
- 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

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

Technical specifications

	6ES7 315-6TH13-0AB0	6ES7 317-6TK13-0AB0	6ES7 317-6TF14-0AB0
General information			
Engineering with			
• Programming package	STEP 7 V5.4 + SP5 (and higher) and Optional package S7-Technology V4.2	STEP 7 V5.4 + SP5 (and higher) and Optional package S7-Technology V4.2	STEP7 V 5.4 SP5 or higher, S7-Technology V4.2 or higher, Distributed Safety V5.4 SP5 or higher, S7-F Configuration Pack V5.5 SP7 or higher
Supply voltage			
24 V DC	Yes	Yes	Yes
Power losses			
Power loss, typ.	6 W	6 W	6 W
Memory			
Work memory			
• integrated	256 kbyte	1 024 kbyte	1 536 kbyte
• Size of retentive memory for retentive data blocks			256 kbyte
Load memory			
• pluggable (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte
CPU processing times			
for bit operations, typ.	0.1 µs	0.05 µs	0.05 µs
for word operations, typ.	0.2 µs	0.2 µs	0.2 µs
for fixed point arithmetic, typ.	2 µs	0.2 µs	0.2 µs
for floating point arithmetic, typ.	3 µs	1 µs	1 µs
Counters, timers and their retentivity			
S7 counter			
• Number	256; Number range: 0 to 255	512; Number range: 0 to 511	512; Number range: 0 to 511
IEC counter			
• present	Yes	Yes	Yes
S7 times			
• Number	256; Number range: 0 to 255	512; Number range: 0 to 511	512; Number range: 0 to 511
IEC timer			
• present	Yes	Yes	Yes

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Technical specifications (continued)

	6ES7 315-6TH13-0AB0	6ES7 317-6TK13-0AB0	6ES7 317-6TF14-0AB0
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	2 048 byte	2 048 byte
• Outputs, adjustable	2 048 byte	2 048 byte	2 048 byte
Time of day			
Clock			
• Hardware clock (real-time clock)	Yes	Yes	Yes
Operating hours counter			
• Number	1	4	4
1st interface			
Type of interface	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			
Type of interface	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
Communication functions			
PG/OP communication	Yes	Yes	Yes
Global data communication			
• supported	Yes	Yes	Yes
S7 basic communication			
• supported	Yes	Yes	Yes
S7 communication			
• supported	Yes	Yes	Yes
S5-compatible communication			
• supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
Number of connections			
• overall	16	32	32
Ambient conditions			
Operating temperature			
• Min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C

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Technical specifications (continued)

	6ES7 315-6TH13-0AB0	6ES7 317-6TK13-0AB0	6ES7 317-6TF14-0AB0
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
Dimensions			
Width	160 mm	160 mm	160 mm
Height	125 mm	125 mm	125 mm
Depth	130 mm	130 mm	130 mm
Weight			
Weight, approx.	750 g	750 g	750 g

Ordering data

	Order No.
CPU 315T-2 DP 256 KB main memory, 24 V DC power supply, MPI, PROFIBUS DP master/slave interface, PROFIBUS DP(DRIVE) interface; with technology/motion control functions; MMC required	**6ES7 315-6TH13-0AB0**
CPU 317T-2 DP 1024 KB main memory, 24 V DC power supply, MPI, PROFIBUS DP master/slave interface, PROFIBUS DP (DRIVE) interface; with technology/motion control functions; MMC required	**6ES7 317-6TK13-0AB0**
CPU 317TF-2 DP 1.5 MB main memory, 24 V DC power supply, MPI, PROFIBUS DP master/slave interface, PROFIBUS DP(DRIVE) interface; with technology/motion control functions; MMC required	**6ES7 317-6TF14-0AB0**
S7-Technology V4.2 Task: Option package for configuring and programming technology tasks with SIMATIC S7 CPU 31xT-2 DP and the SIMATIC S7 CPU 317TF-2 DP Requirement: STEP 7 V5.4 SP5 or higher Delivery package: on DVD; incl. documentation for CPU 31xT-2 DP, CPU 317TF-2 DP (included on DVD)	**6ES7 864-1CC42-0YA5**

	Order No.
SIMATIC Micro Memory Card	
4 MB	**6ES7 953-8LM20-0AA0**
8 MB	**6ES7 953-8LP20-0AA0**
MPI cable for connection of SIMATIC S7 and PG via MPI; 5 m in length	**6ES7 901-0BF00-0AA0**
Front connector (1 unit)	
40-pin, with screw contacts	
• 1 unit	**6ES7 392-1AM00-0AA0**
• 100 units	**6ES7 392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BM01-0AA0**
• 100 units	**6ES7 392-1BM01-1AB0**
Slot number plates	**6ES7 912-0AA00-0AA0**
S7-300 manual Design, CPU data, module data, instruction list	
German	**6ES7 398-8FA10-8AA0**
English	**6ES7 398-8FA10-8BA0**
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	**6ES7 998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	**6ES7 998-8XC01-8YE2**

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Technology CPUs

Ordering data

	Order No.
Power supply connector 10 units, spare part	**6ES7 391-1AA00-0AA0**
Labeling strips 10 units, spare part	**6ES7 392-2XX00-0AA0**
Label cover 10 units, spare part	**6ES7 392-2XY00-0AA0**
Labeling sheets for machine inscription For 32-channel signal modules, DIN A4, for printing with laser printer; 10 units	
petrol	**6ES7 392-2AX10-0AA0**
light-beige	**6ES7 392-2BX10-0AA0**
yellow	**6ES7 392-2CX10-0AA0**
red	**6ES7 392-2DX10-0AA0**
PC adapter USB A2 for connecting a PG/PC or notebook to PROFIBUS or MPI, USB cable included in scope of supply	**6GK1 571-0BA00-0AA0**
PROFIBUS DP bus connector RS 485	
• With 90° cable outlet, max. transfer rate 12 Mbit/s	
- Without PG interface	**6ES7 972-0BA12-0XA0**
- With PG interface	**6ES7 972-0BB12-0XA0**
• With 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbit/s	
- Without PG interface, 1 unit	**6ES7 972-0BA52-0XA0**
- Without PG interface, 100 units	**6ES7 972-0BA52-0XB0**
- With PG interface, 1 unit	**6ES7 972-0BB52-0XA0**
- With PG interface, 100 units	**6ES7 972-0BB52-0XB0**
• With axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS	**6GK1 500-0EA02**

	Order No.
PROFIBUS Fast Connect 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	**6XV1 830-0EH10**
RS 485 repeater for PROFIBUS Transmission rate up to 12 Mbit/s; 24 V DC; IP20 enclosure	**6ES7 972-0AA02-0XA0**
PROFIBUS bus components For establishing MPI/PROFIBUS communication	See catalogs IK PI, CA 01

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Overview

- Digital inputs
- For connecting standard switches and two-wire proximity switches

Technical specifications

	6ES7 321-1BH02-0AA0	6ES7 321-1BH50-0AA0	6ES7 321-1BL00-0AA0	6ES7 321-1BP00-0AA0	6ES7 321-1BH10-0AA0
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/binary inputs	16	16	32	64	16
Input characteristic curve acc. to 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 +5 V	-5 to +30 V	-30 to +5 V	-30 to +5 V	-30 to +5 V
• for signal "1"	13 to 30 V	-13 to -30 V	13 to 30 V	13 to 30 V	13 to 30 V
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					
• Cable length, shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
• Cable length unshielded, max.	600 m	600 m	600 m	600 m	600 m
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

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Technical specifications (continued)

	6ES7 321-1BH02-0AA0	6ES7 321-1BH50-0AA0	6ES7 321-1BL00-0AA0	6ES7 321-1BP00-0AA0	6ES7 321-1BH10-0AA0
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
Weight					
Weight, approx.	200 g	200 g	260 g	230 g; approx.	200 g

	6ES7 321-7BH01-0AB0	6ES7 321-1CH00-0AA0	6ES7 321-1CH20-0AA0	6ES7 321-1FH00-0AA0
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/binary inputs	16	16	16	16
Input characteristic curve acc. to IEC 61131, Type 1		Yes	Yes	Yes
Input characteristic curve acc. to 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 U_e 146 V	16
• vertical installation				
- up to 40 °C, max.	16	16	8	16

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Technical specifications (continued)

	6ES7 321-7BH01-0AB0	6ES7 321-1CH00-0AA0	6ES7 321-1CH20-0AA0	6ES7 321-1FH00-0AA0
Input voltage				
• Type of input voltage	DC	AC/DC	DC	AC
• Rated value, AC		24 V; AC 24 or 48 V		230 V; 120/230 V AC
• Rated value, DC	24 V	24 V; DC 24 or 48 V	48 V; 48 to 125 V DC	
• for signal "0"	-30 to +5 V	-5 to +5 V AC	-146 to +15 V DC	0 to 40 V
• for signal "1"	13 to 30 V	14 to 60 V AC	30 to 146 V DC	79 to 264 V
• Frequency range		0 to 63 Hz		47 to 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				
• Cable length, shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m
• Cable length 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
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
Weight				
Weight, approx.	200 g	260 g	200 g	240 g

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Technical specifications (continued)

	6ES7 321-1EL00-0AA0	6ES7 321-1FF01-0AA0	6ES7 321-1FF10-0AA0
Supply voltage			
Load voltage L1			
• Rated value (AC)	120 V	230 V; 120/230 V AC	230 V; 120/230 V AC; all load voltages must have the same phase.
Input current			
from backplane bus 5 V DC, max.	16 mA	29 mA	100 mA
Power losses			
Power loss, typ.	4 W	4.9 W	4.9 W
Digital inputs			
Number/binary inputs	32	8	8
Input characteristic curve acc. to IEC 61131, Type 1		Yes	Yes
Input characteristic curve acc. to 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
Input voltage			
• Type of input voltage	AC	AC	AC
• Rated value, AC	120 V	230 V; 120/230 V AC	120 V; 120/230 V AC
• for signal "0"	0 to 20 V	0 to 40 V	0 to 40 V
• for signal "1"	74 to 132 V	79 to 264 V	79 to 264 V
• Frequency range	47 to 63 Hz	47 to 63 Hz	47 to 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			
• Cable length, shielded, max.	1 000 m	1 000 m	1 000 m
• Cable length 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

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Technical specifications (continued)

	6ES7 321-1EL00-0AA0	6ES7 321-1FF01-0AA0	6ES7 321-1FF10-0AA0
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
Weight			
Weight, approx.	300 g	240 g	240 g

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SM 321 digital input modules

Ordering data	Order No.
SM 321 digital input modules	
incl. labeling strips, bus connector	
16 inputs, 24 V DC	**6ES7 321-1BH02-0AA0**
16 inputs, 24 V DC, active low	**6ES7 321-1BH50-0AA0**
32 inputs, 24 V DC	**6ES7 321-1BL00-0AA0**
64 inputs, 24 V DC, active high/low	**6ES7 321-1BP00-0AA0**
Note: 6ES7392-4...0-0AA0 connection cable and 6ES7392-1.N00-0AA0 terminal blocks necessary.	
16 inputs, 24 to 48 V DC	**6ES7 321-1CH00-0AA0**
16 inputs, 48 to 125 V DC	**6ES7 321-1CH20-0AA0**
16 inputs, 24 V DC, for isochronous mode	**6ES7 321-1BH10-0AA0**
32 inputs, 120 V AC	**6ES7 321-1EL00-0AA0**
8 inputs, 120/230 V AC	**6ES7 321-1FF01-0AA0**
8 inputs, 120/230 V AC, single root	**6ES7 321-1FF10-0AA0**
16 inputs, 120/230 V AC	**6ES7 321-1FH00-0AA0**
16 inputs, 24 V DC, for isochronous mode, diagnostics-capable	**6ES7 321-7BH01-0AB0**
Front connector	
20-pin, with screw contacts	
• 1 unit	**6ES7 392-1AJ00-0AA0**
• 100 units	**6ES7 392-1AJ00-1AB0**
20-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BJ00-0AA0**
• 100 units	**6ES7 392-1BJ00-1AB0**
40-pin, with screw contacts	
• 1 unit	**6ES7 392-1AM00-0AA0**
• 100 units	**6ES7 392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BM01-0AA0**
• 100 units	**6ES7 392-1BM01-1AB0**
S7-300 connecting cable	
for 64-channel modules; 2 units	
1 m	**6ES7 392-4BB00-0AA0**
2.5 m	**6ES7 392-4BC50-0AA0**
5 m	**6ES7 392-4BF00-0AA0**
Terminal block	
for 64-channel modules; 2 units	
with screw contacts	**6ES7 392-1AN00-0AA0**
with spring-loaded contacts	**6ES7 392-1BN00-0AA0**
Front door, elevated design	**6ES7 328-0AA00-7AA0**
e.g. for 32-channel modules; for connecting 1.3 mm^2/16 AWG conductors; circuit diagram and nameplates in petrol	

	Order No.
SIMATIC TOP connect	See page 5/224; for information about which components can be used for the respective module, see Industry Mall
Bus connectors	**6ES7 390-0AA00-0AA0**
1 unit (spare part)	
Labeling strips	
10 units (spare part)	
for modules with 20-pin front connector	**6ES7 392-2XX00-0AA0**
for modules with 40-pin front connector	**6ES7 392-2XX10-0AA0**
Label cover	
10 units (spare part)	
for modules with 20-pin front connector	**6ES7 392-2XY00-0AA0**
for modules with 40-pin front connector	**6ES7 392-2XY10-0AA0**
Labeling sheets for machine inscription	
for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
petrol	**6ES7 392-2AX00-0AA0**
light-beige	**6ES7 392-2BX00-0AA0**
yellow	**6ES7 392-2CX00-0AA0**
red	**6ES7 392-2DX00-0AA0**
for modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units	
petrol	**6ES7 392-2AX10-0AA0**
light-beige	**6ES7 392-2BX10-0AA0**
yellow	**6ES7 392-2CX10-0AA0**
red	**6ES7 392-2DX10-0AA0**
SIMATIC Manual Collection	**6ES7 998-8XC01-8YE0**
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	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	
S7-300 manual	
Design, CPU data, module data, instruction list	
German	**6ES7 398-8FA10-8AA0**
English	**6ES7 398-8FA10-8BA0**

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Overview

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

Technical specifications

	6ES7 322-1BH01-0AA0	6ES7 322-1BH10-0AA0	6ES7 322-1BL00-0AA0	6ES7 322-1BP00-0AA0	6ES7 322-1BP50-0AA0	6ES7 322-8BF00-0AB0
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/binary 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)
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
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

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Technical specifications (continued)

	6ES7 322-1BH01-0AA0	6ES7 322-1BH10-0AA0	6ES7 322-1BL00-0AA0	6ES7 322-1BP00-0AA0	6ES7 322-1BP50-0AA0	6ES7 322-8BF00-0AB0
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						
• Cable length, shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
• Cable length 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
Weight						
Weight, approx.	190 g	200 g	260 g	230 g	230 g	210 g

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Technical specifications (continued)

	6ES7 322-5GH00-0AB0	6ES7 322-1CF00-0AA0	6ES7 322-1BF01-0AA0	6ES7 322-1FF01-0AA0	6ES7 322-5FF00-0AB0	6ES7 322-1FH00-0AA0
Supply voltage						
Load voltage L+						
• Rated value (DC)	24 V; 24 / 48	48 V; 48 to 125 V DC	24 V			
Load voltage L1						
• Rated value (AC)				230 V; 120/230 V AC	230 V; 120/230 V AC	230 V; 120/230 V AC
Input current						
from 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/binary outputs	16	8	8	8	8	16
Limitation of inductive shutdown voltage to		M (-1 V)	L+ (-48 V)			
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
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						
• Cable length, shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
• Cable length unshielded, max.	600 m	600 m	600 m	600 m	600 m	600 m

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Technical specifications (continued)

	6ES7 322-5GH00-0AB0	6ES7 322-1CF00-0AA0	6ES7 322-1BF01-0AA0	6ES7 322-1FF01-0AA0	6ES7 322-5FF00-0AB0	6ES7 322-1FH00-0AA0
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
Weight						
Weight, approx.	260 g	250 g	190 g	275 g	275 g	275 g

	6ES7 322-1FL00-0AA0	6ES7 322-1HF01-0AA0	6ES7 322-1HF10-0AA0	6ES7 322-5HF00-0AB0	6ES7 322-1HH01-0AA0
Supply voltage					
Load voltage L+					
• Rated value (DC)		24 V	120 V	24 V	120 V
Load voltage L1					
• Rated value (AC)	120 V; 120/230 V AC		230 V	230 V	230 V
Input current					
from 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/binary outputs	32	8; Relay	8; Relay	8; Relay	16; Relay
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				

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Technical specifications (continued)

	6ES7 322-1FL00-0AA0	6ES7 322-1HF01-0AA0	6ES7 322-1HF10-0AA0	6ES7 322-5HF00-0AB0	6ES7 322-1HH01-0AA0
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
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)
- Switching frequency/contacts/at ohmic load/maximum		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					
• Cable length, shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
• Cable length 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 back-plane 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
Weight					
Weight, approx.	500 g	190 g	320 g	320 g	250 g

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SM 322 digital output modules

Ordering data	Order No.
SM 322 digital output modules	
incl. labeling strips, bus connector	
8 outputs, 24 V DC, 2 A	**6ES7 322-1BF01-0AA0**
16 outputs, 24 V DC, 0.5 A	**6ES7 322-1BH01-0AA0**
16 outputs, 24 V DC, 0.5 A, high speed	**6ES7 322-1BH10-0AA0**
32 outputs, 24 V DC, 0.5 A	**6ES7 322-1BL00-0AA0**
64 outputs, 24 V DC, 0.3 A	**6ES7 322-1BP00-0AA0**
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	**6ES7 322-1BP50-0AA0**
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	**6ES7 322-8BF00-0AB0**
16 outputs, 24/48 V DC, 0.5 A	**6ES7 322-5GH00-0AB0**
8 outputs, 48 to 125 V DC, 1.5 A	**6ES7 322-1CF00-0AA0**
8 outputs, 120/230 V AC, 1 A	**6ES7 322-1FF01-0AA0**
8 outputs, 120/230 V AC, 2 A	**6ES7 322-5FF00-0AB0**
16 outputs, 120/230 V AC, 1 A	**6ES7 322-1FH00-0AA0**
32 outputs, 120 V AC, 1 A	**6ES7 322-1FL00-0AA0**
8 outputs, relay contacts, 2 A	**6ES7 322-1HF01-0AA0**
8 outputs, relay contacts, 5 A	**6ES7 322-1HF10-0AA0**
8 outputs, relay contacts, 5 A, with RC filter, overvoltage protection	**6ES7 322-5HF00-0AB0**
16 outputs, relay contacts, 8 A	**6ES7 322-1HH01-0AA0**
Front connector	
20-pin, with screw contacts	
• 1 unit	**6ES7 392-1AJ00-0AA0**
• 100 units	**6ES7 392-1AJ00-1AB0**
20-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BJ00-0AA0**
• 100 units	**6ES7 392-1BJ00-1AB0**
40-pin, with screw contacts	
• 1 unit	**6ES7 392-1AM00-0AA0**
• 100 units	**6ES7 392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BM01-0AA0**
• 100 units	**6ES7 392-1BM01-1AB0**
S7-300 connecting cable	
for 64-channel modules; 2 units	
1 m	**6ES7 392-4BB00-0AA0**
2.5 m	**6ES7 392-4BC50-0AA0**
5 m	**6ES7 392-4BF00-0AA0**
Terminal block	
for 64-channel modules; 2 units	
with screw contacts	**6ES7 392-1AN00-0AA0**
with spring-loaded contacts	**6ES7 392-1BN00-0AA0**

	Order No.
Front door, elevated design	**6ES7 328-0AA00-7AA0**
e.g. for 32-channel modules; for connecting 1.3 mm^2/16 AWG conductors	
SIMATIC TOP connect	See page 5/224; for information about which components can be used for the respective module, see Industry Mall
Bus connectors	**6ES7 390-0AA00-0AA0**
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	**6ES7 973-1HD00-0AA0**
10 fuses 6.3 A; for 6ES7 322-1CF00-0AA0	**6ES7 973-1GC00-0AA0**
Labeling strips	
10 units (spare part)	
for modules with 20-pin front connector	**6ES7 392-2XX00-0AA0**
for modules with 40-pin front connector	**6ES7 392-2XX10-0AA0**
Label cover	
10 units (spare part)	
for modules with 20-pin front connector	**6ES7 392-2XY00-0AA0**
for modules with 40-pin front connector	**6ES7 392-2XY10-0AA0**
Labeling sheets for machine inscription	
for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
petrol	**6ES7 392-2AX00-0AA0**
light-beige	**6ES7 392-2BX00-0AA0**
yellow	**6ES7 392-2CX00-0AA0**
red	**6ES7 392-2DX00-0AA0**
for modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units	
petrol	**6ES7 392-2AX10-0AA0**
light-beige	**6ES7 392-2BX10-0AA0**
yellow	**6ES7 392-2CX10-0AA0**
red	**6ES7 392-2DX10-0AA0**
SIMATIC Manual Collection	**6ES7 998-8XC01-8YE0**
Electronic manuals on DVD, multilingual	
SIMATIC Manual Collection update service for 1 year	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	
S7-300 manual	
Design, CPU data, module data, instruction list	
German	**6ES7 398-8FA10-8AA0**
English	**6ES7 398-8FA10-8BA0**

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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

	6ES7 323-1BH01-0AA0	6ES7 323-1BL00-0AA0	6ES7 327-1BH00-0AB0
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/binary inputs	8	16	8; 8 hard-wired, 8 others individually parameterizable
Input characteristic curve acc. to 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 +5 V	-30 to +5 V	-30 to +5 V
• for signal "1"	13 to 30 V	13 to 30 V	15 to 30 V
Input current			
• for signal "1", typ.	7 mA	7 mA	6 mA
Input delay (for rated value of input voltage)			
• for standard inputs			
- at "0" to "1", min.	1.2 ms	1.2 ms	1.2 ms
- at "0" to "1", max.	4.8 ms	4.8 ms	4.8 ms
- 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			
• Cable length, shielded, max.	1 000 m	1 000 m	1 000 m
• Cable length unshielded, max.	600 m	600 m	600 m

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Technical specifications (continued)

	6ES7 323-1BH01-0AA0	6ES7 323-1BL00-0AA0	6ES7 327-1BH00-0AB0
Digital outputs			
Number/binary outputs	8	16	8; can also be parameterized individually as DI
Functionality/short-circuit strength	Yes; Electronic	Yes; Electronic	Yes; Electronic
• Response threshold, typ.	1 A	1 A	1 A
Limitation of inductive shutdown voltage to	L+ (-53 V)	L+ (-48 V)	L+ (-54 V)
Lamp load, max.	5 W	5 W	5 W
Controlling a digital input	Yes	Yes	Yes
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			
• Cable length, shielded, max.	1 000 m	1 000 m	1 000 m
• Cable length unshielded, max.	600 m	600 m	600 m
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

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Technical specifications (continued)

	6ES7 323-1BH01-0AA0	6ES7 323-1BL00-0AA0	6ES7 327-1BH00-0AB0
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	75 VDC / 60 VAC	75 VDC / 60 VAC	75 VDC / 60 VAC
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
Weight			
Weight, approx.	220 g	260 g	200 g

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SM 323/SM 327 digital input/output modules

Ordering data	Order No.
SM 323 digital input/output modules	
incl. labeling strips, bus connector	
8 inputs, 8 outputs	**6ES7 323-1BH01-0AA0**
16 inputs, 16 outputs	**6ES7 323-1BL00-0AA0**
SM 327 digital input/output modules	
incl. labeling strips, bus connector	
8 inputs, 8 inputs or outputs (can be configured)	**6ES7 327-1BH00-0AB0**
Front connector	
20-pin, with screw contacts	
• 1 unit	**6ES7 392-1AJ00-0AA0**
• 100 units	**6ES7 392-1AJ00-1AB0**
20-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BJ00-0AA0**
• 100 units	**6ES7 392-1BJ00-1AB0**
40-pin, with screw contacts	
• 1 unit	**6ES7 392-1AM00-0AA0**
• 100 units	**6ES7 392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BM01-0AA0**
• 100 units	**6ES7 392-1BM01-1AB0**
Front door, elevated design	**6ES7 328-0AA00-7AA0**
e.g. for 32 channel modules; enables connection of 1.3 mm^2/16 AWG wires	
SIMATIC TOP connect	See page 5/224; for information about which components can be used for the respective module, see Industry Mall
Bus connectors	**6ES7 390-0AA00-0AA0**
1 unit (spare part)	
Labeling strips	
10 units (spare part)	
for modules with 20-pin front connector	**6ES7 392-2XX00-0AA0**
for modules with 40-pin front connector	**6ES7 392-2XX10-0AA0**
Label cover	
10 units (spare part)	
for modules with 20-pin front connector	**6ES7 392-2XY00-0AA0**
for modules with 40-pin front connector	**6ES7 392-2XY10-0AA0**

	Order No.
Labeling sheets for machine inscription	
for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
petrol	**6ES7 392-2AX00-0AA0**
light-beige	**6ES7 392-2BX00-0AA0**
yellow	**6ES7 392-2CX00-0AA0**
red	**6ES7 392-2DX00-0AA0**
for modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units	
petrol	**6ES7 392-2AX10-0AA0**
light-beige	**6ES7 392-2BX10-0AA0**
yellow	**6ES7 392-2CX10-0AA0**
red	**6ES7 392-2DX10-0AA0**
SIMATIC Manual Collection	**6ES7 998-8XC01-8YE0**
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	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	
S7-300 manual	
Design, CPU data, module data, instruction list	
German	**6ES7 398-8FA10-8AA0**
English	**6ES7 398-8FA10-8BA0**

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Overview

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

Note:

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

SIPLUS SM 321	**16 DI 24 V DC 1 X 20-pin**	**32 DI 24 V DC 1 X 40-pin**	**16 DI 48-125 V DC 1 X 20-pin**
Order number	**6AG1 321-1BH02-2AA0**	**6AG1 321-1BL00-2AA0**	**6AG1 321-1CH20-2AA0**
Order No. based on	**6ES7 321-1BH02-0AA0**	**6ES7 321-1BL00-0AA0**	**6ES7 321-1CH20-0AA0**
Ambient temperature range	-40 ... +70 °C	-40 ... +70 °C	-25 ... +70 °C
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	Yes	Yes	Yes
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.		

SIPLUS SM 321	**8 DI 120/230 V AC 1 X 20-pin**	**8 DI 120/230 V AC 1 X 40-pin**	**16 DI 120/230 V AC 1 X 20-pin**
Order number	**6AG1 321-1FF01-2AA0**	**6AG1 321-1FF10-7AA0**	**6AG1 321-1FH00-7AA0**
Order No. based on	**6ES7 321-1FF01-0AA0**	**6ES7 321-1FF10-0AA0**	**6ES7 321-1FH00-0AA0**
Ambient temperature range	-40 ... +70 °C	-25 ... +70 °C	-40 ... +70 °C
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	Yes	No	No
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.		

SIPLUS SM 321	**16 DI 24 V DC 1 X 20-pin**	**16 DI 24 V DC, 1 X 20-pin (0-1 threshold)**	**16 DI 24 V DC DIAGNOSTICS**
Order number	**6AG1 321-7BH01-2AB0**	**6AG1 321-7BH01-4AS0**	**6AG1 321-7TH00-4AB0**
Order No. based on	**6ES7 321-7BH01-0AB0**	**6ES7 321-7BH01-0AB0**	**6ES7 321-7TH00-0AB0**
Ambient temperature range	- 25 ... +70 °C	0 ... +60 °C	0 ... +60 °C
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	Yes	No	No
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.		

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SIPLUS SM 321 digital input modules

Overview (continued)

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)	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

The technical documentation on SIPLUS can be found here:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS SM 321 digital input modules	
(extended temperature range and medial exposure)	
incl. labeling strips, bus connector	
16 inputs, 24 V DC	**6AG1 321-1BH02-2AA0**
32 inputs, 24 V DC	**6AG1 321-1BL00-2AA0**
16 inputs, 48 to 120 V DC	**6AG1 321-1CH20-2AA0**
8 inputs, 120/230 V AC	**6AG1 321-1FF01-2AA0**
8 inputs, 120/230 V AC, single root	**6AG1 321-1FF10-7AA0**
16 inputs, 120/230 V AC	**6AG1 321-1FH00-7AA0**
16 inputs, 24 V DC, diagnostics-capable	**6AG1 321-7BH01-2AB0**
16 inputs, 24 V DC (0-1 threshold)	**6AG1 321-7BH01-4AS0**
16 inputs, NAMUR, redundant design possible	**6AG1 321-7TH00-4AB0**
Accessories	See SIMATIC S7-300 digital input modules, page 5/54

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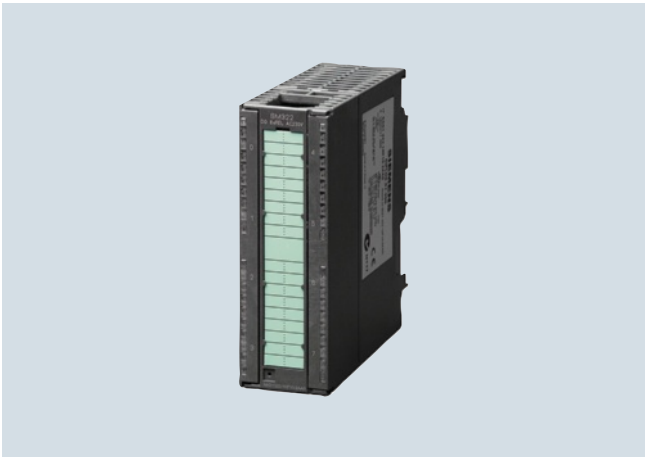
Overview



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

Note:

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

SIPLUS SM 322	**8 DO 24 V DC, 2 A, 1 X 20-pin**	**16 DO 24 V DC, 0.5 A, 1 X 20-pin**	**32 DO 24 V DC, 0.5 A, 1 X 40-pin**
Order number	**6AG1 322-1BF01-2XB0**	**6AG1 322-1BH01-2AA0**	**6AG1 322-1BL00-2AA0**
Order No. based on	**6ES7 322-1BF01-0AA0**	**6ES7 322-1BH01-0AA0**	**6ES7 322-1BL00-0AA0**
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	No	Yes	Yes
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.		

SIPLUS SM 322	**8 DO 48 - 125 V DC 1.5 A, 1 X 20 pin**	**8 DO 120/230 V AC 1 A, 1 X 20 pin**	**16 DO, 120/230 V AC 1 A, 1 X 20-pin**
Order number	**6AG1 322-1CF00-7AA0**	**6AG1 322-1FF01-7AA0**	**6AG1 322-1FH00-7AA0**
Order No. based on	**6ES7 322-1CF00-0AA0**	**6ES7 322-1FF01-0AA0**	**6ES7 322-1FH00-0AA0**
Ambient temperature range	-25 ... +70 °C	-40 ... +70 °C	-40 ... +70 °C
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	No	No	No
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.		

SIPLUS SM 322	**8 DO (relay) 24 V DC, 5 A/230 V AC 5 A, 1 X 40-pin**	**16 RO relay contacts, 1 X 20-pin**	**8 DO 120/230 V AC 2 A, 1 X 40 pin**
Order number	**6AG1 322-1HF10-2AA0**	**6AG1 322-1HH01-2AA0**	**6AG1 322-5FF 00-4AB0**
Order No. based on	**6ES7 322-1HF10-0AA0**	**6ES7 322-1HH01-0AA0**	**6ES7 322-5FF00-0AB0**
Ambient temperature range	-25 ... +60 °C	-40 ... +70 °C	0 ... +60 °C
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	Yes	Yes	No
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.		

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SIPLUS SM 322 digital output modules

Overview (continued)

SIPLUS SM 322	8 RO (relay), 24 V DC, 120 - 230 V AC, 5 A, 1 X 40 pin	8 DO 24 V DC, 0.5 A, short-circuit protection, diagnostics, 1 X 20-pin	16 DO 24 V DC, 0.5 A, diagnostics, wire-break detection 0/1 signal, 1 X 40-pin
Order number	**6AG1 322-5HF00-4AB0**	**6AG1 322-8BF00-2AB0**	**6AG1 322-8BH01-2AB0**
Order No. based on	**6ES7 322-5HF00-0AB0**	**6ES7 322-8BF00-0AB0**	**6ES7 322-8BH01-0AB0**
Ambient temperature range	0 ... +60 °C	-25 ... +70 °C	-25 ... +70 °C
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	No	Yes	No
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)	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

Ordering data

	Order No.
SIPLUS SM 322 digital output modules	
(extended temperature range and medial exposure)	
incl. labeling strips, bus connector	
8 outputs, 24 V DC, 2 A	**6AG1 322-1BF01-2XB0**
8 outputs, 24 V DC, 0.5 A, diagnostics-capable	**6AG1 322-8BF00-2AB0**
16 outputs, 24 V DC, 0.5 A	**6AG1 322-1BH01-2AA0**
32 outputs, 24 V DC, 0.5 A	**6AG1 322-1BL00-2AA0**
8 outputs, 48 to 125 V DC, 1.5 A	**6AG1 322-1CF00-7AA0**
8 outputs, relay contacts, 5 A	**6AG1 322-1HF10-2AA0**
8 outputs, relay contacts, 5 A, with RC filter, overvoltage protection	**6AG1 322-5HF00-4AB0**
8 outputs, 120/230 V AC, 1 A	**6AG1 322-1FF01-7AA0**
8 outputs, 120/230 V AC, 2 A	**6AG1 322-5FF00-4AB0**
16 outputs, 120/230 V AC, 1 A	**6AG1 322-1FH00-7AA0**
16 outputs, relay contacts, 8 A	**6AG1 322-1HH01-2AA0**
16 outputs, 24 V DC / 0.5 A, redundant design possible	**6AG1 322-8BH01-2AB0**
Accessories	See SIMATIC S7-300 digital output modules, page 5/60

The technical documentation on SIPLUS can be found here:
www.siemens.com/siplus-extreme

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SIPLUS 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 Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

SIPLUS SM 322	**8 DI/8 DO 24 V DC, 0.5 A Total current 2 A, 1 X 20-pin**
Order No.	**6AG1 323-1BH01-2AA0**
Order number based on	**6ES7 323-1BH01-0AA0**
Ambient temperature range	-40 ... +70 °C
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	Yes
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 (-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:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS SM 323 digital input/output module	
(extended temperature range and medial exposure)	
incl. labeling strips, bus connector	
8 inputs, 8 outputs	**6AG1 323-1BH01-2AA0**
Accessories	See SIMATIC S7-300 digital input/output modules, page 5/64

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SM 331 analog input modules

Overview

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

Technical specifications

	6ES7 331-7KF02-0AB0	6ES7 331-7HF01-0AB0	6ES7 331-1KF02-0AB0	6ES7 331-7KB02-0AB0
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.	200 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
Number of analog inputs 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 to 5 V	Yes	Yes	Yes	Yes
• 1 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 to +10 mA	Yes		No	Yes
• -20 to +20 mA	Yes	Yes	Yes	Yes
• -3.2 to +3.2 mA	Yes		No	Yes
• 4 to 20 mA	Yes	Yes	Yes	Yes

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Technical specifications (continued)

	6ES7 331-7KF02-0AB0	6ES7 331-7HF01-0AB0	6ES7 331-1KF02-0AB0	6ES7 331-7KB02-0AB0
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 thermometers				
• 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)				
• for thermocouples	Type E, J, K, L, N		No	Type E, J, K, L, N
• Temperature compensation				
- Parameterizable	Yes		No	Yes
- internal temperature compensation	Yes		No	Yes
- external temperature compensation with compensations socket	Yes		No	Yes
Resistance thermometer (RTD)				
• Characteristic linearization				
- 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)
Characteristic linearization				
• Parameterizable	Yes		Yes	Yes
Cable length				
• Cable length, shielded, max.	200 m; 50 m at 80 mV and thermocouples	200 m	200 m; max. 50 m at 50 mV	200 m; 50 m at 80 mV and thermocouples
Analog value creation				
Measurement principle	integrating	Actual value encryption	integrating	integrating
Integrations 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	400 / 60 / 50 / 10 Hz	400 / 60 / 50 / 10 Hz	50 / 60 Hz	400 / 60 / 50 / 10 Hz

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Technical specifications (continued)

	6ES7 331-7KF02-0AB0	6ES7 331-7HF01-0AB0	6ES7 331-1KF02-0AB0	6ES7 331-7KB02-0AB0
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 2-conductor connection	Yes		Yes	Yes
• for resistance measurement with 3-conductor connection	Yes		Yes	Yes
• for resistance measurement with 4-conductor connection	Yes		Yes	Yes
Errors/accuracies				
Operational limit in overall temperature range				
• Voltage, relative to input area	+/- 1 %; +/-1% (80 mV); +/-0.6% (250 to 1000 mV); +/-0.8% (2.5 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 to 1000 mV); +/-0.8% (2.5 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
• Impedance, 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-type 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 to 10 V); +/-0.4% (250 to 1000 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
• Impedance, 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-type 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)
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
Weight				
Weight, approx.	250 g	200 g	250 g	250 g

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Technical specifications (continued)

	6ES7 331-7PF01-0AB0	6ES7 331-7PF11-0AB0	6ES7 331-7PE10-0AB0	6ES7 331-7NF00-0AB0	6ES7 331-7NF10-0AB0
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
Number of analog inputs for resistance measurement	8				
permissible input voltage for voltage input (destruction limit), max.	75 V; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20)	75 V; 20 V DC permanent, 75 V DC for max. 1 s (duty factor 1:20)	35 V; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20)	50 V; Permanent	75 V; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20)
permissible input current for current input (destruction limit), max.				32 mA	40 mA
Input ranges (rated values), voltages					
• 0 to +10 V	No	No	No	No	No
• 1 to 5 V	No	No	No	Yes	Yes
• 1 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 to +10 mA	No	No	No	No	No
• -20 to +20 mA	No	No	No	Yes	Yes
• -3.2 to +3.2 mA	No	No	No	No	No
• 4 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		

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Technical specifications (continued)

	6ES7 331-7PF01-0AB0	6ES7 331-7PF11-0AB0	6ES7 331-7PE10-0AB0	6ES7 331-7NF00-0AB0	6ES7 331-7NF10-0AB0
Input ranges (rated values), resistance thermometers					
• Cu 10	Yes	No	No	No	No
• Ni 100	Yes	No	No	No	No
• Ni 1000	Yes	No	No	No	No
• LG-Ni 1000	Yes	No	No	No	No
• Ni 120	Yes	No	No	No	No
• Ni 200	Yes	No	No	No	No
• Ni 500	Yes	No	No	No	No
• Pt 100	Yes	No	No	No	No
• Pt 1000	Yes	No	No	No	No
• Pt 200	Yes	No	No	No	No
• Pt 500	Yes	No	No	No	No
Input ranges (rated values), resistors					
• 0 to 150 ohms	Yes	No	No	No	No
• 0 to 300 ohms	Yes	No	No	No	No
• 0 to 600 ohms	Yes	No	No	No	No
• 0 to 6000 ohms		No	No	No	No
Thermocouple (TC)					
• 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)		
• 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		
Resistance thermometer (RTD)					
• Characteristic linearization					
- for resistance thermometer	Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10; (standard/climate)		No		
Characteristic linearization					
• Parameterizable	Yes	Yes	Yes		
Cable length					
• Cable length, shielded, max.	200 m	100 m	200 m	200 m	200 m
Analog value creation					
Measurement principle	integrating	integrating	integrating	integrating	integrating
Integrations and conversion time/ esolution 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		400 / 60 / 50 / 10 Hz	400 / 60 / 50 Hz, combinations of 400, 60, 50 Hz

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Technical specifications (continued)

	6ES7 331-7PF01-0AB0	6ES7 331-7PF11-0AB0	6ES7 331-7PE10-0AB0	6ES7 331-7NF00-0AB0	6ES7 331-7NF10-0AB0
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 2-conductor connection	Yes; without resistance correction				
• for resistance measurement with 3-conductor connection	Yes				
• for resistance measurement with 4-conductor connection	Yes				
Errors/accuracies					
Operational limit in overall temperature range					
• Voltage, relative to input area		+/- 1 K	+/- 1 %/K	+/- 0,1 %; +/-0.7%	+/- 0,1 %
• Current, relative to input area				+/- 0,3 %; +/-0.9%	+/- 0,1 %
• Impedance, relative to input area	+/- 0,1 %				
• Resistance-type thermometer, relative to input area	+/- 1 K				
Basic error limit (operational limit at 25 °C)					
• Voltage, relative to input area				+/- 0,05 %	+/- 0,05 %
• Current, relative to input area				+/- 0,05 %	+/- 0,05 %
• Impedance, relative to input area	+/- 0,05 %				
• Resistance-type 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
Weight					
Weight, approx.	272 g	272 g	272 g	272 g	272 g

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SM 331 analog input modules

Ordering data	Order No.
SM 331 analog input modules	
Including labeling strips, bus connector, measuring range modules	
8 inputs, 13-bit resolution	**6ES7 331-1KF02-0AB0**
8 inputs, resolution 9/12/14 bits	**6ES7 331-7KF02-0AB0**
2 inputs, resolution 9/12/14 bits	**6ES7 331-7KB02-0AB0**
8 inputs, enhanced resolution 16 bits	**6ES7 331-7NF00-0AB0**
8 inputs, enhanced resolution 16 bits, 4-channel mode	**6ES7 331-7NF10-0AB0**
8 inputs, resolution 14 bits, for isochronous mode	**6ES7 331-7HF01-0AB0**
6 inputs, for thermal resistors, resolution 16 bits	**6ES7 331-7PE10-0AB0**
8 inputs, for thermal resistors	**6ES7 331-7PF01-0AB0**
8 inputs, for thermoelements	**6ES7 331-7PF11-0AB0**
Measuring range module for analog inputs	**6ES7 974-0AA00-0AA0**
1 module for 2 analog inputs; 2 units (spare part)	
Front connector	
20-pin, with screw contacts	
• 1 unit	**6ES7 392-1AJ00-0AA0**
• 100 units	**6ES7 392-1AJ00-1AB0**
20-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BJ00-0AA0**
• 100 units	**6ES7 392-1BJ00-1AB0**
40-pin, with screw contacts	
• 1 unit	**6ES7 392-1AM00-0AA0**
• 100 units	**6ES7 392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BM01-0AA0**
• 100 units	**6ES7 392-1BM01-1AB0**
Front door, elevated design	**6ES7 328-0AA00-7AA0**
e.g. for 32-channel modules; for connecting 1.3 mm^2/16 AWG wires	
SIMATIC TOP connect	See page 5/224; for information about which components can be used for the respective module, see Industry Mall
Bus connectors	**6ES7 390-0AA00-0AA0**
1 unit (spare part)	
Shield connecting element	**6ES7 390-5AA00-0AA0**
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	**6ES7 390-5AB00-0AA0**
For 1 cable with 3 mm to 8 mm diameter	**6ES7 390-5BA00-0AA0**
For 1 cable with 4 mm to 13 mm diameter	**6ES7 390-5CA00-0AA0**

	Order No.
Label cover	**6ES7 392-2XY00-0AA0**
10 units (spare part), for modules with 20-pin front connector	
Labeling strips	**6ES7 392-2XX00-0AA0**
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	**6ES7 392-2AX00-0AA0**
light-beige	**6ES7 392-2BX00-0AA0**
yellow	**6ES7 392-2CX00-0AA0**
red	**6ES7 392-2DX00-0AA0**
For modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units	
petrol	**6ES7 392-2AX10-0AA0**
light-beige	**6ES7 392-2BX10-0AA0**
yellow	**6ES7 392-2CX10-0AA0**
red	**6ES7 392-2DX10-0AA0**
SIMATIC Manual Collection	**6ES7 998-8XC01-8YE0**
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	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	
S7-300 manual	
Design, CPU data, module data, instruction list	
German	**6ES7 398-8FA10-8AA0**
English	**6ES7 398-8FA10-8BA0**

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Overview

- Analog outputs
- For the connection of analog actuators

Technical specifications

	6ES7 332-5HB01-0AB0	6ES7 332-5HD01-0AB0	6ES7 332-5HF00-0AB0	6ES7 332-7ND02-0AB0
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 to 5 V	Yes	Yes	Yes	Yes
• -10 to +10 V	Yes	Yes	Yes	Yes
Output ranges, current				
• 0 to 20 mA	Yes	Yes	Yes	Yes
• -20 to +20 mA	Yes	Yes	Yes	Yes
• 4 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				
• Cable length, shielded, max.	200 m	200 m	200 m	200 m

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Technical specifications (continued)

	6ES7 332-5HB01-0AB0	6ES7 332-5HD01-0AB0	6ES7 332-5HF00-0AB0	6ES7 332-7ND02-0AB0
Analog value creation				
Integrations 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
Weight				
Weight, approx.	220 g	220 g	272 g	220 g

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Ordering data	Order No.
SM 332 analog output modules	
incl. labeling strips, bus connector	
4 outputs, 11/12 bit	**6ES7 332-5HD01-0AB0**
4 outputs, 16 bit	**6ES7 332-7ND02-0AB0**
2 outputs, 11/12 bit	**6ES7 332-5HB01-0AB0**
8 outputs, 11/12 bit	**6ES7 332-5HF00-0AB0**
Front connector	
20-pin, with screw contacts	
• 1 unit	**6ES7 392-1AJ00-0AA0**
• 100 units	**6ES7 392-1AJ00-1AB0**
20-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BJ00-0AA0**
• 100 units	**6ES7 392-1BJ00-1AB0**
40-pin, with screw contacts	
• 1 unit	**6ES7 392-1AM00-0AA0**
• 100 units	**6ES7 392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BM01-0AA0**
• 100 units	**6ES7 392-1BM01-1AB0**
Front door, elevated design	**6ES7 328-0AA00-7AA0**
e.g. for 32-channel modules; for connecting 1.3 mm^2/16 AWG wires	
SIMATIC TOP connect	See page 5/224; for information about which components can be used for the respective module, see Industry Mall
Bus connectors	
1 unit (spare part)	**6ES7 390-0AA00-0AA0**
Shield connecting element	**6ES7 390-5AA00-0AA0**
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	**6ES7 390-5AB00-0AA0**
for 1 cable with 3 mm to 8 mm diameter	**6ES7 390-5BA00-0AA0**
for 1 cable with 4 mm to 13 mm diameter	**6ES7 390-5CA00-0AA0**
Label cover	**6ES7 392-2XY00-0AA0**
10 units (spare part), for modules with 20-pin front connector	
Labeling strips	**6ES7 392-2XX00-0AA0**
10 units (spare part), for modules with 20-pin front connector	

	Order No.
Labeling sheets for machine labeling	
for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
petrol	**6ES7 392-2AX00-0AA0**
light-beige	**6ES7 392-2BX00-0AA0**
yellow	**6ES7 392-2CX00-0AA0**
red	**6ES7 392-2DX00-0AA0**
for modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units	
petrol	**6ES7 392-2AX10-0AA0**
light-beige	**6ES7 392-2BX10-0AA0**
yellow	**6ES7 392-2CX10-0AA0**
red	**6ES7 392-2DX10-0AA0**
SIMATIC Manual Collection	**6ES7 998-8XC01-8YE0**
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	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	
S7-300 manual	
Design, CPU data, module data, instruction list	
German	**6ES7 398-8FA10-8AA0**
English	**6ES7 398-8FA10-8BA0**

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SM 334 analog input/output modules

Overview

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

Technical specifications

	6ES7 334-0CE01-0AA0	6ES7 334-0KE00-0AB0
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
Number of analog inputs for voltage measurement	4	2
Number of analog inputs 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 thermometers		
• Pt 100		Yes; only climatic range
Input ranges (rated values), resistors		
• 0 to 10000 ohms		Yes
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	

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Technical specifications (continued)

	6ES7 334-0CE01-0AA0	6ES7 334-0KE00-0AB0
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		
• Cable length, shielded, max.	200 m	100 m
Analog value creation		
Integrations 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 2-conductor connection		Yes
• for resistance measurement with 3-conductor connection		Yes
• for resistance measurement with 4-conductor connection		Yes
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 %	
• Impedance, relative to input area		+/- 3,5 %; 10 kOhm
• Resistance-type 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 %	
• Impedance, relative to input area		+/- 2,8 %; 10 kOhm
• Resistance-type 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

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Technical specifications (continued)

	6ES7 334-0CE01-0AA0	6ES7 334-0KE00-0AB0
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
Weight		
Weight, approx.	285 g	200 g

5

Ordering data

	Order No.
SM 334 analog input/output modules	
incl. labeling strips, bus connector	
4 inputs, 2 outputs	**6ES7 334-0CE01-0AA0**
4 inputs, 2 outputs, resistance measurement, Pt 100	**6ES7 334-0KE00-0AB0**
Front connector	
20-pin, with screw contacts	
• 1 unit	**6ES7 392-1AJ00-0AA0**
• 100 units	**6ES7 392-1AJ00-1AB0**
20-pin, with spring-loaded terminals	
• 1 unit	**6ES7 392-1BJ00-0AA0**
• 100 units	**6ES7 392-1BJ00-1AB0**
Front door, elevated design	**6ES7 328-0AA00-7AA0**
e.g. for 32-channel modules; for connecting 1.3 mm^2/16 AWG wires	
SIMATIC TOP connect	See page 5/224; for information about which components can be used for the respective module, see Industry Mall
Bus connectors	**6ES7 390-0AA00-0AA0**
1 unit (spare part)	
Shield connecting element	**6ES7 390-5AA00-0AA0**
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	**6ES7 390-5AB00-0AA0**
for 1 cable with 3 mm to 8 mm diameter	**6ES7 390-5BA00-0AA0**
for 1 cable with 4 mm to 13 mm diameter	**6ES7 390-5CA00-0AA0**
Label cover	**6ES7 392-2XY00-0AA0**
10 units (spare part), for modules with 20-pin front connector	

	Order No.
Labeling strips	**6ES7 392-2XX00-0AA0**
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	**6ES7 392-2AX00-0AA0**
light-beige	**6ES7 392-2BX00-0AA0**
yellow	**6ES7 392-2CX00-0AA0**
red	**6ES7 392-2DX00-0AA0**
SIMATIC Manual Collection	**6ES7 998-8XC01-8YE0**
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	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	
S7-300 manual	
Design, CPU data, module data, instruction list	
German	**6ES7 398-8FA10-8AA0**
English	**6ES7 398-8FA10-8BA0**

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Overview

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

Note:

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

SIPLUS SM 331	**8 AI, 1 X 40-pin**	**8 AI, 1 X 40-pin**	**2 AI, 1 X 20-pin**
Order number	**6AG1 331-1KF02-4AB0**	**6AG1 331-1KF02-7AB0**	**6AG1 331-7KB02-2AB0**
Order No. based on	**6ES7 331-1KF02-0AB0**	**6ES7 331-1KF02-0AB0**	**6ES7 331-7KB02-0AB0**
Ambient temperature range	0 ... +60 °C	-25 ... +70 °C	-25 ... +70 °C
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	No	No	No
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.		

SIPLUS SM 331	**8 AI, 1 X 20-pin**	**8 AI, 1 X 40-pin**	**8 AI, 1 X 40-pin**
Order number	**6AG1 331-7KF02-2AB0**	**6AG1 331-7NF00-2AB0**	**6AG1 331-7NF10-2AB0**
Order No. based on	**6ES7 331-7KF02-0AB0**	**6ES7 331-7NF00-0AB0**	**6ES7 331-7NF10-0AB0**
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +60 °C
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	Yes	Yes	No
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.		

SIPLUS SM 331	**8 AI, 1 X 40-pin**	**8 AI, 1 X 40-pin**
Order number	**6AG1 331-7PF01-4AB0**	**6AG1 331-7PF11-4AB0**
Order No. based on	**6ES7 331-7PF01-0AB0**	**6ES7 331-7PF11-0AB0**
Ambient temperature range	0 ... +60 °C	0 ... +60 °C
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	No	No
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.	

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SIPLUS SM 331 analog input modules

Overview (continued)

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)	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:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS SM 331 analog input modules	
(extended temperature range and medial exposure)	
Including labeling strips, bus connector, measuring range modules	
8 inputs, resolution 13 bit; only medial exposure	**6AG1 331-1KF02-4AB0**
8 inputs, resolution 13 bit	**6AG1 331-1KF02-7AB0**
2 inputs, resolution 9/12/14 bit	**6AG1 331-7KB02-2AB0**
8 inputs, resolution 9/12/14 bit	**6AG1 331-7KF02-2AB0**
8 inputs, enhanced resolution 16 bit	**6AG1 331-7NF00-2AB0**
8 inputs, enhanced resolution 16 bit, 4-channel mode	**6AG1 331-7NF10-2AB0**
8 inputs, for thermal resistors	**6AG1 331-7PF01-4AB0**
8 inputs, for thermocouples	**6AG1 331-7PF11-4AB0**
Accessories	See SIMATIC S7-300 analog input modules, page 5/76

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Overview

- Analog outputs
- For connection of analog actuators

Note:

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

SIPLUS SM 332	**2 AO 1 X 20-pin**	**4 AO 1 X 20-pin**	**8 AO 1 X 40-pin**
Order number	**6AG1 332-5HB01-2AB0**	**6AG1 332-5HD01-7AB0**	**6AG1 332-5HF00-2AB0**
Order No. based on	**6ES7 332-5HB01-0AB0**	**6ES7 332-5HD01-0AB0**	**6ES7 332-5HF00-0AB0**
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	Yes	No	No
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.		

SIPLUS SM 332	**8 AO 1 X 40-pin**	**4 AO 1 X 20-pin**
Order number	**6AG1 332-5HF00-4AB0**	**6AG1332-7ND02-4AB0**
Order No. based on	**6ES7 332-5HF00-0AB0**	**6ES7 332-7ND02-0AB0**
Ambient temperature range	0 ... +60 °C	0 ... +60 °C
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	No	No
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.	

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SIPLUS SM 332 analog output modules

Overview (continued)

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)	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:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS SM 332 analog output modules	
(extended temperature range and medial exposure)	
incl. labeling strips, bus connector	
4 outputs, 11/12 bit	**6AG1 332-5HD01-7AB0**
4 outputs, 16 bit; only medial exposure	**6AG1 332-7ND02-4AB0**
2 outputs, 11/12 bit	**6AG1 332-5HB01-2AB0**
8 outputs, 11/12 bit	**6AG1 332-5HF00-2AB0**
8 outputs, 11/12 bit; only medial exposure	**6AG1 332-5HF00-4AB0**
Accessories	See SIMATIC S7-300 analog output modules, page 5/79

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SIPLUS SM 334 analog input/output modules

Overview

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

Note:

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

SIPLUS SM 334	**2 AO**
Order number	**6AG1 334-0KE00-7AB0**
Order No. based on	**6ES7 334-0KE00-0AB0**
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.
Compliant with the standards for electronic equipment used on railway 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 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)	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:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS SM 334 analog input/output modules	
(extended temperature range and medial exposure)	
incl. labeling strips, bus connector	
4 inputs, 2 outputs, resistance measurement, Pt 100	**6AG1 334-0KE00-7AB0**
Accessories	See SIMATIC S7-300 analog input/output modules, page 5/82

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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

5

Technical specifications

	6ES7 326-1RF00-0AB0	6ES7 326-1BK02-0AB0
Supply voltage		
Rated value (DC)	24 V	24 V
Input current		
from load voltage L+ (without load), max.	160 mA	450 mA
from backplane bus 5 V DC, max.	90 mA	100 mA
Encoder supply		
Number of outputs	8	4; Isolated
Output voltage	8.2 V DC	
Output current, rated value		400 mA
Power losses		
Power loss, typ.	4.5 W	10 W
Digital inputs		
Number/binary inputs	8; 8 (one-channel); 4 (two-channel)	24
Number of simultaneously controllable inputs		
• all mounting positions		
- up to 40 °C, max.	8; vertical setup	24
- up to 60 °C, max.	8; horizontal set up	24; (at 24 V) or 18 (at 28.8 V)
Input voltage		
• Type of input voltage	DC	
• Rated value, DC	in accordance with DIN 19234 or NAMUR	24 V
• for signal "0"		-30 to +5 V
• for signal "1"		11 to 30 V
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		
• Cable length, shielded, max.	200 m	200 m
• Cable length unshielded, max.	100 m	100 m

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Technical specifications (continued)

	6ES7 326-1RF00-0AB0	6ES7 326-1BK02-0AB0
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	Yes
Diagnostic messages		
• Diagnostic information readable	Yes	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.	60 V DC/30 V 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 back-plane bus	Yes	Yes
Isolation		
Isolation checked with	500 V DC	500 V DC / 350 V AC
Standards, approvals, certificates		
Highest safety class achievable in safety mode		
• acc. to DIN VDE 0801	AK 4 (one channel), AK 5 und 6 (two channel)	AK 6
• acc. to EN 954	4	
• acc. 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	40-pin	40-pin
Dimensions		
Width	80 mm	80 mm
Height	125 mm	125 mm
Depth	120 mm	120 mm
Weight		
Weight, approx.	482 g	442 g

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SM 326 F digital input modules - Safety Integrated

Ordering data	Order No.
SM 326 F digital input module	
24 inputs, 24 V DC	**6ES7 326-1BK02-0AB0**
8 inputs, 24 V DC, NAMUR	**6ES7 326-1RF00-0AB0**
S7 Distributed Safety V5.4 programming tool Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, ET 200S Requirement: STEP 7 V5.3 SP3 and higher	
Floating License	**6ES7 833-1FC02-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7 833-1FC02-0YH5**
S7 Distributed Safety upgrade	
From V5.x to V5.4; Floating license for 1 user	**6ES7 833-1FC02-0YE5**
STEP 7 Safety Advanced V11 Task: Engineering tool 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 Professional V11 SP1	
Floating license for 1 user	**6ES7 833-1FA11-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7 833-1FA11-0YH5**
STEP 7 Safety Advanced Upgrade	
Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V11 for parallel use; incl. software on CD; Combo License for 1 user	**6ES7 833-1FA11-0YE5**
Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V11 for parallel use; includes software on CD; combo license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7 833-1FA11-0YK5**
DIN rail for active bus modules	
For max. 5 active bus modules for hot swapping function	
• 483 mm (19") long	**6ES7 195-1GA00-0XA0**
• 530 mm long	**6ES7 195-1GF30-0XA0**
• 620 mm long	**6ES7 195-1GG30-0XA0**
• 2000 mm long	**6ES7 195-1GC00-0XA0**

	Order No.
Active bus module BM 1 x 80 for 1 module with 80 mm width	**6ES7 195-7HC00-0XA0**
SITOP power supply module For ET 200M; 120/230 V AC, 24 V DC, 5 A; Type PS 307-1E	**6ES7 307-1EA01-0AA0**
Front connectors	
40-pin, with screw contacts	
• 1 unit	**6ES7 392-1AM00-0AA0**
• 100 units	**6ES7 392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BM01-0AA0**
• 100 units	**6ES7 392-1BM01-1AB0**
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	**6ES7 328-7AA10-0AA0**
Labeling strips For fail-safe modules (spare part); 10 units	**6ES7 392-2XX20-0AA0**
Label cover For fail-safe modules (spare part); 10 units	**6ES7 392-2XY20-0AA0**
LK 393 cable guide For F modules; L+ and M connections; 5 units	**6ES7 393-4AA10-0AA0**
S7-300 manual Design, CPU data, module data, instruction list	
German	**6ES7 398-8FA10-8AA0**
English	**6ES7 398-8FA10-8BA0**
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	**6ES7 998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	**6ES7 998-8XC01-8YE2**

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

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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

	6ES7 326-2BF10-0AB0	6ES7 326-2BF41-0AB0
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/binary outputs	10	8
Functionality/short-circuit strength	Yes; Electronic	Yes; Electronic
Limitation of inductive shutdown voltage to		L+ (-33 V)
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
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		
• Cable length, shielded, max.	1 000 m	200 m; 200 m for SIL3, AK 6, Cat 4
• Cable length unshielded, max.	600 m	200 m

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Technical specifications (continued)

	6ES7 326-2BF10-0AB0	6ES7 326-2BF41-0AB0
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	370 V for 1 min	500 V DC / 350 V AC
Standards, approvals, certificates		
Highest safety class achievable in safety mode		
• acc. to DIN VDE 0801	AK 5 and 6	
• acc. to IEC 61508	SIL 3	SIL 3
Connection method		
required front connector	40-pin	40-pin
Dimensions		
Width	40 mm	80 mm
Height	125 mm	125 mm
Depth	120 mm	120 mm
Weight		
Weight, approx.	330 g	465 g

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Ordering data	Order No.
SM 326 F digital output module	
10 outputs, 24 V DC, 2 A PP; width 40 mm	**6ES7 326-2BF10-0AB0**
8 outputs, 24 V DC, 2 A PM; width 80 mm	**6ES7 326-2BF41-0AB0**
S7 Distributed Safety V5.4 programming tool	
Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, ET 200S Requirement: STEP 7 V5.3 SP3 and higher	
Floating License	**6ES7 833-1FC02-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7 833-1FC02-0YH5**
S7 Distributed Safety upgrade	
From V5.x to V5.4; Floating license for 1 user	**6ES7 833-1FC02-0YE5**
STEP 7 Safety Advanced V11	
Task: Engineering tool 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 Professional V11 SP1	
Floating license for 1 user	**6ES7 833-1FA11-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7 833-1FA11-0YH5**
STEP 7 Safety Advanced Upgrade	
Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V11 for parallel use; incl. software on CD; Combo License for 1 user	**6ES7 833-1FA11-0YE5**
Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V11 for parallel use; includes software on CD; combo license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7 833-1FA11-0YK5**
DIN rail for active bus modules	
For max. 5 active bus modules, for function "Insertion and removal"	
• 483 mm (19") long	**6ES7 195-1GA00-0XA0**
• 530 mm long	**6ES7 195-1GF30-0XA0**
• 620 mm long	**6ES7 195-1GG30-0XA0**
• 2000 mm long	**6ES7 195-1GC00-0XA0**
Active bus modules	
BM 2 x 40 for accepting 2 IO modules each 40 mm wide	**6ES7 195-7HB00-0XA0**
BM 1 x 80 for accepting 1 IO module 80 mm wide	**6ES7 195-7HC00-0XA0**

	Order No.
SITOP power supply module	**6ES7 307-1EA01-0AA0**
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	**6ES7 392-1AM00-0AA0**
• 100 units	**6ES7 392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BM01-0AA0**
• 100 units	**6ES7 392-1BM01-1AB0**
Front door, higher version, for F-modules	**6ES7 328-7AA10-0AA0**
For F-modules; for connecting 1.3 mm^2/16 AWG wires; wiring diagram and labels in yellow	
Labeling strips	**6ES7 392-2XX20-0AA0**
For fail-safe modules (spare part), 10 units	
Label cover	**6ES7 392-2XY20-0AA0**
For fail-safe modules (spare part), 10 units	
LK 393 cable guide	**6ES7 393-4AA10-0AA0**
For F modules; L+ and M connections, 5 units	
S7-300 manual	
Design, CPU data, module data, instruction list	
German	**6ES7 398-8FA10-8AA0**
English	**6ES7 398-8FA10-8BA0**
SIMATIC Manual Collection	**6ES7 998-8XC01-8YE0**
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	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	

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

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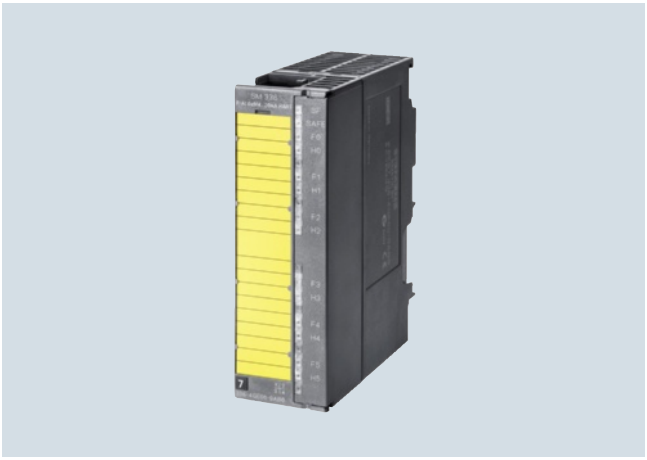
SM 336 F analog input modules - Safety Integrated

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

Technical specifications

Order No.	6ES7 336-4GE00-0AB0
Product-type designation	**SM 336 F-AI 6x0/4 to 20 mA HART**
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 to 20 mA	Yes
Cable length	
• Cable length, shielded, max.	1 000 m
Analog value creation	
Integrations 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

Order No.	6ES7 336-4GE00-0AB0
Product-type designation	**SM 336 F-AI 6x0/4 to 20 mA 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	370 V for 1 min
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
• acc. to DIN V 19250	old
• acc. to EN 954	4
• acc. to IEC 61508	SIL 3
Connection method	
required front connector	20-pin
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weight	
Weight, approx.	350 g

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Ordering data	Order No.
SM 336 F analog input module	
6 inputs, 15 bit, 0/4 - 20 mA HART	**6ES7 336-4GE00-0AB0**
S7 Distributed Safety V5.4 programming tool	
Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, ET 200S Requirement: STEP 7 V5.3 SP3 and higher	
Floating License	**6ES7 833-1FC02-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7 833-1FC02-0YH5**
S7 Distributed Safety upgrade	
From V5.x to V5.4; Floating license for 1 user	**6ES7 833-1FC02-0YE5**
STEP 7 Safety Advanced V11	
Task: Engineering tool 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 Professional V11 SP1	
Floating license for 1 user	**6ES7 833-1FA11-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7 833-1FA11-0YH5**
STEP 7 Safety Advanced Upgrade	
Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V11 for parallel use; incl. software on CD; Combo License for 1 user	**6ES7 833-1FA11-0YE5**
Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V11 for parallel use; includes software on CD; combo license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7 833-1FA11-0YK5**
DIN rail for active bus modules	
For max. 5 active bus modules for hot swapping function	
• 483 mm long	**6ES7 195-1GA00-0XA0**
• 530 mm long	**6ES7 195-1GF30-0XA0**
• 620 mm long	**6ES7 195-1GG30-0XA0**
• 2000 mm long	**6ES7 195-1GC00-0XA0**
Active bus module BM 2x40	**6ES7 195-7HB00-0XA0**
Bus module for accepting 2 IO modules each 40 mm wide	

	Order No.
SITOP power supply module	**6ES7 307-1EA01-0AA0**
For ET 200M; 120/230 V AC, 24 V DC, 5 A; Type PS 307-1E	
Front connector	
20-pin, with screw contacts	
• 1 unit	**6ES7 392-1AJ00-0AA0**
• 100 units	**6ES7 392-1AJ00-1AB0**
20-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BJ00-0AA0**
• 100 units	**6ES7 392-1BJ00-1AB0**
Front door, higher version, for F-modules	**6ES7 328-7AA10-0AA0**
For F-modules; for connecting 1.3 mm^2/16 AWG wires; wiring diagram and labels in yellow	
Labeling strips	**6ES7 392-2XX20-0AA0**
For fail-safe modules (spare part), 10 units	
Label cover	**6ES7 392-2XY20-0AA0**
For fail-safe modules (spare part), 10 units	
LK 393 cable guide	**6ES7 393-4AA10-0AA0**
For F modules; L+ and M connections, 5 units	
S7-300 manual	
Design, CPU data, module data, instruction list	
German	**6ES7 398-8FA10-8AA0**
English	**6ES7 398-8FA10-8BA0**
SIMATIC Manual Collection	**6ES7 998-8XC01-8YE0**
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	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	

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

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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

	6ES7 195-7KF00-0XA0
Weight	
Weight, approx.	10 g

Ordering data

	Order No.
Isolation module for simultaneous operation of fail-safe and standard modules in an ET 200M	**6ES7 195-7KF00-0XA0**
Isolation bus module for accommodating the isolation module in an ET 200M	**6ES7 195-7HG00-0XA0**

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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 Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

SIPLUS SM 326 F digital input module			
Order No.	**6AG1 326-1BK02-2AB0**	**6AG1 326-1BK02-2AY0**	**6AG1 326-1RF00-4AB0**
Order number based on	**6ES7 326-1BK02-0AB0**	**6ES7 326-1BK02-0AB0**	**6AG1 326-1RF00-0AB0**
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.		
Compliant with the standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1)	No	Yes	No
Ambient conditions			
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.		

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

Ordering data

	Order No.
SIPLUS SM 326 F digital input	
(extended temperature range and medial exposure)	
24 inputs, 24 V DC	**6AG1 326-1BK02-2AB0**
24 inputs, 24 V DC (EN 50155 compliant)	**6AG1 326-1BK02-2AY0**
8 inputs, 24 V DC, NAMUR	**6AG1 326-1RF00-4AB0**
Accessories	See SIMATIC SM 326 F digital input, page 5/90

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SIPLUS SM 326 F digital output modules - Safety Integrated

Overview

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

Note:

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

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SIPLUS SM 326 F digital output module				
Order No.	**6AG1 326-2BF10-2AB0**	**6AG1 326-2BF10-2AY0**	**6AG1 326-2BF41-2AB0**	**6AG1 326-2BF41-2AY0**
Order No. based on	**6ES7 326-2BF10-0AB0**	**6ES7 326-2BF10-0AB0**	**6ES7 326-2BF41-0AB0**	**6ES7 326-2BF41-0AB0**
Ambient temperature range	-25 ... +60 °C, condensation permissible			
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			
Conforms with standards for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	No	Yes	No	Yes
Ambient conditions				
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.			

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

Ordering data

	Order No.
SIPLUS SM 326 F digital output module	
(extended temperature range and medial exposure)	
10 outputs, 24 V DC	**6AG1 326-2BF10-2AB0**
10 outputs, 24 V DC (according to EN 50155)	**6AG1 326-2BF10-2AY0**
8 outputs, 24 V DC, 2 A	**6AG1 326-2BF41-2AB0**
8 outputs, 24 V DC, 2 A (according to EN 50155)	**6AG1 326-2BF41-2AY0**

	Order No.
Accessories	
Active bus modules	
(extended temperature range and medial exposure)	
BM 2 x 40 for accepting 2 IO modules each 40 mm wide	**6AG1 195-7HB00-7XA0**
BM 1 x 80 for accepting 1 IO module 80 mm wide	**6AG1 195-7HC00-2XA0**
Further accessories	See SIMATIC SM 326 F digital output module, page 5/93

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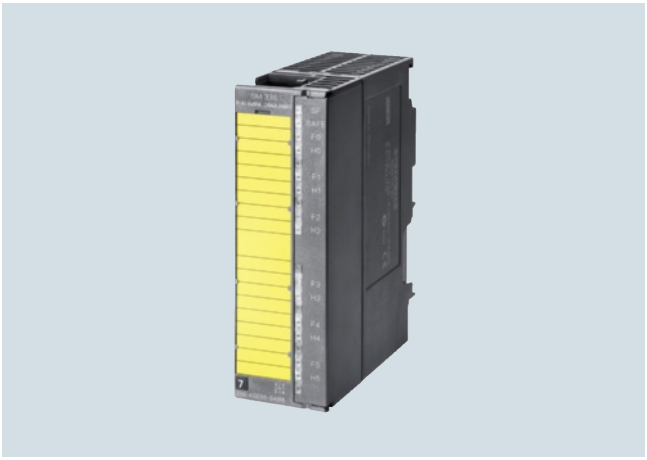
Overview



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

Note:

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

SIPLUS SM 336 F analog input module	
Order number	**6AG1 336-4GE00-4AB0**
Order No. based on	**6ES7 336-4GE00-0AB0**
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.

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

Ordering data	**Order No.**
SIPLUS SM 336 F analog input module	
(medial exposure)	
6 inputs, 15 bit, 0/4 - 20 mA HART	**6AG1 336-4GE00-4AB0**
Accessories	See SIMATIC SM 336 F analog input module, page 5/95

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Ex digital input modules

Overview

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

Technical specifications

	6ES7 321-7RD00-0AB0
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	
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	
• Cable length unshielded, max.	200 m

	6ES7 321-7RD00-0AB0
Encoder	
Connectable encoders	
• NAMUR encoder	Yes; Two-wire connection
Interrupts/diagnostics/status information	
Diagnostic messages	
• Diagnostic information readable	Yes
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
Connection method	
required front connector	20-pin
Weight	
Weight, approx.	230 g

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Ordering data

	Order No.
Ex digital input module	
4 inputs, isolated, NAMUR	**6ES7 321-7RD00-0AB0**
Front connector	
20-pin, with screw contacts	
• 1 unit	**6ES7 392-1AJ00-0AA0**
• 100 units	**6ES7 392-1AJ00-1AB0**
Front door, elevated design	
e.g. for 32 channel modules; enables connection of 1.3 mm^2/16 AWG wires	**6ES7 328-0AA00-7AA0**
LK 393 cable guide	**6ES7 393-4AA00-0AA0**
Mandatory for operation in Ex-hazard areas	
Labeling strips	**6ES7 392-2XX00-0AA0**
10 units (spare part), for modules with 20-pin front connector	
Label cover	**6ES7 392-2XY00-0AA0**
10 units (spare part), for modules with 20-pin front connector	

	Order No.
Labeling sheets for machine inscription	
for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
petrol	**6ES7 392-2AX00-0AA0**
light-beige	**6ES7 392-2BX00-0AA0**
yellow	**6ES7 392-2CX00-0AA0**
red	**6ES7 392-2DX00-0AA0**
SIMATIC Manual Collection	**6ES7 998-8XC01-8YE0**
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	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	

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Ex digital output modules

Overview

- Digital outputs for signals from the Ex field
- For the connection of intrinsically safe digital equipment from the Ex field
- 4 DO 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

	6ES7 322-5SD00-0AB0	6ES7 322-5RD00-0AB0
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/binary outputs	4	4
Functionality/short-circuit strength	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		
• 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(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

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Technical specifications (continued)

	6ES7 322-5SD00-0AB0	6ES7 322-5RD00-0AB0
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
Connection method		
required front connector	20-pin	20-pin
Weight		
Weight, approx.	230 g	230 g

Ordering data

	Order No.
Ex digital output modules	
4 outputs, isolated, 24 V DC, 10 mA	**6ES7 322-5SD00-0AB0**
4 outputs, isolated, 15 V DC, 20 mA	**6ES7 322-5RD00-0AB0**
Front connector	
20-pin, with screw contacts	
• 1 unit	**6ES7 392-1AJ00-0AA0**
• 100 units	**6ES7 392-1AJ00-1AB0**
Front door, elevated design	
e.g. for 32 channel modules; enables connection of 1.3 mm^2/16 AWG wires	**6ES7 328-0AA00-7AA0**
LK 393 cable guide	**6ES7 393-4AA00-0AA0**
Mandatory for operation in Ex-hazard areas	
Labeling strips	**6ES7 392-2XX00-0AA0**
10 units (spare part), for modules with 20-pin front connector	
Label cover	**6ES7 392-2XY00-0AA0**
10 units (spare part), for modules with 20-pin front connector	

	Order No.
Labeling sheets for machine inscription	
for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
petrol	**6ES7 392-2AX00-0AA0**
light-beige	**6ES7 392-2BX00-0AA0**
yellow	**6ES7 392-2CX00-0AA0**
red	**6ES7 392-2DX00-0AA0**
SIMATIC Manual Collection	**6ES7 998-8XC01-8YE0**
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SIMATIC Manual Collection update service for 1 year	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	

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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)

Technical specifications

	6ES7 331-7RD00-0AB0	6ES7 331-7SF00-0AB0
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 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
Input ranges (rated values), resistance thermometers		
• Ni 100		Yes
• Pt 100		Yes
• Pt 200		Yes
Cable length		
• Cable length, shielded, max.	200 m	200 m; TC: 50m

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Technical specifications (continued)

	6ES7 331-7RD00-0AB0	6ES7 331-7SF00-0AB0
Analog value creation		
Measurement principle	Sigma Delta	Sigma Delta
Integrations 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 to 100 ms	Yes; 2.5 to 100 ms
• Interference voltage suppression for interference frequency f1 in Hz	10 to 400 Hz	10 to 400 Hz
Encoder		
Connection of signal encoders		
• for current measurement as 2-wire transducer	Yes	Yes
• for current measurement as 4-wire transducer	Yes	Yes
Errors/accuracies		
Temperature error (relative to input area)		Temperature error: 0.001 to 0.002 %/K
Operational limit in overall temperature range		
• Current, relative to input area	+/- 0,45 %	
• Resistance-type 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-type 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
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

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Technical specifications (continued)

	6ES7 331-7RD00-0AB0	6ES7 331-7SF00-0AB0
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
Connection method		
required front connector	20-pin	20-pin
Weight		
Weight, approx.	290 g	210 g

Ordering data

	Order No.
Ex analog input modules	
4 inputs, isolated, 0/4 to 20 mA, 15 bit	**6ES7 331-7RD00-0AB0**
8/4 inputs, isolated, for thermocouples and Pt100, Pt200, Ni100	**6ES7 331-7SF00-0AB0**
Front connector	
20-pin, with screw contacts	
• 1 unit	**6ES7 392-1AJ00-0AA0**
• 100 units	**6ES7 392-1AJ00-1AB0**
Front door, elevated design	
e.g. for 32 channel modules; enables connection of 1.3 mm^2/16 AWG wires	**6ES7 328-0AA00-7AA0**
LK 393 cable guide	**6ES7 393-4AA00-0AA0**
Mandatory for operation in Ex-hazard areas	
Labeling strips	**6ES7 392-2XX00-0AA0**
10 units (spare part), for modules with 20-pin front connector	
Label cover	**6ES7 392-2XY00-0AA0**
10 units (spare part), for modules with 20-pin front connector	

	Order No.
Labeling sheets for machine inscription	
for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
petrol	**6ES7 392-2AX00-0AA0**
light-beige	**6ES7 392-2BX00-0AA0**
yellow	**6ES7 392-2CX00-0AA0**
red	**6ES7 392-2DX00-0AA0**
SIMATIC Manual Collection	**6ES7 998-8XC01-8YE0**
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	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	

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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

	6ES7 332-5RD00-0AB0
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 to 20 mA	Yes
Connection of actuators	
• for current output 2-conductor connection	Yes
Load impedance (in rated range of output)	
• with current outputs, max.	500 Ω
Cable length	
• Cable length, shielded, max.	200 m
Analog value creation	
Integrations 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 %

	6ES7 332-5RD00-0AB0
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
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
Connection method	
required front connector	20-pin
Weight	
Weight, approx.	280 g

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Ex analog output modules

Ordering data	Order No.
Ex analog output module	
4 outputs, isolated, 0/4 to 20 mA	**6ES7 332-5RD00-0AB0**
Front connector	
20-pin, with screw contacts	
• 1 unit	**6ES7 392-1AJ00-0AA0**
• 100 units	**6ES7 392-1AJ00-1AB0**
Front door, elevated design	
e.g. for 32 channel modules; enables connection of 1.3 mm^2/16 AWG wires	**6ES7 328-0AA00-7AA0**
LK 393 cable guide	**6ES7 393-4AA00-0AA0**
Mandatory for operation in Ex-hazard areas	
Labeling strips	**6ES7 392-2XX00-0AA0**
10 units (spare part), for modules with 20-pin front connector	
Label cover	**6ES7 392-2XY00-0AA0**
10 units (spare part), for modules with 20-pin front connector	

	Order No.
Labeling sheets for machine inscription	
for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
petrol	**6ES7 392-2AX00-0AA0**
light-beige	**6ES7 392-2BX00-0AA0**
yellow	**6ES7 392-2CX00-0AA0**
red	**6ES7 392-2DX00-0AA0**
SIMATIC Manual Collection	**6ES7 998-8XC01-8YE0**
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	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	

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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.

www.siemens.com/simatic-technology

Technical specifications

	6ES7 350-1AH03-0AE0
Supply voltage	
Aux. voltage 1L+, load voltage 2 L+	
• 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
Encoder supply	
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
Digital inputs	
Number/binary inputs	3
Functions	1 for gate start, 1 for gate stop, 1 for setting the counter
Input voltage	
• for signal "0"	-28.8 to +5 V
• for signal "1"	+11 to +28.8 V
Input current	
• for signal "1", typ.	9 mA

	6ES7 350-1AH03-0AE0
Digital outputs	
Number/binary outputs	2
Functionality/short-circuit strength	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
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 to +5 V
• Input voltage, for signal "1"	+11 to +28.8 V
• Input current, for signal "1", typ.	9 mA
• Counting frequency, max.	200 kHz
• Minimum pulse width	2.5 µs

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Technical specifications (continued)

	6ES7 350-1AH03-0AE0
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	75 VDC / 60 VAC

	6ES7 350-1AH03-0AE0
Isolation	
Isolation checked with	500 V
Connection method	
required front connector	1x 20-pin
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weight	
Weight, approx.	250 g

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Ordering data

	Order No.
FM 350-1 counter module	**6ES7 350-1AH03-0AE0**
with 1 channel, max. 500 kHz; for incremental encoder	
Coding plug - Range card for analog inputs	**6ES7 974-0AA00-0AA0**
Spare part	
Front connector	
20-pin, with screw contacts	
• 1 unit	**6ES7 392-1AJ00-0AA0**
• 100 units	**6ES7 392-1AJ00-1AB0**
20-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BJ00-0AA0**
• 100 units	**6ES7 392-1BJ00-1AB0**
Bus connectors	**6ES7 390-0AA00-0AA0**
1 unit (spare part)	
Labeling strips	**6ES7 392-2XX00-0AA0**
10 units (spare part)	
Labeling sheets for machine inscription	See under "Accessories", page 5/248
Slot number label	**6ES7 912-0AA00-0AA0**
Spare part	
Shield connection element	**6ES7 390-5AA00-0AA0**
80 mm wide, with 2 rows for 4 terminals each	
Terminal elements	
2 units	
For 2 cables with 2 mm to 6 mm diameter	**6ES7 390-5AB00-0AA0**
For 1 cable with 3 mm to 8 mm diameter	**6ES7 390-5BA00-0AA0**
For 1 cable with 4 mm to 13 mm diameter	**6ES7 390-5CA00-0AA0**

	Order No.
Connectable incremental encoders 6FX2 001-2...	Refer to the Industry Mall under SIMODRIVE Sensor or Motion Connect 500 (see also www.siemens.com/simatic-technology)
Signal cable	
Pre-assembled for HTL and TTL encoder, without sub D connector, UL/DESINA	**6FX5 002-2CA12-** ■ ■ ■ **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**

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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.

www.siemens.com/simatic-technology

Technical specifications

	6ES7 350-2AH01-0AE0
Supply voltage	
Aux. voltage 1L+, load voltage 2 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.	150 mA
from backplane bus 5 V DC, max.	100 mA
Encoder supply	
Output voltage	NAMUR-encoder supply: 8.2 V +/-2%
Output current, rated value	200 mA
Output current	
• Short-circuit protection	Yes
Power losses	
Power loss, typ.	10 W
Digital inputs	
Number/binary inputs	8
Functions	1 each for gate start/ gate stop
Input voltage	
• for signal "0"	-3 to +5 V
• 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	
• Cable length, shielded, max.	100 m

	6ES7 350-2AH01-0AE0
Digital outputs	
Number/binary outputs	8
Functionality/short-circuit strength	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	
• Cable length, shielded, max.	600 m
• Cable length unshielded, max.	100 m
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

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Technical specifications (continued)

	6ES7 350-2AH01-0AE0
Interrupts/diagnostics/status information	
Alarms	
• Diagnostic alarm	Yes; Parameterizable
• Hardware interrupt	Yes; Parameterizable
Diagnostic messages	
• Diagnostic functions	Yes; Diagnostic information readable
Counter	
Counter input 24 V	
• Number	8; 32 bit or +/-31 bit
• Input voltage, for signal "0"	-3 to +5 V
• 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

	6ES7 350-2AH01-0AE0
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
Weight	
Weight, approx.	460 g

Ordering data

	Order No.
FM 350-2 counter module	**6ES7 350-2AH01-0AE0**
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	**6ES7 392-1AM00-0AA0**
• 100 units	**6ES7 392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BM01-0AA0**
• 100 units	**6ES7 392-1BM01-1AB0**
Bus connectors	**6ES7 390-0AA00-0AA0**
1 unit (spare part)	
Labeling strips	**6ES7 392-2XX10-0AA0**
10 units (spare part)	
Labeling sheets for machine inscription	See under "Accessories", page 5/248
Slot number label	**6ES7 912-0AA00-0AA0**
Spare part	
Shield connection element	**6ES7 390-5AA00-0AA0**
80 mm wide, with 2 rows for 4 terminals each	
Terminal elements	
2 units	
For 2 cables with 2 mm to 6 mm diameter	**6ES7 390-5AB00-0AA0**
For 1 cable with 3 mm to 8 mm diameter	**6ES7 390-5BA00-0AA0**
For 1 cable with 4 mm to 13 mm diameter	**6ES7 390-5CA00-0AA0**

	Order No.
Signal cable	
Pre-assembled for HTL and TTL encoder, without sub D connector, UL/DESINA	**6FX5 002-2CA12-** ■ ■ ■ **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**

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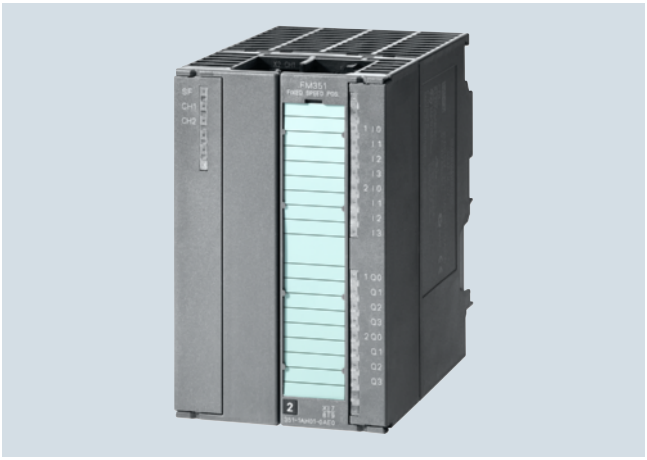
Overview



- 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.

www.siemens.com/simatic-technology

Technical specifications

	6ES7 351-1AH02-0AE0
Supply voltage	
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
Digital inputs	
Number/binary 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 +5 V
• for signal "1"	11 to 30 V
Input current	
• for 2-wire sensor	
- for signal "0", typ.	2 mA
- for signal "1", typ.	6 mA

	6ES7 351-1AH02-0AE0
Digital outputs	
Number/binary outputs	8
Functions	Rapid traverse, creep, run right, run left
Functionality/short-circuit strength	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
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

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Technical specifications (continued)

	6ES7 351-1AH02-0AE0
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

	6ES7 351-1AH02-0AE0
Dimensions	
Width	80 mm
Height	125 mm
Depth	120 mm
Weight	
Weight, approx.	550 g

Ordering data

FM 351 positioning module	**6ES7 351-1AH02-0AE0**
For rapid traverse and creep speed drives	
Front connector	
20-pin, with screw contacts	
• 1 unit	**6ES7 392-1AJ00-0AA0**
• 100 units	**6ES7 392-1AJ00-1AB0**
20-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BJ00-0AA0**
• 100 units	**6ES7 392-1BJ00-1AB0**
Bus connectors	**6ES7 390-0AA00-0AA0**
1 unit (spare part)	
Labeling strips	**6ES7 392-2XX00-0AA0**
10 units (spare part)	
Slot number label	**6ES7 912-0AA00-0AA0**
Labeling sheets for machine inscription	See under "Accessories", page 5/248
Spare part	
Shield connection element	**6ES7 390-5AA00-0AA0**
80 mm wide, with 2 rows for 4 terminals each	
Terminal elements	
2 units	
For 2 cables with 2 mm to 6 mm diameter	**6ES7 390-5AB00-0AA0**
For 1 cable with 3 mm to 8 mm diameter	**6ES7 390-5BA00-0AA0**
For 1 cable with 4 mm to 13 mm diameter	**6ES7 390-5CA00-0AA0**

Signal cables										
Pre-assembled for HTL encoder, UL/DESINA	**6FX5 0**	■	**2-2AL00-**	■	■	■	■			
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-**	■	■	■	■			
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**			

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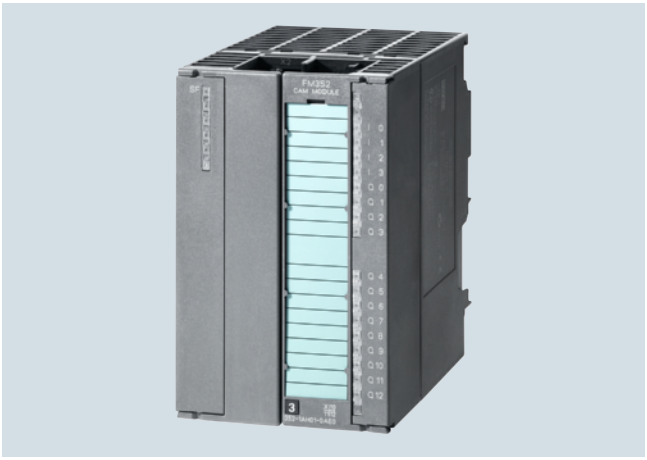
Overview



- 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.

www.siemens.com/simatic-technology

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Technical specifications

	6ES7 352-1AH02-0AE0
Supply voltage	
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/binary inputs	4
Functions	Reference point switch, set floating actual value/length measurement, brake release, enable track output no. 3
Input voltage	
• Rated value, DC	24 V
• for signal "0"	-30 to +5 V
• for signal "1"	11 to 30 V
Input current	
• for 2-wire sensor	
- for signal "0", typ.	2 mA
- for signal "1", typ.	7 mA
Digital outputs	
Number/binary outputs	13
Functions	Cam track
Functionality/short-circuit strength	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

	6ES7 352-1AH02-0AE0
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
Connection method	
required front connector	1x 20-pin
Dimensions	
Width	80 mm
Height	125 mm
Depth	120 mm
Weight	
Weight, approx.	550 g

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FM 352 cam controllers

Ordering data	Order No.
FM352 electronic cam controller	**6ES7 352-1AH02-0AE0**
Sub D connector	**6ES5 750-2AA21**
15-pin, male	
Front connector	
20-pin, with screw contacts	
• 1 unit	**6ES7 392-1AJ00-0AA0**
• 100 units	**6ES7 392-1AJ00-1AB0**
20-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BJ00-0AA0**
• 100 units	**6ES7 392-1BJ00-1AB0**
Bus connectors	**6ES7 390-0AA00-0AA0**
1 unit (spare part)	
Labeling strips	**6ES7 392-2XX00-0AA0**
10 units (spare part)	
Labeling sheets for machine inscription	See under "Accessories", page 5/248
Slot number label	**6ES7 912-0AA00-0AA0**
Spare part	
Shield connection element	**6ES7 390-5AA00-0AA0**
80 mm wide, with 2 rows for 4 terminals each	
Terminal elements	
2 units	
For 2 cables with 2 mm to 6 mm diameter	**6ES7 390-5AB00-0AA0**
For 1 cable with 3 mm to 8 mm diameter	**6ES7 390-5BA00-0AA0**
For 1 cable with 4 mm to 13 mm diameter	**6ES7 390-5CA00-0AA0**

Signal cable	Order No.
Pre-assembled for HTL encoder, UL/DESINA	**6FX5 0 ■ 2-2AL00- ■ ■ ■ ■**
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- ■ ■ ■ ■**
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**

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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 (RS422) 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.

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Technical specifications

	6ES7 352-5AH01-0AE0	6ES7 352-5AH11-0AE0
Supply voltage		
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; typ.	135 mA; typ.
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 over-loaded; diagnostics if output reaches temperature limit; no protection on applying a normal or counter voltage	Yes; Overvoltage and overheating protection if over-loaded; 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		
Memory card, RAM	128 kbyte; required for operation, MMC	128 kbyte; required for operation, MMC

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Technical specifications (continued)

	6ES7 352-5AH01-0AE0	6ES7 352-5AH11-0AE0
Digital inputs		
Number/binary inputs	8; Standard and up to 12 with 24 V DC encoder inputs as digital inputs	8; Standard and up to 12 with 24 V DC encoder inputs as digital inputs
Input voltage		
• Rated value, DC	24 V	24 V
• for signal "0"	-30 to +5 V	-30 to +5 V
• for signal "1"	11 to 30 V	11 to 30 V
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		
• Cable length, shielded, max.	600 m	600 m
• Cable length 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/binary outputs	8	8
Current-sinking	Yes	No
Current-sourcing	No	Yes
Functionality/short-circuit strength	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 to -55 V); comment: no protection against inductive kickback >55mJ	2M -45 V typ., (-40 to -55 V); comment: no protection against inductive kickback >55mJ
Lamp load, max.	5 W	5 W
Controlling a digital input	No	Yes
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		
• Cable length, shielded, max.	600 m	600 m
• Cable length unshielded, max.	100 m	100 m

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Technical specifications (continued)

	6ES7 352-5AH01-0AE0	6ES7 352-5AH11-0AE0
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 time	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

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Technical specifications (continued)

	6ES7 352-5AH01-0AE0	6ES7 352-5AH11-0AE0
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	-2147480000	-2147480000
Counting range, upper limit	2 147 480 000	2 147 480 000
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; 75 VDC / 60 VAC	Yes; 75 VDC / 60 VAC
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
Weight		
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

	Order No.
FM 352-5 high-speed Boolean processor	
with current sinking digital outputs	**6ES7 352-5AH01-0AE0**
with current sourcing digital outputs	**6ES7 352-5AH11-0AE0**
Micro Memory Card	
128 KB	**6ES7 953-8LG20-0AA0**
512 KB	**6ES7 953-8LJ30-0AA0**
2 MB	**6ES7 953-8LL31-0AA0**
Front connector	
40-pin, with screw contacts	
• 1 unit	**6ES7 392-1AM00-0AA0**
• 100 units	**6ES7 392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BM01-0AA0**
• 100 units	**6ES7 392-1BM01-1AB0**

	Order No.
Signal cables	
To HTL and TTL encoders, preassembled, without Sub-D connector	**6FX5 002-2CA12-■■■0**
To SSI absolute encoders 6FX2 001-5, preassembled, without Sub-D connector	**6FX5 002-2CC12-■■■■**
Length code:	See FM 351, page 5/114

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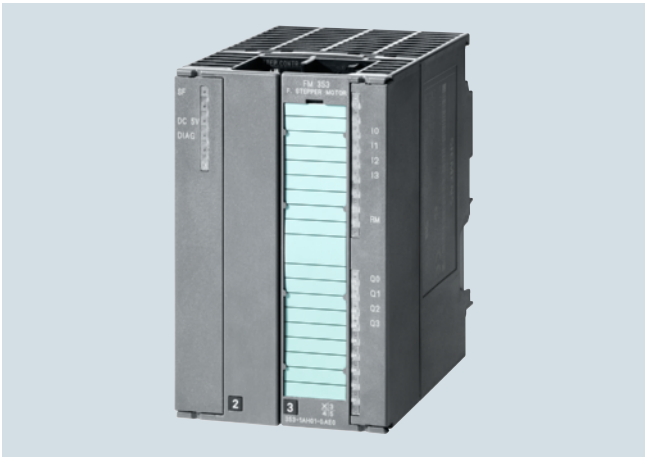
Overview



- 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

	6ES7 353-1AH01-0AE0
Supply voltage	
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/binary 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 +5 V
• for signal "1"	11 to 30 V
Input current	
• for signal "0", max. (permissible quiescent current)	2 mA
• for signal "1", typ.	6 mA; 6 to 15 mA
Digital outputs	
Number/binary 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
Functionality/short-circuit strength	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

	6ES7 353-1AH01-0AE0
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
Weight	
Weight, approx.	500 g

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FM 353 positioning modules

Ordering data	Order No.
FM 353 positioning module 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	**6ES7 353-1AH01-0AE0**
FM 353 manual	
German	**6ES7 353-1AH01-8AG0**
English	**6ES7 353-1AH01-8BG0**
French	**6ES7 353-1AH01-8CG0**
Italian	**6ES7 353-1AH01-8EG0**
Edit FM Program editor for editing, loading and saving NC programs with the standard programming device/PC; German/English, on CD-ROM	**6FC5 263-0AA03-0AB0**
Connecting cables	
To stepper motor power section	**6FX8 0■2-3AC02-■■■■0**
Length code	See page 5/114
Connecting cables and encoders	See catalog NC 60, CA 01 or in the Industry Mall
Sub D connector 15-pin, socket	**6ES5 750-2AB21**
Front connector	
20-pin, with screw contacts	
• 1 unit	**6ES7 392-1AJ00-0AA0**
• 100 units	**6ES7 392-1AJ00-1AB0**
20-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BJ00-0AA0**
• 100 units	**6ES7 392-1BJ00-1AB0**

	Order No.
Bus connectors 1 unit (spare part)	**6ES7 390-0AA00-0AA0**
Labeling strips 10 units (spare part)	**6ES7 392-2XX00-0AA0**
Labeling sheets for machine inscription	See under "Accessories", page 5/248
Slot number label Spare part	**6ES7 912-0AA00-0AA0**
Shield connection element 80 mm wide, with 2 rows for 4 terminals each	**6ES7 390-5AA00-0AA0**
Terminal elements	
2 units	
For 2 cables with 2 mm to 6 mm diameter	**6ES7 390-5AB00-0AA0**
For 1 cable with 3 mm to 8 mm diameter	**6ES7 390-5BA00-0AA0**
For 1 cable with 4 mm to 13 mm diameter	**6ES7 390-5CA00-0AA0**

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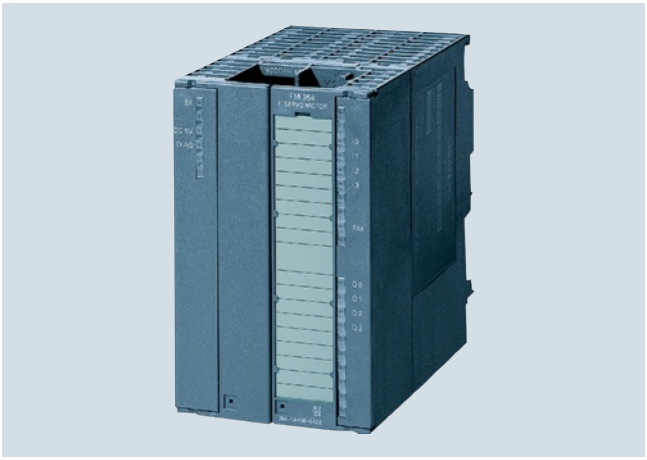
Overview



- 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

	6ES7 354-1AH01-0AE0
Supply voltage	
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/binary 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 +5 V
• for signal "1"	11 to 30 V
Input current	
• for signal "0", max.	2 mA
• (permissible quiescent current)	
• for signal "1", typ.	6 mA; 6 to 15 mA
Digital outputs	
Number/binary 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
Functionality/short-circuit strength	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

	6ES7 354-1AH01-0AE0
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
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 +5 V
• Input voltage, for signal "1"	15 to 30 V
• 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 voltage	-10 to +10 V
• Output current	-3 to +3 mA
• Cable length, max.	35 m

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Technical specifications (continued)

	6ES7 354-1AH01-0AE0
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

	6ES7 354-1AH01-0AE0
Dimensions	
Width	80 mm
Height	125 mm
Depth	118 mm
Weight	
Weight, approx.	550 g

Ordering data

	Order 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	**6ES7 354-1AH01-0AE0**
FM 354 manual	
German	**6ES7 354-1AH01-8AG0**
English	**6ES7 354-1AH01-8BG0**
French	**6ES7 354-1AH01-8CG0**
Italian	**6ES7 354-1AH01-8EG0**
Edit FM Program editor for editing, loading and saving NC programs with the standard programming device/PC; German/English, on CD-ROM	**6FC5 263-0AA03-0AB0**
Connecting cables	
To SSI absolute encoders 6FX2 001-5, preassembled	**6FX5 0■2-2CC11-■■■■**
To incremental encoders 6FX2 001-1, 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 5/114

	Order No.
Encoders	See catalog NC 60, CA 01 or in the Industry Mall
Front connector	
20-pin, with screw contacts	
• 1 unit	**6ES7 392-1AJ00-0AA0**
• 100 units	**6ES7 392-1AJ00-1AB0**
20-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BJ00-0AA0**
• 100 units	**6ES7 392-1BJ00-1AB0**
Bus connectors 1 unit (spare part)	**6ES7 390-0AA00-0AA0**
Labeling strips 10 units (spare part)	**6ES7 392-2XX00-0AA0**
Labeling sheets for machine inscription	See under "Accessories", page 5/248
Slot number label Spare part	**6ES7 912-0AA00-0AA0**
Shield connection element 80 mm wide, with 2 rows for 4 terminals each	**6ES7 390-5AA00-0AA0**
Terminal elements	
2 units	
For 2 cables with 2 mm to 6 mm diameter	**6ES7 390-5AB00-0AA0**
For 1 cable with 3 mm to 8 mm diameter	**6ES7 390-5BA00-0AA0**
For 1 cable with 4 mm to 13 mm diameter	**6ES7 390-5CA00-0AA0**

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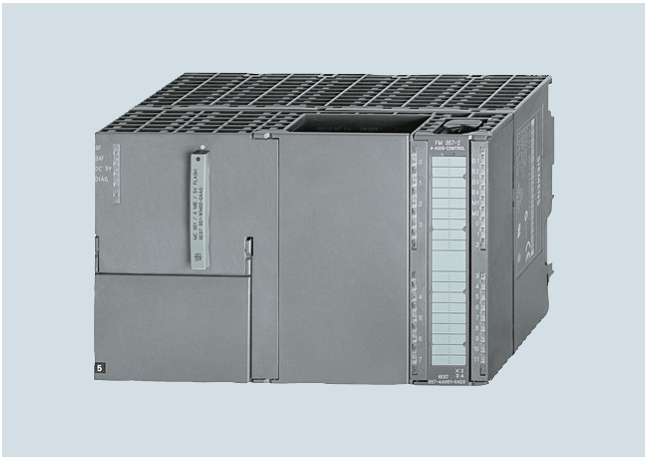
Overview



- 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:

www.siemens.com/simatic-technology

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Technical specifications

	6ES7 357-4AH01-0AE0
Supply voltage	
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	
NC program memory	750 kbyte
Digital inputs	
Number/binary inputs	18
Functions	4 Bero, 2 probes, 12 for any use
Input voltage	
• Rated value, DC	24 V
• for signal "0"	-3 to +5 V
• for signal "1"	11 to 30 V
Input current	
• for signal "0", max. (permissible quiescent current)	2 mA
• for signal "1", typ.	6 mA; 6 to 30 mA

	6ES7 357-4AH01-0AE0
Digital outputs	
Number/binary 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
Positioning	
Programmable traverse speed, max.	1 000 m/min

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Technical specifications (continued)

	6ES7 357-4AH01-0AE0
Drive interface	
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 voltage	-10 to +10 V
• Output current	-3 to +3 mA
• Cable length, max.	35 m

	6ES7 357-4AH01-0AE0
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
Weight	
Weight, approx.	1 200 g

Ordering data

	Order No.
FM 357-2 positioning module	**6ES7 357-4AH01-0AE0**
Basic unit	
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 screenforms for OP17/OP27)	
FM 357-2L system firmware	**6ES7 357-4AH03-3AE0**
On memory card	
FM 357-2LX system firmware	**6ES7 357-4BH03-3AE0**
With additional functions; on memory card	
FM 357-H system firmware	**6ES7 357-4CH03-3AE0**
With additional functions for the handling sector; on memory card	
FM 357-2 manual	
German	**6ES7 357-4AH00-8AG0**
English	**6ES7 357-4AH00-8BG0**
French	**6ES7 357-4AH00-8CG0**
Italian	**6ES7 357-4AH00-8EG0**
Edit FM	**6FC5 263-0AA03-0AB0**
Program editor for editing, loading and saving NC programs with the standard programming device/ PC;German/English, on CD-ROM	

	Order 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	**6ES7 392-1AM00-0AA0**
• 100 units	**6ES7 392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BM01-0AA0**
• 100 units	**6ES7 392-1BM01-1AB0**
Back-up battery	**6ES7 971-1AA00-0AA0**
Li-Ion, 3.6 V/0.95 Ah	
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 5/114

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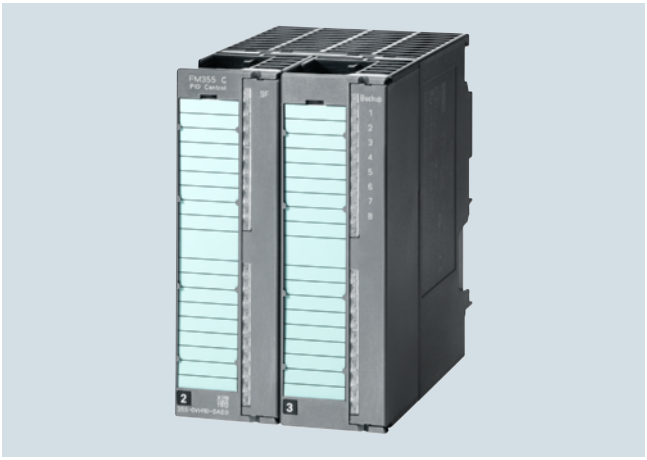
Overview



- 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

Technical specifications

	6ES7 355-0VH10-0AE0	6ES7 355-1VH10-0AE0
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/binary inputs	8	8
Input characteristic curve acc. to IEC 61131, Type 2	Yes	Yes
Input voltage		
• Rated value, DC	24 V	24 V
• for signal "0"	-3 to +5 V	-3 to +5 V
• for signal "1"	13 to 30 V	13 to 30 V
Input current		
• for signal "1", typ.	7 mA	7 mA
Cable length		
• Cable length, shielded, max.	1 000 m	1 000 m
• Cable length unshielded, max.	600 m	600 m
Digital outputs		
Number/binary outputs		8
Functionality/short-circuit strength		Yes; Electronic
Limitation of inductive shutdown voltage to		L+ (-1.5 V)
Lamp load, max.		5 W
Controlling a digital input		Yes
Load resistance range		
• lower limit		240 Ω
• upper limit		4 kΩ
Output voltage		
• for signal "1", min.		L+ (-2.5 V)

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Technical specifications (continued)

	6ES7 355-0VH10-0AE0	6ES7 355-1VH10-0AE0
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		
• Cable length, shielded, max.		1 000 m
• Cable length 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 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 to +23.5 mA	Yes	Yes
• 4 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 thermometers		
• Pt 100	Yes	Yes
Thermocouple (TC)		
• for thermocouples	Type B, J, K, R, S	Type B, J, K, R, S
• Temperature compensation		
- internal temperature compensation	Yes	Yes
- external temperature compensation with Pt100	Yes	Yes
Resistance thermometer (RTD)		
• Characteristic linearization		
- for resistance thermometer	Pt100 (standard)	Pt100 (standard)
Characteristic linearization		
• Parameterizable	Yes	Yes
Cable length		
• Cable length, shielded, max.	200 m; 50 m at 80 mV and thermocouples	200 m; 50 m at 80 mV and thermocouples

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Technical specifications (continued)

	6ES7 355-0VH10-0AE0	6ES7 355-1VH10-0AE0
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 to +10 V	Yes	
Output ranges, current		
• 0 to 20 mA	Yes	
• 4 to 20 mA	Yes	
Connection of actuators		
• for voltage output 2-conductor connection	Yes	
• for current output 2-conductor 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		
• Cable length, shielded, max.	200 m; 50 m at 80 mV and thermocouples	
Analog value creation		
Measurement principle	integrating	integrating
Integrations 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
Errors/accuracies		
Linearity error (relative to input area)	+/- 0,05 %	+/- 0,05 %
Temperature error (relative to input area)	+/- 0,005 %/K	+/- 0,005 %/K
Linearity error (relative to output area)	+/- 0,05 %	
Temperature error (relative to output area)	+/- 0,02 %/K	

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Technical specifications (continued)

	6ES7 355-0VH10-0AE0	6ES7 355-1VH10-0AE0
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-type 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-type 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	75 VDC / 60 VAC	75 VDC / 60 VAC
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
Weight		
Weight, approx.	470 g	470 g

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Ordering data	Order No.
FM 355 C controller module with 4 analog outputs for 4 continuous-action controllers	**6ES7 355-0VH10-0AE0**
FM 355 S controller module with 8 digital outputs for 4 step or pulse controllers	**6ES7 355-1VH10-0AE0**
Front connector	
20-pin, with screw contacts	
• 1 unit	**6ES7 392-1AJ00-0AA0**
• 100 units	**6ES7 392-1AJ00-1AB0**
20-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BJ00-0AA0**
• 100 units	**6ES7 392-1BJ00-1AB0**
Bus connectors 1 unit (spare part)	**6ES7 390-0AA00-0AA0**
Labeling strips 10 units (spare part)	**6ES7 392-2XX00-0AA0**

	Order No.
Labeling sheets for machine inscription	See under "Accessories", page 5/248
Slot number label Spare part	**6ES7 912-0AA00-0AA0**
Shield connection element 80 mm wide, with 2 rows for 4 terminals each	**6ES7 390-5AA00-0AA0**
Terminal elements	
2 units	
For 2 cables with 2 mm to 6 mm diameter	**6ES7 390-5AB00-0AA0**
For 1 cable with 3 mm to 8 mm diameter	**6ES7 390-5BA00-0AA0**
For 1 cable with 4 mm to 13 mm diameter	**6ES7 390-5CA00-0AA0**

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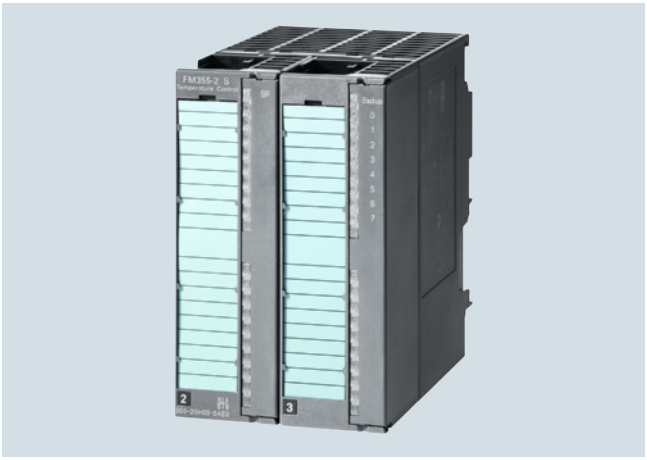
FM 355-2 temperature controller modules

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 inputs (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

	6ES7 355-2CH00-0AE0	6ES7 355-2SH00-0AE0
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/binary inputs	8	8
Input characteristic curve acc. to IEC 61131, Type 2	Yes	Yes
Input voltage		
• Rated value, DC	24 V	24 V
• for signal "0"	-3 to +5 V	-3 to +5 V
• for signal "1"	13 to 30 V	13 to 30 V
Input current		
• for signal "1", typ.	7 mA	7 mA
Cable length		
• Cable length, shielded, max.	1 000 m	1 000 m
• Cable length unshielded, max.	600 m	600 m
Digital outputs		
Number/binary outputs		8
Functionality/short-circuit strength		Yes; Electronic
Limitation of inductive shutdown voltage to		L+ (-1.5 V)
Lamp load, max.		5 W
Controlling a digital input		Yes
Load resistance range		
• lower limit		240 Ω
• upper limit		4 kΩ

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Technical specifications (continued)

	6ES7 355-2CH00-0AE0	6ES7 355-2SH00-0AE0
Output voltage		
• for signal "1", min.		L+ (-2.5 V)
Output current		
• for signal "1" rated value		0.1 A
• for signal "1" permissible range for 0 to 60 °C, min.		5 mA
• for signal "1" permissible range for 0 to 60 °C, max.		150 mA
• for signal "0" residual current, max.		0.5 mA
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		
• Cable length, shielded, max.		1 000 m
• Cable length 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 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 to +23.5 mA	Yes	Yes
• 4 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 thermometers		
• Pt 100	Yes	Yes
Thermocouple (TC)		
• for thermocouples	Type B, E, J, K, R, S	Type B, E, J, K, R, S
• Temperature compensation		
- internal temperature compensation	Yes	Yes
- external temperature compensation with Pt100	Yes	Yes
Resistance thermometer (RTD)		
• Characteristic linearization		
- for resistance thermometer	Pt100 (standard)	Pt100 (standard)
Characteristic linearization		
• Parameterizable	Yes	Yes
Cable length		
• Cable length, shielded, max.	200 m; 50 m at 80 mV and thermocouples	200 m; 50 m at 80 mV and thermocouples

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Technical specifications (continued)

	6ES7 355-2CH00-0AE0	6ES7 355-2SH00-0AE0
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 to +10 V	Yes	
Output ranges, current		
• 0 to 20 mA	Yes	
• 4 to 20 mA	Yes	
Connection of actuators		
• for voltage output 2-conductor connection	Yes	
• for current output 2-conductor 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		
• Cable length, shielded, max.	200 m; 50 m at 80 mV and thermocouples	
Analog value creation		
Measurement principle	integrating	integrating
Integrations 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

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Technical specifications (continued)

	6ES7 355-2CH00-0AE0	6ES7 355-2SH00-0AE0
Errors/accuracies		
Linearity error (relative to input area)	+/- 0,05 %	+/- 0,05 %
Temperature error (relative to input area)	+/- 0,005 %/K	+/- 0,005 %/K
Linearity error (relative to output area)	+/- 0,05 %	
Temperature error (relative to output area)	+/- 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-type 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-type 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	75 VDC / 60 VAC	75 VDC / 60 VAC
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
Weight		
Weight, approx.	470 g	470 g

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FM 355-2 temperature controller modules

Ordering data	Order No.
FM 355-2 C temperature controller module with 4 analog outputs for 4 continuous-action controllers	**6ES7 355-2CH00-0AE0**
FM 355-2 S temperature controller module with 8 digital outputs for 4 step or pulse controllers	**6ES7 355-2SH00-0AE0**
Front connector	
20-pin, with screw contacts	
• 1 unit	**6ES7 392-1AJ00-0AA0**
• 100 units	**6ES7 392-1AJ00-1AB0**
20-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BJ00-0AA0**
• 100 units	**6ES7 392-1BJ00-1AB0**
Bus connectors 1 unit (spare part)	**6ES7 390-0AA00-0AA0**
Labeling strips 10 units (spare part)	**6ES7 392-2XX00-0AA0**

	Order No.
Labeling sheets for machine inscription	See under "Accessories", page 5/248
Slot number label Spare part	**6ES7 912-0AA00-0AA0**
Shield connection element 80 mm wide, with 2 rows for 4 terminals each	**6ES7 390-5AA00-0AA0**
Terminal elements	
2 units	
For 2 cables with 2 mm to 6 mm diameter	**6ES7 390-5AB00-0AA0**
For 1 cable with 3 mm to 8 mm diameter	**6ES7 390-5BA00-0AA0**
For 1 cable with 4 mm to 13 mm diameter	**6ES7 390-5CA00-0AA0**

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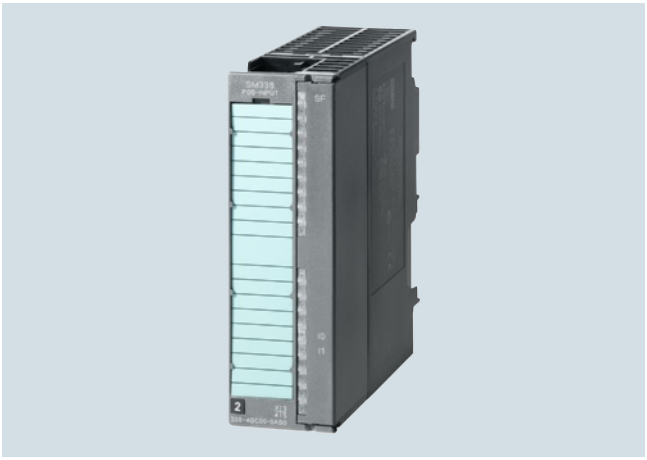
Overview



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

www.siemens.com/simatic-technology

Technical specifications

	6ES7 338-4BC01-0AB0
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
Encoder supply	
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 +5 V
• 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	
• Cable length, shielded, max.	600 m

	6ES7 338-4BC01-0AB0
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
Weight	
Weight, approx.	235 g

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SM 338 POS input modules

Ordering data

SM 338 POS input module	**6ES7 338-4BC01-0AB0**
For position sensing with 3 SSI encoders	
Front connector	
20-pin, with screw contacts	
• 1 unit	**6ES7 392-1AJ00-0AA0**
• 100 units	**6ES7 392-1AJ00-1AB0**
20-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BJ00-0AA0**
• 100 units	**6ES7 392-1BJ00-1AB0**
Front door, elevated design	**6ES7 328-0AA00-7AA0**
e.g. for 32-channel modules; for connecting 1.3 mm^2/16 AWG conductors	
SIMATIC Manual Collection	**6ES7 998-8XC01-8YE0**
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	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	
S7-300 manual	
Design, CPU data, module data, instruction list	
German	**6ES7 398-8FA10-8AA0**
English	**6ES7 398-8FA10-8BA0**
Signal cable	
Pre-assembled for SSI absolute encoder 6FX2001-5, without Sub-D connector, UL/DESINA	**6FX5 002-2CC12-■■■■**
Length code	See page 5/114

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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

Technical specifications

	6ES7 174-0AA10-0AA0
Supply voltage	
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/binary inputs	10
Input voltage	
• for signal "0"	-3 to +5 V
• for signal "1"	11 to 30 V
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	
• Cable length, shielded, max.	100 m

	6ES7 174-0AA10-0AA0
Digital outputs	
Number/binary outputs	8
Functionality/short-circuit strength	Yes
Lamp load, max.	30 W
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	
- Switching frequency/contacts/ at ohmic load/maximum	1 A
Cable length	
• Cable length, shielded, max.	600 m
Analog outputs	
Number of analog outputs	4
Output ranges, voltage	
• -10 to +10 V	Yes
Analog value creation	
Integrations and conversion time/ resolution per channel	
• Resolution with overrange (bit including sign), max.	15 bit

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Technical specifications (continued)

	6ES7 174-0AA10-0AA0
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

	6ES7 174-0AA10-0AA0
Signal output I	
• Type	
- Number of relay contacts	2
• Differential output voltage, min.	
- Switching voltage, max.	30 V
• Differential output voltage for signal "0", max.	
- Switching current, max.	1 A
• Differential output voltage, for signal "1", min.	
- Switching capacity, max.	30 V·A
- Number of switching cycles, min.	50 000; at 30 V DC, 1 A
• Load impedance	
- 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
Weight	
Weight, approx.	1 kg

Ordering data

	Order No.
IM 174 PROFIBUS module	**6ES7 174-0AA10-0AA0**
PROFIBUS module for connecting analog drives and stepper drives to a controller	

	Order No.
Setpoint cable	
for the connection between IM 174 and SIMODRIVE 611-A	**6FX2 002-3AD01-■■■■**
for the connection between IM 174 with 3 stepper drives and one SIMODRIVE (end of cable cut off)	**6FX2 002-3AD02-■■■■**
Length code	See page 5/114

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Overview

SIWAREX U is a versatile weighing module for all simple weighing and force measuring tasks. The compact module is easy to install in all SIMATIC automation systems. Complete data access is then possible via the SIMATIC.

Technical specifications

	SIWAREX U
Integration in automation systems:	
• S7-300	Direct integration
• S7-400 (H)	Via ET 200M
• PCS 7 (H)	Via ET 200M
• C7	Via IM or ET 200M
• Automation systems from other vendors	Via 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	over 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
Supply voltage 24 V DC	
Rated voltage	24 V DC
Max. current consumption	150 mA (single-channel) / 240 mA (two-channel)
Voltage supply from 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
Horizontal installation	0 ... +40 °C
EMC requirements according to	NAMUR NE21, Part 1 EN 61326
Dimensions	40 x 125 x 130 mm

1) Supply of load cells compared to 7MH4601-1AA01 or. ... 1BA01 changed to 6 V DC.

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

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SIWAREX U

Ordering data

	Order No.
SIWAREX U for SIMATIC S7 and ET 200M, incl. bus connector, weight 0.3 kg	
• 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 on the Internet at: www.siemens.com/weighing-technology	
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 PCS 7, version 6.x suitable for 7MH4601-1*A01 and 7MH4950-*AA01 In German and English on CD-ROM, module for the CFC and faceplate	**7MH4683-3BA64**
SIWAREX U configuration package for PCS7 version 7.0 and V7.1 suitable for 7MH4950-1AA01 and 7MH4950-2AA01 on CD-ROM • HSP Hardware Support • Package for integration of SIWAREX U in STEP 7 • Function block for the CFC chart • Faceplate • SIWATOOL U setting software • Manual	**7MH4950-3AK61**
SIWATOOL cable from SIWAREX U/CS with serial PC interface, for 9-pin PC interfaces (RS 232), 3 m long	**7MH4607-8CA**

	Order 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) 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	**6ES7390-1AB60-0AA0**
• 480 mm	**6ES7390-1AE80-0AA0**
• 530 mm	**6ES7390-1AF30-0AA0**
• 830 mm	**6ES7390-1AJ30-0AA0**
• 2000 mm	**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 Tel.: +49 6806/980-0 Fax: +49 6806/980-999 Internet: www.siebert.de Detailed information available from manufacturer.	

[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.

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Ordering data	Order No.
SIWAREX JB junction box, aluminium housing for connecting up to 4 load cells in parallel, and for connecting several 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 Pi With UL and FM approvals, but **without ATEX approval** for intrinsically-safe connection of load cells, suitable for the SIWAREX U, CS, MS, FTA and FTC weighing modules. **Not approved for use in the EU.**	**7MH4710-5AA**
Manual for Ex interface type SIWAREX Pi	**C71000-T5974-C29**
SIWAREX IS Ex interface 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**

	Order No.
Cable (optional)	
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) - CY, orange sheath to connect 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 outer diameter, for ambient temperature -40 to +80 °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 outer diameter, for ambient temperature -40 to +80 °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**

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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 for automatic and non-automatic weighing, e.g. for the production of mixtures, filling, loading, monitoring and bagging.

It has been assigned appropriate scale approvals and is also suitable for calibration plants.

The SIWAREX FTA 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.

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Technical specifications

	SIWAREX FTA
Use in automation systems	
S7-300	Directly or via ET 200M
S7-400 (H)	Via ET 200M
PCS 7 (H)	Via ET 200M
Communication interface	
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 6000 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}	> 56 Ω > 87 Ω with Ex interface
• R_{Lmax}	≤ 4010 Ω

	SIWAREX FTA
Max. distance of load cells	
When using the recommended cable:	
Standard	1000 m (500 m legal-for-trade)
In hazardous area[1)]	
• For gases of group IIC	300 m
• For gases of group IIB	1000 m
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.
Power supply	
Rated voltage	24 V DC
Max. current 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	0/4 ... 20 mA
• Updating rate	100 Hz
Approvals	EU type approval (CE, OIML R76) EU prototype test to MID (OIML R51, R61, R107)
Degree of protection to EN 60529; IEC 60529	IP20
Climatic requirements	
$T_{min\ (IND)}$ ... $T_{max\ (IND)}$ (operating temperature)	
Vertical installation	-10 ... 60 °C
Horizontal installation	-10 ... 40 °C
EMC requirements	EN 61326, EN 45501, NAMUR NE21, Part 1
Dimensions	80 x 125 x 130 mm
Weight	600 g

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

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Ordering data	Order 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-technology	
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-technology	
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 • Manual	**7MH4900-2AK01**
SIWAREX FTA configuration package for PCS 7 V6.x 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	**7MH4900-2AK61**
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**
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**

	Order No.
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 cable from SIWAREX FTA with serial PC interface, for 9-pin PC interfaces (RS 232)	
• 2 m long	**7MH4702-8CA**
• 5 m long	**7MH4702-8CB**
40-pin front plug with screw contacts (required for each SIWAREX module), alternatively with spring-loaded contacts	**6ES7392-1AM00-0AA0**
40-pin front plug with spring-loaded contacts (required for each SIWAREX module), alternatively with screw contacts	**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) 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	**6ES7390-1AB60-0AA0**
• 480 mm	**6ES7390-1AE80-0AA0**
• 530 mm	**6ES7390-1AF30-0AA0**
• 830 mm	**6ES7390-1AJ30-0AA0**
• 2000 mm	**6ES7390-1BC00-0AA0**
PS 307 load power supply (only required if DC 24 V 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**

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SIWAREX FTA

Ordering data	Order No.
Remote display (optional) The Siebert S102 and S302 remote digital display can be directly connected to the SIWAREX FTA via an RS 485 interface. Siebert Industrieelektronik GmbH P.O. Box 1180 D-66565 Eppelborn Tel.: +49 6806/980-0 Fax: +49 6806/980-999 Internet: www.siebert.de Detailed information available from manufacturer.	
SIWAREX JB junction box, aluminium housing for connecting up to 4 load cells in parallel, and for connecting several 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 Pi With UL and FM approvals, but **without ATEX approval** for intrinsically-safe connection of load cells, suitable for the SIWAREX U, CS, MS, FTA and FTC weighing modules. Not approved for use in the EU.	**7MH4710-5AA**
Manual for Ex interface type SIWAREX Pi	**C71000-T5974-C29**
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**

	Order No.
Cable (optional)	
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) - CY, orange sheath to connect 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 outer diameter, for ambient temperature -40 to +80 °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 outer diameter, for ambient temperature -40 ... +80 °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**

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Overview

The SIWAREX FTC (Flexible Technology for Continuous Weighing) is a versatile and flexible weighing module for conveyor scales, loss-in-weigh scales 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)	Via ET 200M
PCS 7 (H)	Via 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 6000 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}	> 56 Ω > 87 Ω with Ex interface
• R_{Lmax}	≤ 4010 Ω

	SIWAREX FTC
Max. distance of load cells	
When using the recommended cable:	
Standard	1000 m
In hazardous area[1)]	
• For gases of group IIC	300 m
• For gases of group IIB	1000 m
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.
Power supply	
Rated voltage	24 V DC
Max. current 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	0/4 ... 20 mA
• Updating rate	100 Hz
Degree of protection to DIN EN 60529; IEC 60529	IP20
Climatic requirements	
$T_{min\ (IND)}$ ... $T_{max\ (IND)}$ (operating temperature)	
Vertical installation	-10 ... 60 °C
Horizontal installation	-10 ... 40 °C
EMC requirements	EN 61326, EN 45501, NAMUR NE21, Part 1
Dimensions	80 x 125 x 130 mm
Weight	600 g

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

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SIWAREX FTC

Ordering data	Order No.
SIWAREX FTC Weighing electronics for S7-300 and ET 200M. Applications: Belt scales, force measurement, loss-in-weight scales and bulk flow meters	**7MH4900-3AA01**
SIWAREX FTC_B **Manual for belt scales** • Available in a range of languages Free download from the Internet at: www.siemens.com/weighing-technology	
SIWAREX FTC_L **Manual for bulk flow meters and loss-in-weight scales** • Available in a range of languages Free download from the Internet at: www.siemens.com/weighing-technology	
SIWAREX FTC "Getting started" for belt scales Sample software shows beginners how to program the scales in STEP 7 for belt scale mode Free download from the Internet at: www.siemens.com/weighing-technology	
SIWAREX FTC "Getting started" for bulk flow meters Sample software shows beginners how to program the scales in STEP 7 for bulk flow meter mode Free download from the Internet at: www.siemens.com/weighing-technology	
SIWAREX FTC "Getting started" for loss-in-weight scales Sample software shows beginners how to program the scales in STEP 7 for loss-in-weight scale mode Free download from the Internet at: www.siemens.com/weighing-technology	
SIWAREX FTC_B configuration package for SIMATIC S7 on CD-ROM (belt scale) • HSP Hardware Support Package for integrating SIWAREX FTA/FTC in STEP 7 • "Getting started" for belt scales • Commissioning software SIWATOOL FTC_B for belt scales • Manual	**7MH4900-3AK01**
SIWAREX FTC_L configuration package for SIMATIC S7 on CD-ROM (bulk flow meter, loss-in-weight feeder) • HSP Hardware Support Package for integrating SIWAREX FTA/FTC in STEP 7 • "Getting started" for bulk flow meters • "Getting started" for loss-in-weight feeders • Commissioning software SIWATOOL_L for bulk flow meters and loss-in-weight feeders • Manual	**7MH4900-3AK02**

	Order No.
SIWAREX FTC_B configuration package for PCS 7 V6.x on CD-ROM (belt scale) • HSP Hardware Support Package for integrating SIWAREX FTA/FTC in STEP 7 • Function block for CFC • Faceplate • Commissioning software SIWATOOL FTC_B for belt scales • Manual	**7MH4900-3AK61**
SIWAREX FTC_B configuration package for PCS 7 V7.0 on CD-ROM (belt scale) • HSP Hardware Support Package for integrating SIWAREX FTA/FTC in STEP 7 • Function block for CFC • Faceplate • Commissioning software SIWATOOL FTC_B for belt scales • Manual	**7MH4900-3AK63**
SIWAREX FTC_L configuration package for PCS 7 V7.0 and V7.1 on CD-ROM (loss-in-weight feeder) • HSP Hardware Support Package for integrating SIWAREX FTA/FTC in STEP 7 • Function block for 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	**7MH4702-8CA**
• 5 m long	**7MH4702-8CB**
40-pin front plug with screw contacts (required for each SIWAREX module), alternatively with spring-loaded contacts	**6ES7392-1AM00-0AA0**
40-pin front plug with spring-loaded contacts (required for each SIWAREX module), alternatively with screw contacts	**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**
S7 DIN rail	
• 160 mm	**6ES7390-1AB60-0AA0**
• 480 mm	**6ES7390-1AE80-0AA0**
• 530 mm	**6ES7390-1AF30-0AA0**
• 830 mm	**6ES7390-1AJ30-0AA0**
• 2000 mm	**6ES7390-1BC00-0AA0**

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Ordering data

	Order No.
PS 307 load power supply (only required if DC 24 V 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 MByte	**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 mode "Belt scale")	
Siebert Industrieelektronik GmbH P.O. Box 1180 D-66565 Eppelborn Tel.: +49 6806/980-0 Fax: +49 6806/980-999 Internet: www.siebert.de	
Detailed information available from manufacturer.	
SIWAREX JB junction box, aluminium housing	**7MH4710-1BA**
for connecting up to 4 load cells in parallel, and for connecting several junction boxes	
SIWAREX JB junction box, stainless steel housing	**7MH4710-1EA**
for connecting up to 4 load cells in parallel	
Ex interface, type SIWAREX Pi	**7MH4710-5AA**
With UL and FM approvals, but **without ATEX approval** for intrinsically-safe connection of load cells, suitable for the SIWAREX U, CS, MS, FTA and FTC weighing modules. Not approved for use in the EU.	
Manual for Ex interface type SIWAREX Pi	**C71000-T5974-C29**
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**

	Order No.
Cable (optional)	
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) - CY, orange sheath	**7MH4702-8AG**
to connect 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 outer diameter, for ambient temperature -40 … +80 °C	
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 outer diameter, for ambient temperature -40 ... +80 °C	
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	

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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, i.e.:

- Central 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. baudrate: 115 200 baud • Max. line length: 15 m at 115 200 baud • Signal level: according to EIA-RS232C
Modbus RS 485	• Max. baudrate: 115 200 baud • Max. line length: 1200 m at 115 200 baud • Signal level: according to EIA-RS485 • 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.

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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 IEC Ex 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 IEC 61000-6-2, tested according to: IEC 61000-4-2,IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6 Emitted interference according to EN 50081-2, tested according to: EN 55011, class A, group 1
NAMUR	Within the limits according to “General requirements” with error criteria A in accordance with NE21
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

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SIFLOW FC070

Ordering data

	Order 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 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 plug with spring contacts	**6ES7392-1BJ00-0AA0**
Operating instructions for SITRANS F C SIFLOW FC070	
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**

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:

www.siemens.com/flowdocumentation

	Order No.
Accessories	
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**

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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 Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

SIPLUS FM 350-1		
Order No.	**6AG1 350-1AH03-2AE0**	**6AG1 350-1AH03-2AY0**
Order No. based on	**6ES7 350-1AH03-0AE0**	**6ES7 350-1AH03-0AE0**
Ambient temperature range	-25 ... +60 °C	-25 ... +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.	
Conforms with standard for electronic equipment used on rolling stock (EN 50155).	No	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 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 (-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 further technical documentation on SIPLUS, see:
www.siemens.com/siplus-extreme

Ordering data	**Order No.**
SIPLUS FM 350-1 counter module	
(extended temperature range and medial exposure)	
with 1 channel, max. 500 kHz; for incremental encoder	
without conformity to EN 50155	**6AG1 350-1AH03-2AE0**
Conformity to EN 50155	**6AG1 350-1AH03-2AY0**
Accessories	See SIMATIC S7-300 FM 350-1 counter module, page 5/110

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SIPLUS 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 Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

SIPLUS FM 350-2 counter module	
Order No.	**6AG1 350-2AH01-4AE0**
Order number based on	**6ES7 350-2AH01-0AE0**
Conformal coating	Coating of the printed circuit boards and the electronic components
Ambient temperature range	0... +60 °C
Ambient conditions	Suitable for extraordinary medial exposure (e.g. chlorine sulfur atmosphere)
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 (-1 000 … +2 000 m) See ambient temperature range 795...658 hPa (+2 000 ... +3 500m) derating 10 K 658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K

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

Ordering data

	Order No.
SIPLUS FM 350-2 counter module (medial exposure) With 8 channels, max. 20 kHz; for 24 V incremental encoders and NAMUR encoders; incl. configuration package and electronic documentation on CD	**6AG1 350-2AH01-4AE0**
Accessories	See SIMATIC FM 350-2 counter module, page 5/112

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Overview

SIPLUS SIWAREX U electronic weighing system

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

Note:

SIPLUS extreme products are based on Siemens Industry 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	
Order No.	**6AG1 950-2AA01-4AA0**
Order No. based on	**7MH4 950-2AA01**
Range of ambient temperature	0 ... +60 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies except for the ambient conditions.
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.

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

Ordering data	**Order No.**
SIPLUS SIWAREX U	**6AG1 950-2AA01-4AA0**
(medial exposure)	
Electronic weighing system for SIMATIC S7 and ET 200M, incl. bus connector	
Accessories	See SIWAREX U, page 5/142

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SIPLUS DCF 77 radio clock module

Overview

This module can be used to synchronize the real-time clock of the SIMATIC 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.

The time is received by means of a DCF receiver (antenna with electronics) which is connected via two digital inputs on the SIMATIC and SIPLUS together with a software driver included in the scope of delivery (function block FB). The function blocks are available on the Internet for downloading.

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

	Order 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	**6AG1 057-1AA03-0AA0**

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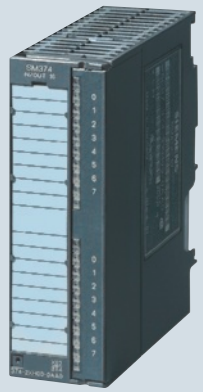
Overview



- 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

	6ES7 374-2XH01-0AA0
Input current	
from backplane bus 5 V DC, max.	80 mA
Power losses	
Power loss, typ.	0.35 W
Digital inputs	
Number/binary inputs	16; Switch
Digital outputs	
Number/binary 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
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weight	
Weight, approx.	190 g

Ordering data

	Order No.
SM 374 simulator module	**6ES7 374-2XH01-0AA0**
incl. bus connectors, labeling strips	
Bus connectors	**6ES7 390-0AA00-0AA0**
1 unit, spare part	
Labeling strips	**6ES7 392-2XX00-0AA0**
10 units (spare part)	
Label cover	**6ES7 392-2XY00-0AA0**
10 units (spare part)	
Labeling sheets for machine inscription	
for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
petrol	**6ES7 392-2AX00-0AA0**
light-beige	**6ES7 392-2BX00-0AA0**
yellow	**6ES7 392-2CX00-0AA0**
red	**6ES7 392-2DX00-0AA0**

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DM 370 dummy modules

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

	6ES7 370-0AA01-0AA0
Input current	
from backplane bus 5 V DC, max.	5 mA
Power losses	
Power loss, max.	0.03 W
Digital inputs	
Number/binary inputs	0
Digital outputs	
Number/binary outputs	0
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weight	
Weight, approx.	180 g

Ordering data

	Order No.
DM 370 dummy module	**6ES7 370-0AA01-0AA0**
incl. bus connectors, labeling strips	
Bus connectors	**6ES7 390-0AA00-0AA0**
1 unit, spare part	
Labeling strips	**6ES7 392-2XX00-0AA0**
10 units (spare part)	
Label cover	**6ES7 392-2XY00-0AA0**
10 units (spare part)	
Labeling sheets for machine inscription	
for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
petrol	**6ES7 392-2AX00-0AA0**
light-beige	**6ES7 392-2BX00-0AA0**
yellow	**6ES7 392-2CX00-0AA0**
red	**6ES7 392-2DX00-0AA0**

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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

	6ES7 340-1AH02-0AE0	6ES7 340-1BH02-0AE0	6ES7 340-1CH02-0AE0
Supply voltage			
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 rates, 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
• PtP	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
• 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		

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Technical specifications (continued)

	6ES7 340-1AH02-0AE0	6ES7 340-1BH02-0AE0	6ES7 340-1CH02-0AE0
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
Weight			
Weight, approx.	300 g	300 g	300 g

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Ordering data

	Order No.
CP 340 communications module	**6ES7 340-1AH02-0AE0**
With one RS 232 C (V.24) interface	
RS 232 connecting cable	
For linking to SIMATIC S7	
5 m	**6ES7 902-1AB00-0AA0**
10 m	**6ES7 902-1AC00-0AA0**
15 m	**6ES7 902-1AD00-0AA0**
CP 340 communications module	**6ES7 340-1BH02-0AE0**
With one 20 mA (TTY) interface	
20 mA (TTY) connecting cable	
For linking to SIMATIC S7	
5 m	**6ES7 902-2AB00-0AA0**
10 m	**6ES7 902-2AC00-0AA0**
50 m	**6ES7 902-2AG00-0AA0**

	Order No.
CP 340 communications module	**6ES7 340-1CH02-0AE0**
With one RS 422/485 (X.27) interface	
RS 422/485 connecting cable	
For linking to SIMATIC S7	
5 m	**6ES7 902-3AB00-0AA0**
10 m	**6ES7 902-3AC00-0AA0**
50 m	**6ES7 902-3AG00-0AA0**

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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 parameterizing tool integrated in STEP 7

Technical specifications

Order No.	6ES7 341-1AH02-0AE0	6ES7 341-1BH02-0AE0	6ES7 341-1CH02-0AE0
Product-type designation	**CP341 V2 RS232**	**CP341 V2 TTY**	**CP341 V2 RS422/485**
Supply voltage			
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 rates, 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
• PtP	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
• 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		

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Technical specifications (continued)

Order No.	6ES7 341-1AH02-0AE0	6ES7 341-1BH02-0AE0	6ES7 341-1CH02-0AE0
Product-type designation	**CP341 V2 RS232**	**CP341 V2 TTY**	**CP341 V2 RS422/485**
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
Weight			
Weight, approx.	300 g	300 g	300 g

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Ordering data

	Order No.
CP 341 communications module	**6ES7 341-1AH02-0AE0**
With one RS 232 C (V.24) interface	
RS 232 connecting cable	
For linking to SIMATIC S7	
5 m	**6ES7 902-1AB00-0AA0**
10 m	**6ES7 902-1AC00-0AA0**
15 m	**6ES7 902-1AD00-0AA0**
CP 341 communications module	**6ES7 341-1BH02-0AE0**
With one 20 mA (TTY) interface	
20 mA (TTY) connecting cable	
For linking to SIMATIC S7	
5 m	**6ES7 902-2AB00-0AA0**
10 m	**6ES7 902-2AC00-0AA0**
50 m	**6ES7 902-2AG00-0AA0**

	Order No.
CP 341 communications module	**6ES7 341-1CH02-0AE0**
With one RS 422/485 (X.27) interface	
RS 422/485 connecting cable	
For linking to SIMATIC S7	
5 m	**6ES7 902-3AB00-0AA0**
10 m	**6ES7 902-3AC00-0AA0**
50 m	**6ES7 902-3AG00-0AA0**
Loadable drivers for CP 341	
Modbus master (RTU format)	
• Single license	**6ES7 870-1AA01-0YA0**
• Single license, without software or documentation	**6ES7 870-1AA01-0YA1**
Modbus slave (RTU format)	
• Single license	**6ES7 870-1AB01-0YA0**
• Single license, without software or documentation	**6ES7 870-1AB01-0YA1**

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Overview

- Drivers for Modbus protocol with RTU message format; communication as master or slave
- Downloadable onto CP 341 and CP 441-2 (6ES7 441-2AA04-0AE0)

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

Technical specifications	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

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Loadable drivers for CP 441-2 and CP 341

Ordering data	Order 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	**6ES7 870-1AA01-0YA0**
Single license, without software and documentation	**6ES7 870-1AA01-0YA1**
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	**6ES7 870-1AB01-0YA0**
Single license, without software and documentation	**6ES7 870-1AB01-0YA1**

	Order No.
SIMATIC Manual Collection	**6ES7 998-8XC01-8YE0**
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	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	

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Overview

The CP 343-2P is the AS-Interface master for the SIMATIC S7-300 programmable controller and the ET 200M distributed I/O station.

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 (all analog profiles)
- Supports all AS-Interface master functions according to the AS-Interface Specification V3.0
- Status displays of operating states and indication of the readiness for operation of connected slaves by means of LEDs in the front panel
- Fault indications (e. g. 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) for Standard AS-i with 30 V voltage.
- With CP 343-2P additionally: Supports the configuration of the AS-Interface-network with STEP 7 V5.2 and higher

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 direct connection of the AS-Interface cable
- LEDs in the front panel for indicating the operating state and the readiness for operation of all connected and activated slaves
- Pushbuttons for switching over the master operating state and for adopting the existing ACTUAL configuration of the AS-i slave as the DESIRED configuration

Function

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

The CP 343-2P / CP 343-2 occupies 16 bytes each in the I/O address area of the SIMATIC S7-300. The digital I/O data of the standard slaves and A slaves are 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.

More information can be found on the Internet under

http://support.automation.siemens.com/WW/view/en/51678777

Configuration

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

With CP 343-2P additionally

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.

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CP 343-2 P, CP 343-2

Technical specifications

Order No.	6GK7 343-2AH11-0XA0 6GK7 343-2AH01-0XA0
Product type designation	**CP 343-2P CP 343-2**
Interfaces	
Version of electrical connection of the AS-Interface	S7-300 front connector with terminal connection
Supply voltage	
Supply voltage from backplane bus	5 V
Current consumption	
Current consumed	
• from backplane bus at 5 V DC typical	200 mA
• from AS-Interface shaped cables, max.	100 mA
Suitable for AS-i Power 24 V	Yes, from product version 2 / Firmware version 3.1
Effective power loss	
Effective power loss	2 W
Permitted ambient conditions	
Ambient temperature	
• during operation	0 … 60 °C
• during storage	-40 … +70 °C
• during transport	-40 … +70 °C
Maximum relative humidity at 25 °C during operation	95%
Design, dimensions and weight	
Module format	S7-300 design
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	190 g
Number of slots required	1
Standards and specifications	
Version of the AS-Interface specification	V 3.0
Bus cycle time of the AS-Interface	
• with 31 slaves	5 ms
• with 62 slaves	10 ms
Power data	
Data volume	
• of the address area of the inputs	16 byte
• of the address area of the outputs	16 byte
Number of modules / for each CPU / maximum	typically 4 per rack, limited by current consumption from backplane bus
Configuration	
Configuration software included in scope of delivery of STEP 7 V5.x NCM S7 for Industrial Ethernet	Yes

Ordering data

	Order No.
CP 343-2P communications processor for the connection of SIMATIC S7-300 and ET 200M to AS-Interface; configuration of the AS-i network by means of SET-key or via STEP 7 (V5.2 or higher); without front connector	**6GK7 343-2AH11-0XA0**
CP 343-2 communications processor For connecting SIMATIC S7-300 and ET 200M to the AS-Interface ; configuration of the AS-i network by means of SET-key; without front connector	**6GK7 343-2AH01-0XA0**
Front connector, 20-pin • With screw terminals	**6ES7 392-1AJ00-0AA0**
Front connector, 20-pin • With spring-type terminals	**6ES7 392-1BJ00-0AA0**
Front connector, 20-pin • With FastConnect	**6ES7 392-1CJ00-0AA0**
Manuals Manuals available in the Internet at http://support.automation.siemens.com/WW/view/en/14310380/133300	**6GK1 975-1AA00-3AA0**

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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/s)
- 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

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Technical specifications

Order No.	6GK7 342-5DA03-0XE0
Product-type designation	**CP 342-5**
Transmission rate	
Transmission rate at interface 1 in accordance with PROFIBUS	9.6 kbit/s … 12 Mbit/s
Interfaces	
Number of electrical connections	
• at interface 1 in accordance with PROFIBUS	1
• for power supply	1
Design of electrical connection	
• at interface 1 in accordance with PROFIBUS	9-pin Sub-D socket (RS485)
• for power supply	
Supply voltage, current consumption, power loss	
Type of voltage of supply voltage	DC
Supply voltage	
• 1 from backplane bus	5 V
• external	24 V
Relative positive tolerance at 24 V with DC	20 %
Relative negative tolerance at 24 V with DC	15 %
Consumed current	
• from backplane bus at 5 V for DC Typical	0.15 A
• from external supply voltage at 24 V with DC	
- typical	0.25 A
- maximum	-
Resistive loss	6.75 W

Order No.	6GK7 342-5DA03-0XE0
Product-type designation	**CP 342-5**
Permitted ambient conditions	
Ambient temperature	
• during operating	0 … 60 °C
• during storage	-40 … +70 °C
• during transport	-40 … +70 °C
• Comment	-
Relative humidity at 25 °C without condensation during operating maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.3 kg
Product properties, functions, components general	
Number of modules	
• per CPU maximum	4
• note	-

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Technical specifications (continued)

Order No.	6GK7 342-5DA03-0XE0
Product-type designation	**CP 342-5**
Performance data	
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	16
Data volume as user data per connection for open communication by means of SEND/RECEIVE blocks maximum	240 byte
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 overall	2 160 byte
• of the address area of the outputs as DP master overall	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
• DPV1	-
Amount of data	
• of the address area of the inputs as DP slave overall	240 byte
• of the address area of the outputs as DP slave overall	240 byte

Order No.	6GK7 342-5DA03-0XE0
Product-type designation	**CP 342-5**
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	16
• with PG connections maximum	-
• with PG/OP connections maximum	-
• note	-
Performance data multi-protocol mode	
Number of active connections with multi-protocol mode	
• without DP maximum	32
• with DP maximum	28
Product functions management, configuration	
Configuration software required	STEP 7 V5.1 SP2 and higher or STEP 7 V11.0 and higher

Ordering data

	Order No.
CP 342-5 communications processor	**6GK7 342-5DA03-0XE0**
Communications processor for electrical connection of SIMATIC S7-300 to PROFIBUS at up to 12 Mbit/s, with electronic manual on CD-ROM	
PROFIBUS FastConnect bus connector RS485	
With 90° cable outlet; insulation displacement technology, max. transfer rate 12 Mbit/s (1 unit)	
• Without PG interface	**6ES7 972-0BA52-0XA0**
• With PG interface	**6ES7 972-0BB52-0XA0**

	Order No.
PROFIBUS bus connector IP20	
With connection to PPI, MPI, PROFIBUS	
• Without PG interface	**6ES7 972-0BA12-0XA0**
• With PG interface	**6ES7 972-0BB12-0XA0**
PROFIBUS bus terminal 12M	**6GK1 500-0AA10**
Bus terminal for connection of PROFIBUS nodes at up to 12 Mbit/s with connecting cable	
SIMATIC S7-300 DM 370	**6ES7 370-0AA01-0AA0**
Dummy module; used for module replacement	

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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/s)
- 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

Order No.	6GK7 342-5DF00-0XE0
Product-type designation	**CP 342-5 FO**
Transmission rate	
Transmission rate at interface 1 in accordance with PROFIBUS	9,6 kbit/s … 12 Mbit/s
Interfaces	
Number of optical connections at interface 1 in accordance with PROFIBUS	2
Number of electrical connections for power supply	1
Design of optical connection at interface 1 in accordance with PROFIBUS	Duplex socket
Design of the electrical connection for power supply	
Supply voltage, current consumption, power loss	
Type of voltage of supply voltage	DC
Supply voltage	
• 1 from backplane bus	5 V
• external	24 V
Relative positive tolerance at 24 V with DC	20 %
Relative negative tolerance at 24 V with DC	15 %
Consumed current	
• from backplane bus at 5 V for DC Typical	0.15 A
• from external supply voltage at 24 V with DC	
- typical	0,25 A
- maximum	-
Resistive loss	6 W

Order No.	6GK7 342-5DF00-0XE0
Product-type designation	**CP 342-5 FO**
Permitted ambient conditions	
Ambient temperature	
• during operating	0 … 60 °C
• during storage	-40 … +70 °C
• during transport	-40 … +70 °C
• Comment	-
Relative humidity at 25 °C without condensation during operating maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0,3 kg
Product properties, functions, components general	
Number of modules	
• per CPU maximum	4
• note	-
Cable length	
• with PCF cable maximum	300 m
• with POF cable maximum	50 m

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Technical specifications (continued)

Order No.	6GK7 342-5DF00-0XE0
Product-type designation	**CP 342-5 FO**
Performance data	
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	16
Data volume as user data per connection for open communication by means of SEND/RECEIVE blocks maximum	240 byte
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 overall	2 160 byte
• of the address area of the outputs as DP master overall	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
• DPV1	-
Amount of data	
• of the address area of the inputs as DP slave overall	240 byte
• of the address area of the outputs as DP slave overall	240 byte

Order No.	6GK7 342-5DF00-0XE0
Product-type designation	**CP 342-5 FO**
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	16
• with PG connections maximum	-
• with PG/OP connections maximum	-
• note	-
Performance data multi-protocol mode	
Number of active connections with multi-protocol mode	
• without DP maximum	32
• with DP maximum	28
Product functions management, configuration	
Configuration software required	STEP 7 V5.1 SP2 and higher or STEP 7 V11.0 and higher

Ordering data

	Order No.
CP 342-5 FO communications processor Communication processor for optical connection of SIMATIC S7-300 to PROFIBUS to 12 Mbit/s with electronic manual on CD-ROM	**6GK7 342-5DF00-0XE0**
PROFIBUS Plastic Fiber Optic, Simplex Connector/Polishing Set 100 simplex connectors and 5 polishing sets for assembling PROFIBUS plastic fiber optic cables for the optical PROFIBUS DP	**6GK1 901-0FB00-0AA0**

	Order No.
PROFIBUS Plastic Fiber Optic, Stripping Tool Set Tools for removing the outer sheath or core sheath of Plastic Fiber Optic cables	**6GK1 905-6PA10**
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	**6ES7 195-1BE00-0XA0**

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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/s)

- 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

Order No.	6GK7 343-5FA01-0XE0
Product-type designation	**CP 343-5**
Transmission rate	
Transmission rate at interface 1 in accordance with PROFIBUS	9.6 kbit/s … 12 Mbit/s
Interfaces	
Number of electrical connections	
• at interface 1 in accordance with PROFIBUS	1
• for power supply	1
Design of electrical connection	
• at interface 1 in accordance with PROFIBUS	9-pin Sub-D socket (RS485)
• for power supply	
Supply voltage, current consumption, power loss	
Type of voltage of supply voltage	DC
Supply voltage	
• 1 from backplane bus	5 V
• external	24 V
Relative positive tolerance at 24 V with DC	20 %
Relative negative tolerance at 24 V with DC	15 %
Consumed current	
• from backplane bus at 5 V for DC Typical	0.15 A
• from external supply voltage at 24 V with DC	
- typical	0,25 A
- maximum	-
Resistive loss	5 W

Order No.	6GK7 343-5FA01-0XE0
Product-type designation	**CP 343-5**
Permitted ambient conditions	
Ambient temperature	
• during operating	0 … 60 °C
• during storage	-40 … +70 °C
• during transport	-40 … +70 °C
• Comment	-
Relative humidity at 25 °C without condensation during operating maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0,3 kg
Product properties, functions, components general	
Number of modules	
• per CPU maximum	4
• note	-

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Technical specifications (continued)

Order No.	6GK7 343-5FA01-0XE0
Product-type designation	**CP 343-5**
Performance data	
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	16
Data volume as user data per connection for open communication by means of SEND/RECEIVE blocks maximum	240 byte
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
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	16
• with PG connections maximum	-
• with PG/OP connections maximum	-
• note	-
Performance data multi-protocol mode	
Number of active connections with multiprotocol mode	48
Product functions management, configuration	
Configuration software required	

Ordering data

	Order No.
CP 343-5 communications processor	**6GK7 343-5FA01-0XE0**
Communications processor for connection of S7-300 to PROFIBUS, FMS, open communication, PG/OP and S7 communication; with electronic manual on CD-ROM	
PROFIBUS FastConnect bus connector RS485	
With 90° cable outlet; insulation displacement technology, max. transmission rate 12 Mbit/s (1 unit)	
• Without PG interface	**6ES7 972-0BA52-0XA0**
• With PG interface	**6ES7 972-0BB52-0XA0**
PROFIBUS bus connector IP20	
With connection to PPI, MPI, PROFIBUS	
• Without PG interface	**6ES7 972-0BA12-0XA0**
• With PG interface	**6ES7 972-0BB12-0XA0**
PROFIBUS bus terminal 12M	**6GK1 500-0AA10**
Bus terminal for connection of PROFIBUS nodes at up to 12 Mbit/s with connecting cable	
SIMATIC S7-300 DM 370	**6ES7 370-0AA01-0AA0**
Dummy module; used for module replacement	

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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

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Technical specifications

Order No.	6GK7 343-1CX10-0XE0
Product-type designation	**CP 343-1 Lean**
Transmission rate	
Transfer rate at the interface 1	10 … 100 Mbit/s
Interfaces	
Number of electrical connections	
• at interface 1 in accordance with Industrial Ethernet	2
• for power supply	1
Design of electrical connection	
• at interface 1 in accordance with Industrial Ethernet	RJ45 port
• for power supply	
Supply voltage, current consumption, power loss	
Type of voltage of supply voltage	DC
Supply voltage	
• 1 from backplane bus	5 V
• external	24 V
Relative positive tolerance at 24 V with DC	20 %
Relative negative tolerance at 24 V with DC	15 %
Consumed current	
• from backplane bus at 5 V for DC Typical	0.2 A
• from external supply voltage at 24 V with DC	
- typical	0.16 A
- maximum	0.2 A
Resistive loss	5.8 W

Order No.	6GK7 343-1CX10-0XE0
Product-type designation	**CP 343-1 Lean**
Permitted ambient conditions	
Ambient temperature	
• during operating	0 … 60 °C
• during storage	-40 … +70 °C
• during transport	-40 … +70 °C
• Comment	-
Relative humidity at 25 °C without condensation during operating maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0,22 kg
Product properties, functions, components general	
Number of modules	
• per CPU maximum	-
• note	-

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Technical specifications (continued)

Order No.	6GK7 343-1CX10-0XE0
Product-type designation	**CP 343-1 Lean**
Performance data	
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	8
Data volume	
• as user data per ISO on TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks maximum	2 Kibyte
Number of Multicast stations	8
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	4
• with PG connections maximum	-
• with PG/OP connections maximum	-
• note	-
Service of SIMATIC communication as server	Yes
Performance data multi-protocol mode	
Number of active connections with multiprotocol mode	12
Performance data PROFINET communication as PN IO-Device	
Product function PROFINET IO device	Yes
Amount of data	
• as useful data for input variables as PROFINET IO device maximum	512 byte
• as useful data for input variables as PROFINET IO device maximum	512 byte
• as useful data for input variables for each sub-module under PROFINET IO device	240 byte
• as useful data for input variables for each sub-module under PROFINET IO device	240 byte
• as useful data for the consistency area for each sub-module	240 byte
Number of submodules per PROFINET IO-Device	32

Order No.	6GK7 343-1CX10-0XE0
Product-type designation	**CP 343-1 Lean**
Product functions management, configuration	
Product function MIB support	Yes
Protocol is supported	
• SNMP v1	Yes
• DCP	Yes
• LLDP	Yes
Configuration software required	
Identification & maintenance	
• I&M0 - device-specific information	Yes
• I&M1 - plant identification/location name	Yes
Product functions Diagnosis	
Product function Web-based diagnostics	Yes
Product functions switch	
Product feature switch	Yes
Product function	
• switch-managed	No
• Configuration with STEP 7	Yes
Product functions Redundancy	
Product function	
• Ring redundancy	Yes
• MRP redundancy protocol	Yes
Product functions Security	
Product function	
• switchoff of non-required services	Yes
• blocking of communication via physical ports	Yes
Product functions Time	
Product function	
• SICLOCK support	Yes
• pass on time synchronization	Yes
Protocol is supported NTP	Yes

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Ordering data	Order 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	**6GK7 343-1CX10-0XE0**
IE FC TP Standard Cable GP 2x2 4-core, shielded TP installation cable for connection to IE FC RJ45 outlet / IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter max. length 1000 m, minimum order 20 m	**6XV1 840-2AH10**
CSM 377 Compact Switch Module Unmanaged switch for connection of a SIMATIC S7-300-CPU, ET 200M and as many as 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	**6GK7 377-1AA00-0AA0**
IE FC RJ45 Plug 145 RJ45 plug connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 145° cable outlet;	
• 1 pack = 1 unit	**6GK1 901-1BB30-0AA0**
• 1 pack = 10 units	**6GK1 901-1BB30-0AB0**
• 1 pack = 50 units	**6GK1 901-1BB30-0AE0**
IE FC Stripping Tool Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	**6GK1 901-1GA00**

	Order No.
SOFTNET S7 for Industrial Ethernet Software for S7 and open communication, including OPC server, PG/OP communication and NCM PC, runtime software, software and electronic manual on CD-ROM, license key on a USB stick, Class A	
SOFTNET-IE S7 V8.2 For 32/64-bit Windows 7 Professional/Ultimate; for 64-bit: Windows 2008 Server R2; German/English	
Up to 64 connections	
• Single License for one installation	**6GK1 704-1CW08-2AA0**
SOFTNET-S7 Edition 2008 (V7.1) for Industrial Ethernet for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/ Ultimate SP1; Windows 2008 Server; German/English	
Up to 64 connections	
• Single License for one installation	**6GK1 704-1CW71-3AA0**
Software Update Service For 1 year with automatic extension; requirement: current software version	**6GK1 704-1CW00-3AL0**
Upgrade	
• From Edition 2006 to Edition 2008 or V8.1	**6GK1 704-1CW00-3AE0**
• From V6.0, V6.1, V6.2 or V6.3 to Edition 2008 or V8.1	**6GK1 704-1CW00-3AE1**
SOFTNET-IE S7 Lean Edition V8.2	
Up to eight connections	
• Single License for one installation	**6GK1 704-1LW08-2AA0**
SOFTNET-S7 Lean Edition 2008 (V7.1) for Industrial Ethernet	
Up to eight connections	
• Single License for one installation	**6GK1 704-1LW71-3AA0**
Software Update Service For 1 year with automatic extension; requirement: current software version	**6GK1 704-1LW00-3AL0**
Upgrade	
• From Edition 2006 to Edition 2008 or V8.1	**6GK1 704-1LW00-3AE0**
• From V6.0, V6.1, V6.2 or V6.3 to Edition 2008 or V8.1	**6GK1 704-1LW00-3AE1**

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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

Order No.	6GK7 343-1EX30-0XE0
Product-type designation	**CP 343-1**
Transmission rate	
Transfer rate at the interface 1	10 … 100 Mbit/s
Interfaces	
Number of electrical connections	
• at interface 1 in accordance with Industrial Ethernet	2
• for power supply	1
Design of electrical connection	
• at interface 1 in accordance with Industrial Ethernet	RJ45 port
• for power supply	
Supply voltage, current consumption, power loss	
Type of voltage of supply voltage	DC
Supply voltage	
• 1 from backplane bus	5 V
• external	24 V
Relative positive tolerance at 24 V with DC	20 %
Relative negative tolerance at 24 V with DC	15 %
Consumed current	
• from backplane bus at 5 V for DC Typical	0,2 A
• from external supply voltage at 24 V with DC	
- typical	0.16 A
- maximum	0.2 A
Resistive loss	5.8 W

Order No.	6GK7 343-1EX30-0XE0
Product-type designation	**CP 343-1**
Permitted ambient conditions	
Ambient temperature	
• during operating	0 ... 60 °C
• during storage	-40 … +70 °C
• during transport	-40 … +70 °C
• Comment	-
Relative humidity at 25 °C without condensation during operating maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.22 kg
Product properties, functions, components general	
Number of modules	
• per CPU maximum	-
• note	-

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Technical specifications (continued)

Order No.	6GK7 343-1EX30-0XE0
Product-type designation	**CP 343-1**
Performance data	
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	16
Data volume	
• as user data per ISO connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per ISO on TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks maximum	2 Kibyte
Number of Multicast stations	16
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	16
• with PG connections maximum	-
• with PG/OP connections maximum	-
• note	-
Performance data multi-protocol mode	
Number of active connections with multiprotocol 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
Data volume	
• as useful data for input variables as PROFINET IO controller maximum	1 Kibyte
• as useful data for output variables with PROFINET IO controller maximum	1 Kibyte
• as useful data for input variables per PN IO device with PROFINET IO controller maximum	1 433 byte
• as useful data for output variables per PN IO device with PROFINET IO controller maximum	1 433 byte
• as user data for input variable per PN IO device per submodule as PROFINET IO controller maximum	240 byte
• as user data for output variables per PN IO device per submodule as PROFINET IO controller maximum	240 byte

Order No.	6GK7 343-1EX30-0XE0
Product-type designation	**CP 343-1**
Performance data PROFINET communication as PN IO-Device	
Product function PROFINET IO device	Yes
Amount of data	
• as useful data for input variables as PROFINET IO device maximum	512 byte
• as useful data for input variables as PROFINET IO device maximum	512 byte
• as useful data for input variables for each sub-module under PROFINET IO device	240 byte
• as useful data for input variables for each sub-module under PROFINET IO device	240 byte
• as useful data for the consistency area for each sub-module	240 byte
Number of submodules per PROFINET IO-Device	32
Product functions management, configuration	
Product function MIB support	Yes
Protocol is supported	
• SNMP v1	Yes
• DCP	Yes
• LLDP	Yes
Configuration software required	
Identification & maintenance	
• I&M0 - device-specific information	Yes
• I&M1 - plant identification/location name	Yes
Product functions Diagnosis	
Product function Web-based diagnostics	Yes
Product functions Switch	
Product feature switch	Yes
Product function	
• switch-managed	No
• Configuration with STEP 7	Yes
Product functions Redundancy	
Product function	
• Ring redundancy	Yes
• Redundancy manager	No
• MRP redundancy protocol	Yes
Product functions Security	
Product function	
• ACL - IP-based	Yes
• switchoff 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
• pass on time synchronization	Yes
Protocol is supported NTP	Yes

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Ordering data	Order 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	**6GK7 343-1EX30-0XE0**
IE FC TP Standard Cable GP 2x2 4-core, shielded TP installation cable for connection to IE FC RJ45 outlet / IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter max. length 1000 m, minimum order 20 m	**6XV1 840-2AH10**
C-PLUG Removable media for easy device replacement upon failure, for receiving configuration or projects and application data, may be used in SIMATIC NET products with C-PLUG slot	**6GK1 900-0AB00**
Industrial Ethernet Switch SCALANCE X204-2 Industrial Ethernet switches with integral SNMP access, online diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbit/s RJ45 ports and two fiber-optic cable ports	**6GK5 204-2BB10-2AA3**
CSM 377 Compact Switch Module Unmanaged switch for connection of a SIMATIC S7-300-CPU, ET 200M and as many as 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	**6GK7 377-1AA00-0AA0**
IE FC RJ45 Plug 145 RJ45 plug connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 145° cable outlet	
• 1 pack = 1 unit	**6GK1 901-1BB30-0AA0**
• 1 pack = 10 units	**6GK1 901-1BB30-0AB0**
• 1 pack = 50 units	**6GK1 901-1BB30-0AE0**
IE FC Stripping Tool Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	**6GK1 901-1GA00**

	Order No.
SOFTNET S7 for Industrial Ethernet Software for S7 and open communication, including OPC server, PG/OP communication and NCM PC, runtime software, software and electronic manual on CD-ROM, license key on a USB stick, Class A	
SOFTNET-IE S7 V8.2 For 32/64-bit Windows 7 Professional/Ultimate; for 64-bit: Windows 2008 Server R2; German/English	
Up to 64 connections	
• Single License for one installation	**6GK1 704-1CW08-2AA0**
SOFTNET-S7 Edition 2008 (V7.1) for Industrial Ethernet For 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/ Ultimate SP1; Windows 2008 Server; German/English	
Up to 64 connections	
• Single License for one installation	**6GK1 704-1CW71-3AA0**
Software Update Service For 1 year with automatic extension; requirement: current software version	**6GK1 704-1CW00-3AL0**
Upgrade	
• From Edition 2006 to Edition 2008 or V8.1	**6GK1 704-1CW00-3AE0**
• From V6.0, V6.1, V6.2 or V6.3 to Edition 2008 or V8.1	**6GK1 704-1CW00-3AE1**
SOFTNET-IE S7 Lean Edition V8.2	
Up to eight connections	
• Single License for one installation	**6GK1 704-1LW08-2AA0**
SOFTNET-S7 Lean Edition 2008 (V7.1) for Industrial Ethernet	
Up to eight connections	
• Single License for one installation	**6GK1 704-1LW71-3AA0**
Software Update Service For 1 year with automatic extension; requirement: current software version	**6GK1 704-1LW00-3AL0**
Upgrade	
• From Edition 2006 to Edition 2008 or V8.1	**6GK1 704-1LW00-3AE0**
• From V6.0, V6.1, V6.2 or V6.3 to Edition 2008 or V8.1	**6GK1 704-1LW00-3AE1**

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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 functions, 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

Order No.	6GK7 343-1GX31-0XE0	6GK7 343-1GX30-0XE0
Product-type designation	**CP 343-1 Advanced**	**CP 343-1 Advanced**
Transmission rate		
Transfer rate		
• at the interface 1	10 … 1 000 Mbit/s	10 … 1 000 Mbit/s
• at the interface 2	10 … 100 Mbit/s	10 … 100 Mbit/s
Interfaces		
Number of electrical connections		
• at interface 1 in accordance with Industrial Ethernet	1	1
• at interface 2 in accordance with Industrial Ethernet	2	2
• for power supply	1	1
Design of electrical connection		
• at interface 1 in accordance with Industrial Ethernet	RJ45 port	RJ45 port
• at interface 2 in accordance with Industrial Ethernet	RJ45 port	RJ45 port
• for power supply		
design of the removable storage C-PLUG	Yes	Yes
Supply voltage, current consumption, power loss		
Type of voltage of supply voltage	DC	DC
Supply voltage		
• 1 from backplane bus	5 V	5 V
• external	24 V	24 V
Relative positive tolerance at 24 V with DC	20 %	20 %
Relative negative tolerance at 24 V with DC	15 %	15 %
Consumed current		
• from backplane bus at 5 V for DC Typical	0.14 A	0.14 A
• from external supply voltage at 24 V with DC		
- typical	0.48 A	0.48 A
- maximum	0.62 A	0.62 A
Resistive loss	14.7 W	14.7 W
Permitted ambient conditions		
Ambient temperature		
• during operating	- -	- -
• during storage	-40 … +70 °C	-40 … +70 °C
• during transport	-40 … +70 °C	-40 … +70 °C
• Comment	-	-
Relative humidity at 25 °C without condensation during operating maximum	95 %	95 %
Protection class IP	IP20	IP20

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Technical specifications (continued)

Order No.	6GK7 343-1GX31-0XE0	6GK7 343-1GX30-0XE0
Product-type designation	**CP 343-1 Advanced**	**CP 343-1 Advanced**
Design, dimensions and weight		
Module format		
Width	80 mm	80 mm
Height	125 mm	125 mm
Depth	120 mm	120 mm
Net weight	0.8 kg	0.6 kg
Product properties, functions, components general		
Number of modules		
• per CPU maximum	-	-
• note	-	-
Performance data		
Performance data open communication		
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	16	16
Data volume		
• as user data per ISO connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte	8 Kibyte
• as user data per ISO on TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte	8 Kibyte
• as user data per TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte	8 Kibyte
• as user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks maximum	2 Kibyte	2 Kibyte
Number of Multicast stations	16	16
Performance data S7 communication		
Number of possible connections for S7 communication		
• maximum	16	16
• with PG connections maximum	-	-
• with PG/OP connections maximum	-	-
• note	-	-
Performance data multi-protocol mode		
Number of active connections with multiprotocol mode	48	48
Performance data IT functions		
Number of possible connections		
• as client by means of FTP maximum	10	10
• as server		
- by means of FTP maximum	2	2
- by means of HTTP maximum	4	4
• as e-mail client maximum	1	1
Amount of data as useful data for e-mail maximum	8 Kibyte	8 Kibyte
Storage capacity of user memory		
• as flash memory file system	28 Mibyte	28 Mibyte
• as RAM	30 Mibyte	30 Mibyte
Number of possible write cycles flash memory cells	100 000	100 000

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Technical specifications (continued)

Order No.	6GK7 343-1GX31-0XE0	6GK7 343-1GX30-0XE0
Product-type designation	**CP 343-1 Advanced**	**CP 343-1 Advanced**
Performance data PROFINET communication as PN IO-Controller		
Number of PN IO-Devices on PROFINET IO-Controller usable total	128	128
Number of PN IO IRT-Devices on PROFINET IO-Controller usable	128	32
Number of external PN IO lines with PROFINET per rack	1	1
Data volume		
• as useful data for input variables as PROFINET IO controller maximum	4 Kibyte	4 Kibyte
• as useful data for output variables with PROFINET IO controller maximum	4 Kibyte	4 Kibyte
• as useful data for input variables per PN IO device with PROFINET IO controller maximum	1 433 byte	1 433 byte
• as useful data for output variables per PN IO device with PROFINET IO controller maximum	1 433 byte	1 433 byte
• as user data for input variable per PN IO device per submodule as PROFINET IO controller maximum	240 byte	240 byte
• as user data for output variables per PN IO device per submodule as PROFINET IO controller maximum	240 byte	240 byte
Performance data PROFINET communication as PN IO-Device		
Product function PROFINET IO device	Yes	Yes
Amount of data		
• as useful data for input variables as PROFINET IO device maximum	1 024 byte	1 024 byte
• as useful data for input variables as PROFINET IO device maximum	1 024 byte	1 024 byte
• as useful data for input variables for each sub-module under PROFINET IO device	240 byte	240 byte
• as useful data for input variables for each sub-module under PROFINET IO device	240 byte	240 byte
• as useful data for the consistency area for each sub-module	240 byte	240 byte
Number of submodules per PROFINET IO-Device	32	32
Performance data PROFINET CBA		
Number of remote connection partners with PROFINET CBA	64	64
Number of connections with PROFINET CBA total	1 000	1 000
Amount of data		
• as useful data for digital inputs with PROFINET CBA maximum	8 192 byte	8 Kibyte
• as useful data for digital outputs in the case of PROFINET CBA max.	8 192 byte	8 Kibyte
• as useful data for arrays and data types		
- in the case of acyclic transmission with PROFINET CBA maximum	8 192 byte	8 Kibyte
- in the case of cyclic transmission with PROFINET CBA maximum	250 byte	250 byte
- in the case of local interconnection with PROFINET CBA maximum	2 400 byte	2 400 byte
Performance data PROFINET CBA remote connection with acyclic transmission		
Updating time of the remote interconnections in the case of acyclic transmission with PROFINET CBA	0.1 s	100 ms
Number of remote connections to input variables with acyclic transmission with PROFINET CBA maximum	128	128
Number of remote connections to output variables with acyclic transmission with PROFINET CBA maximum	128	128
Amount of data		
• as useful data for remote interconnections with input variables in the case of acyclic transmission with PROFINET CBA	8 Kibyte	8 Kibyte
• as useful data for remote interconnections with output variables in the case of acyclic transmission with PROFINET CBA	8 Kibyte	8 Kibyte

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Technical specifications (continued)

Order No.	6GK7 343-1GX31-0XE0	6GK7 343-1GX30-0XE0
Product-type designation	**CP 343-1 Advanced**	**CP 343-1 Advanced**
Performance data PROFINET CBA remote connection with cyclic transmission		
Updating time of the remote interconnections in the case of acyclic transmission with PROFINET CBA	8 ms	8 ms
Number of remote connections to input variables with cyclic transmission with PROFINET CBA maximum	200	200
Number of remote connections to output variables with cyclic transmission with PROFINET CBA maximum	200	200
Amount of data		
• as useful data for remote interconnections with input variables in the case of cyclic transmission with PROFINET CBA max.	2 000 byte	2 000 byte
• as useful data for remote interconnections with output variables in the case of cyclic transmission with PROFINET CBA maximum	2 000 byte	2 000 byte
Performance data PROFINET CBA HMI variables via PROFINET acyclic		
Number of connectable HMI stations for HMI variables with acyclic transmission with PROFINET CBA	3	3
Updating time of the HMI variables in the case of acyclic transmission with PROFINET CBA	500 ms	500 ms
Number of HMI variables with acyclic transmission with PROFINET CBA maximum	200	200
Amount of data as useful data for HMI variables in the case of acyclic transmission with PROFINET CBA maximum	8 Kibyte	8 Kibyte
Performance data PROFINET CBA device-internal connections		
Number of internal connections with PROFINET CBA maximum	256	256
Data volume of internal connections with PROFINET CBA maximum	2 400 byte	2 400 byte
Performance data PROFINET CBA connections to constants		
Number of connections to constants with PROFINET CBA maximum	200	200
Amount of data as useful data for interconnections with constants in the case of PROFINET CBA maximum	4 096 byte	4 096 byte
Performance data PROFINET CBA PROFIBUS proxy functionality		
Product function with PROFINET CBA PROFIBUS proxy functionality	No	No
Product functions management, configuration		
Product function MIB support	Yes	Yes
Protocol is supported		
• SNMP v1	Yes	Yes
• DCP	Yes	Yes
• LLDP	Yes	Yes
Configuration software		
• required	STEP 7 V5.5 SP2 HF1 or higher or STEP 7 V12.0 or higher	STEP 7 V5.4 SP4 or higher or STEP 7 V11.0 or higher
• for PROFINET CBA required	SIMATIC iMap V3.0 SP4 and higher	SIMATIC iMap V3.0 SP1 and higher
Identification & maintenance		
• I&M0 - device-specific information	Yes	Yes
• I&M1 - plant identification/location name	Yes	Yes
Product functions Diagnosis		
Product function Web-based diagnostics	Yes	Yes
Product functions switch		
Product feature switch	Yes	Yes
Product function		
• switch-managed	No	No
• for IRT PROFINET IO switch	Yes	Yes
• Configuration with STEP 7	Yes	Yes

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Technical specifications (continued)

Order No.	6GK7 343-1GX31-0XE0	6GK7 343-1GX30-0XE0
Product-type designation	**CP 343-1 Advanced**	**CP 343-1 Advanced**
Product functions Redundancy		
Product function		
• Ring redundancy	Yes	Yes
• Redundancy manager	Yes	Yes
• MRP redundancy protocol	Yes	Yes
Product functions Security		
Design of the firewall	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 for VPN connection	32	-
Product function		
• password protection for Web applications	Yes	Yes
• ACL - IP-based	Yes	Yes
• ACL - IP-based for PLC/routing	Yes	Yes
• switchoff of non-required services	Yes	Yes
• blocking of communication via physical ports	Yes	Yes
• log file for unauthorized access	No	No
Product functions Time		
Product function		
• SICLOCK support	Yes	Yes
• pass on time synchronization	Yes	Yes
Protocol is supported NTP	Yes	Yes

Ordering data

	Order 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); RJ45 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; e-mail; PROFINET CBA; C-PLUG	
• With Security (firewall + VPN) and PROFIenergy (controller + device)	**6GK7 343-1GX31-0XE0**
• Without security (firewall + VPN) and PROFIenergy (controller + device)	**6GK7 343-1GX30-0XE0**

	Order No.
SOFTNET S7 for Industrial Ethernet	
Software for S7 and open communication, including OPC server, PG/OP communication and NCM PC, runtime software, software and electronic manual on CD-ROM, license key on a USB stick, Class A	
SOFTNET-IE S7 V8.2	
For 32/64-bit Windows 7 Professional/Ultimate; for 64-bit: Windows 2008 Server R2; German/English	
up to 64 connections	
• Single license for one installation	**6GK1 704-1CW08-2AA0**

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Ordering data

	Order No.
SOFTNET-S7 Edition 2008 (V7.1) for Industrial Ethernet	
for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; German/English	
up to 64 connections	
• Single license for one installation	**6GK1 704-1CW71-3AA0**
Software Update Service	**6GK1 704-1CW00-3AL0**
For one year with automatic extension; requirement: Current software version	
Upgrade	
• From Edition 2006 to Edition 2008 or V8.1	**6GK1 704-1CW00-3AE0**
• From V6.0, V6.1, V6.2 or V6.3 to Edition 2008 or V8.1	**6GK1 704-1CW00-3AE1**
SOFTNET-IE S7 Lean Edition V8.2	
Up to eight connections	
• Single license for one installation	**6GK1 704-1LW08-2AA0**
SOFTNET-S7 Lean Edition 2008 (V7.1) for Industrial Ethernet	
Up to eight connections	
• Single license for one installation	**6GK1 704-1LW71-3AA0**
Software Update Service	**6GK1 704-1LW00-3AL0**
For one year with automatic extension; requirement: Current software version	
Upgrade	
• From Edition 2006 to Edition 2008 or V8.1	**6GK1 704-1LW00-3AE0**
• From V6.0, V6.1, V6.2 or V6.3 to Edition 2008 or V8.1	**6GK1 704-1LW00-3AE1**
IE FC TP standard cable GP 2 x 2 (type A)	**6XV1 840-2AH10**
4-wire, shielded TP installation cable for connection to IE FC RJ45 outlet / IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. quantity 1000 m, minimum order 20 m	
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 application; with UL approval; sold by the meter; max quantity 1000 m, minimum order 20 m	
• AWG22, for connection to IE FC RJ45 Modular Outlet	**6XV1 870-2E**
• AWG24, for connection to IE FC RJ45 Plug 4 x 2	**6XV1 878-2A**

	Order No.
IE FC RJ45 Plug 180	
RJ45 plug-in connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with a 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface	
• 1 pack = 1 unit	**6GK1 901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1 901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1 901-1BB10-2AE0**
IE FC RJ45 Plug 4 x 2	
RJ45 plug-in connector for Industrial Ethernet (10/100/1000 Mbit/s) 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	**6GK1 901-1BB11-2AA0**
• 1 pack = 10 units	**6GK1 901-1BB11-2AB0**
• 1 pack = 50 units	**6GK1 901-1BB11-2AE0**
IE FC Stripping Tool	**6GK1 901-1GA00**
Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables	
Compact Switch Module CSM 377	**6GK7 377-1AA00-0AA0**
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	
Industrial Ethernet Switch SCALANCE X308-2	**6GK5 308-2FL00-2AA3**
2 x 1000 Mbit/s multimode fiber-optic 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	
SIMATIC iMap V3.0	
for configuring PROFINET CBA,	
Requirement: Windows 2000 Prof. with Service Pack 4 or later or Windows XP Prof. with Service Pack 1 or later or Windows 2003 Server with Service Pack 1 or later; on PG or PC with Pentium processor, min. 1 GHz; STEP 7 V5.3 or later with Service Pack 3, PN OPC Server V6.3 or later	
Available in: German, English, with electronic documentation	
• Single license	**6ES7 820-0CC04-0YA5**
• Software Update Service	**6ES7 820-0CC01-0YX2**
• Upgrade to V3.0, single license	**6ES7 820-0CC04-0YE5**

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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

Order No.	6GK7 343-1FX00-0XE0
Product-type designation	**CP 343-1 ERPC**
Transmission rate	
Transfer rate at the interface 1	10 … 1 000 Mbit/s
Interfaces	
Number of electrical connections	
• at interface 1 in accordance with Industrial Ethernet	1
• for power supply	1
Design of electrical connection	
• at interface 1 in accordance with Industrial Ethernet	RJ45 port
• for power supply	
design of the removable storage C-PLUG	Yes
Supply voltage, current consumption, power loss	
Type of voltage of supply voltage	DC
Supply voltage	
• 1 from backplane bus	5 V
• external	24 V
Relative positive tolerance at 24 V with DC	20 %
Relative negative tolerance at 24 V with DC	15 %
Consumed current	
• from backplane bus at 5 V for DC Typical	0,3 A
• from external supply voltage at 24 V with DC	
- typical	0.16 A
- maximum	0.6 A
Resistive loss	14.7 W

Order No.	6GK7 343-1FX00-0XE0
Product-type designation	**CP 343-1 ERPC**
Permitted ambient conditions	
Ambient temperature	
• during operating	- -
• during storage	-40 … +70 °C
• during transport	-40 … +70 °C
• Comment	-
Relative humidity at 25 °C without condensation during operating maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	
Width	80 mm
Height	125 mm
Depth	120 mm
Net weight	0,8 kg
Product properties, functions, components general	
Number of modules	
• per CPU maximum	-
• note	-

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Technical specifications (continued)

Order No.	6GK7 343-1FX00-0XE0
Product-type designation	**CP 343-1 ERPC**
Performance data	
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	8
Data volume	
• as user data per ISO on TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks maximum	2 Kibyte
Number of Multicast stations	8
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	8
• with PG connections maximum	-
• with PG/OP connections maximum	-
• note	also 2 PG/OP connections and 1 diagnostics connection
Performance data multi-protocol mode	
Number of active connections with multiprotocol mode	32
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
Data volume as user data and header information per logical trigger	8 Kibyte

Order No.	6GK7 343-1FX00-0XE0
Product-type designation	**CP 343-1 ERPC**
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 or higher plus HSP or STEP 7 V11.0 or higher
Identification & maintenance	
• I&M0 - device-specific information	Yes
• I&M1 - plant identification/location name	Yes
Product functions Diagnosis	
Product function Web-based diagnostics	Yes
Product functions Redundancy	
Product function	
• Ring redundancy	No
• MRP redundancy protocol	-
Product functions Security	
Product function	
• ACL - IP-based	Yes
• switchoff 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
• pass on time synchronization	Yes
Protocol is supported NTP	Yes

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Ordering data

	Order No.
CP 343-1 ERPC communications processor (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	**6GK7 343-1FX00-0XE0**
SOFTNET S7 for Industrial Ethernet Software for S7 and open communication, including OPC server, PG/OP communication and NCM PC, runtime software, software and electronic manual on CD-ROM, license key on a USB stick, Class A	
SOFTNET-IE S7 V8.2 For 32/64-bit Windows 7 Professional/Ultimate; for 64-bit: Windows 2008 Server R2; German/English	
up to 64 connections • Single License for one installation	**6GK1 704-1CW08-2AA0**
SOFTNET-S7 Edition 2008 (V7.1) for Industrial Ethernet for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/ Ultimate SP1; Windows 2008 Server; German/English	
up to 64 connections • Single License for one installation	**6GK1 704-1CW71-3AA0**
Software Update Service For 1 year with automatic extension; requirement: current software version	**6GK1 704-1CW00-3AL0**
Upgrade • From Edition 2006 to Edition 2008 or V8.1 • From V6.0, V6.1, V6.2 or V6.3 to Edition 2008 or V8.1	**6GK1 704-1CW00-3AE0** **6GK1 704-1CW00-3AE1**

	Order No.
SOFTNET-IE S7 Lean Edition V8.2 Up to eight connections • Single License for one installation	**6GK1 704-1LW08-2AA0**
SOFTNET-S7 Lean Edition 2008 (V7.1) for Industrial Ethernet Up to eight connections • Single License for one installation	**6GK1 704-1LW71-3AA0**
Software Update Service For 1 year with automatic extension; requirement: current software version	**6GK1 704-1LW00-3AL0**
Upgrade • From Edition 2006 to Edition 2008 or V8.1 • From V6.0, V6.1, V6.2 or V6.3 to Edition 2008 or V8.1	**6GK1 704-1LW00-3AE0** **6GK1 704-1LW00-3AE1**
SCALANCE X308-2 Industrial Ethernet Switch 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	**6GK5 308-2FL00-2AA3**
IE FC TP Standard Cable GP 4 x 2 8-core, shielded TP installation cable for universal use; with UL approval; sold by the meter max. length 1000 m; minimum order quantity 20 m • AWG 22, for connection to IE FC RJ45 Modular Outlet • AWG 24, for connection to IE FC RJ45 Plug 4 x 2	 **6XV1 870-2E** **6XV1 878-2A**
IE FC RJ45 Plug 4 x 2 RJ45 plug connector for Industrial Ethernet (10/100/1000 Mbit/s) 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 • 1 pack = 10 units • 1 pack = 50 units	 **6GK1 901-1BB11-2AA0** **6GK1 901-1BB11-2AB0** **6GK1 901-1BB11-2AE0**
IE FC Stripping Tool Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	**6GK1 901-1GA00**

More information

You can obtain further information on the software "deviceWISE embedded Edition for SIMATIC S7" from:

ILS Technology LLC;
5300 Broken Sound Blvd.
Suite 150
Boca Raton, FL, USA, 33487
Phone.: +1-561-982-9898 x124
Fax.: +1-561-982-8638
E-mail: devicewise@ilstechnology.com
Internet: www.ilstechnology.com/erpc

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CSM 377 unmanaged

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

Order No.	6GK7 377-1AA00-0AA0
Product-type designation	**CSM 377**
Transmission rate	
Transfer rate 1	10 Mbit/s
Transfer rate 2	100 Mbit/s
Interfaces	
Number of electrical/optical connections for network components or terminal equipment maximum	4
Number of electrical connections	
• for network components and terminal equipment	4
• for alarm contact	-
• for power supply	1
Design of electrical connection	
• for network components and terminal equipment	RJ45 port
• for signaling contact	-
• for power supply	2-pole terminal block
Supply voltage, current consumption, power loss	
Type of voltage of supply voltage	DC
Supply voltage external	24 V
• minimum	19,2 V
• maximum	28.8 V
Product component fusing at power supply input	Yes
Type of fusing at input for supply voltage	0,5 A / 60 V
Consumed current maximum	0.07 A
Active power loss at 24 V for DC	1.6 W
Permitted ambient conditions	
Ambient temperature	
• during operating	0 … 60 °C
• during storage	-40 … +70 °C
• during transport	-40 … +70 °C
Relative humidity at 25 °C without condensation during operating maximum	95 %
Protection class IP	IP20

Order No.	6GK7 377-1AA00-0AA0
Product-type designation	**CSM 377**
Design, dimensions and weight	
Design	SIMATIC S7-300 device design
Width	40 mm
Height	125 mm
Depth	118 mm
Net weight	0.2 kg
Type of mounting	
• 35 mm DIN rail mounting	No
• wall mounting	No
• S7-300 rail mounting	Yes
Type of mounting	-
Product properties, functions, components general	
Cascading in cases of star structuring	-
Product functions management, configuration	
Product function switch-managed	No
Standards, specifications, approvals	
Standard	
• for EMC from FM	FM3611: Class 1, Division 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 of CSA and UL	UL 508, CSA C22.2 No. 142
• for hazardous area of 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
Verification of suitability	EN 61000-6-2:2001, EN 61000-6-4:2001
• CE mark	Yes
• C-Tick	Yes
• KC approval	No

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Ordering data	Order No.
CSM 377 Compact Switch Module 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	**6GK7 377-1AA00-0AA0**

Accessories	Order 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-compliant; with UL approval; sold by the meter; max. quantity 1000 m, minimum order 20 m	**6XV1 840-2AH10**
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	**6GK1 901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1 901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1 901-1BB10-2AE0**
IE FC stripping tool Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	**6GK1 901-1GA00**

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TIM 3V-IE for WAN and Ethernet

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

Order No.	6NH7 800-3BA00
Product-type designation	**TIM 3V-IE**
Transmission rate	
• for Industrial Ethernet	10 … 100 Mbit/s
• in accordance with RS 232	50 … 38 400 bit/s
Interfaces	
Number of interfaces according to Industrial Ethernet	1
Number of electrical connections	
• for external data transmission in accordance with RS 232	1
• for power supply	1
Design of electrical connection	
• the Industrial Ethernet Interface	
• at interface 1 for external data transmission	
• at interface 2 for external data transmission	-
• for power supply	
design of the removable storage C-PLUG	No
Supply voltage, current consumption, power loss	
Type of voltage of supply voltage	DC
Supply voltage	24 V
• minimum	20.4 V
• maximum	28.8 V
Consumed current	
• from backplane bus at 24 V for DC maximum	0.2 A
• from external supply voltage at 24 V at DC maximum	0.2 A
Resistive loss	5.8 W
Product expansion optional backup battery	No
Type of battery	-
Backup current	
• typical	-
• maximum	-

Order No.	6NH7 800-3BA00
Product-type designation	**TIM 3V-IE**
Permitted ambient conditions	
Ambient temperature	
• during operating	0 … 60 °C
• during storage	-40 … +70 °C
• during transport	-40 … +70 °C
Relative humidity at 25 °C without condensation during operating maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.25 kg
Product properties, functions, components general	
Number of modules note	Number of TIMs per S7-300: 1
Cable length	
• with RS232 interface maximum	6 m
• with RS485 interface maximum	-
Performance data	
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	8
• with PG connections maximum	2
• with OP connections maximum	8
• note	-
Service	
• SINAUT ST7 through S7 communication	Yes
• PG-/OP-communication	Yes

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Technical specifications (continued)

Order No.	6NH7 800-3BA00
Product-type designation	**TIM 3V-IE**
Performance data multi-protocol mode	
Number of active connections with multiprotocol mode	12
Performance data telecontrol	
Suitability for use	
• TIM node station	No
• TIM station	Yes
• TIM control center	No
• note	
Protocol will be supported TCP/IP	Yes
Protocol is supported DNP3	No
Protocol will be supported SINAUT ST1 protocol	Yes
Protocol will be supported SINAUT ST7 protocol	Yes
Product function data buffering if connection is aborted	Yes
• note	16,000 data messages
Storage capacity	
• of user memory of S7 CPU	
- for TD7onCPU mode data blocks on CPU required	20 Kibyte
- 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 retentive 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 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 SINAUT ST7 protocol	spontaneous
Hamming distance	
• for SINAUT ST1 protocol	4
• for SINAUT ST7 protocol	4

Order No.	6NH7 800-3BA00
Product-type designation	**TIM 3V-IE**
Product functions management, configuration	
Configuration software	
• required	STEP7 V5.5 or higher plus SINAUT ST7 Engineering Software
• 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 Virtual Private Network	
Suitability for installation Virtual Private Network	Yes
Product function	
• password protection for VPN	Yes
• MSC client via GPRS modem with MSC capability	Yes
Protocol is supported MSC protocol	No
Number of possible connections	
• as MSC client with VPN connection	1
• as MSC server with VPN connection	0
Protocol with Virtual Private Network MSC is supported	-
Key length for MSC with Virtual Private Network	128 bit
Type of authentication with Virtual Private Network PSK	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
Product functions Time	
Product component Hardware real-time clock	-
Product property battery-backed hardware real-time clock	-
Accuracy of hardware real-time clock per day maximum	-

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TIM 3V-IE for WAN and Ethernet

Ordering data

	Order No.
TIM 3V-IE communications module With an RS232 interface for SINAUT communication via a conventional WAN or an IP-based network (WAN or LAN)	**6NH7 800-3BA00**
SINAUT Engineering Software V5.3 On CD-ROM, comprising • SINAUT Engineering Software V5.3 for the programming device • SINAUT TD7 block library • Electronic manual in German and English	**6NH7 997-0CA53-0AA0**
SINAUT Engineering Software V5.3 Upgrade from V5.0, 5.1 or 5.2 for adding functional expansions; the functional expansions are for transferring larger data quantities of 1 KB and SMS functionality in GPRS mode	**6NH7 997-0CA53-0GA0**
SINAUT ST7 Engineering Software V5.0 09/2009 (Upgrade) for STEP 7 V5.4 SP4, for owners of older versions of SINAUT ST7 engineering software	**6NH7 997-0CA50-0GA0**

	Order 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	**6XV1 840-2AH10**
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	**6GK1 901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1 901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1 901-1BB10-2AE0**
IE FC Stripping Tool Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	**6GK1 901-1GA00**
Connecting cable For connecting a TIM (RS232) with a SINAUT ST7 MD2, MD3 or MD4 (RS232) modem; cable length 1.5 m	**6NH7 701-4AL**
Connecting cable For connecting a TIM (RS232) with the GSM modem MD720-3; also suitable for third-party modems or radio equipment with standard RS232 interface; cable length 2.5 m	**6NH7 701-5AN**
Connecting cable with one end open for connecting a TIM (RS232) to a third-party modem or radio unit (RS232); cable length 2.5 m	**6NH7 701-4BN**
Connecting cable For connecting two TIM modules via their RS232 interface without modems ("null modem"); cable length 6 m	**6NH7 701-0AR**

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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

Order No.	6NH7 800-3CA00
Product-type designation	**TIM 3V-IE Advanced**
Transmission rate	
Transfer rate	
• for Industrial Ethernet	10 … 100 Mbit/s
• in accordance with RS 232	50 … 38 400 bit/s
Interfaces	
Number of interfaces according to Industrial Ethernet	1
Number of electrical connections	
• for external data transmission in accordance with RS 232	1
• for power supply	1
Design of electrical connection	
• the Industrial Ethernet Interface	
• at interface 1 for external data transmission	
• at interface 2 for external data transmission	-
• for power supply	
design of the removable storage C-PLUG	No
Supply voltage, current consumption, power loss	
Type of voltage of supply voltage	DC
Supply voltage	24 V
• minimum	20.4 V
• maximum	28.8 V
Consumed current	
• from backplane bus at 24 V for DC maximum	0.2 A
• from external supply voltage at 24 V at DC maximum	0.2 A
Resistive loss	5.8 W
Product expansion optional backup battery	No
Type of battery	-
Backup current	
• typical	-
• maximum	-

Order No.	6NH7 800-3CA00
Product-type designation	**TIM 3V-IE Advanced**
Permitted ambient conditions	
Ambient temperature	
• during operating	0 … 60 °C
• during storage	-40 … +70 °C
• during transport	-40 … +70 °C
Relative humidity at 25 °C without condensation during operating maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.25 kg
Product properties, functions, components general	
Number of modules note	Number of TIMs per S7-300: multiple, number depends on the connection resources of the S7-300 CPU
Cable length	
• with RS232 interface maximum	6 m
• with RS485 interface maximum	-
Performance data	
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	24
• with PG connections maximum	4
• with OP connections maximum	20
• note	-
Service	
• SINAUT ST7 through S7 communication	Yes
• PG-/OP-communication	Yes

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TIM 3V-IE Advanced

Technical specifications (continued)

Order No.	6NH7 800-3CA00
Product-type designation	**TIM 3V-IE Advanced**
Performance data multi-protocol mode	
Number of active connections with multiprotocol mode	24
Performance data telecontrol	
Suitability for use	
• TIM node station	Yes
• TIM station	Yes
• TIM control center	Yes
• note	
Protocol will be 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 user memory of S7 CPU	
- for TD7onCPU mode data blocks on CPU required	20 Kibyte
- 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 retentive 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 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 SINAUT ST7 protocol	spontaneous
Hamming distance	
• for SINAUT ST1 protocol	4
• for SINAUT ST7 protocol	4

Order No.	6NH7 800-3CA00
Product-type designation	**TIM 3V-IE Advanced**
Product functions management, configuration	
Configuration software	
• required	STEP7 V5.5 or higher plus SINAUT ST7 Engineering Software
• 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 Virtual Private Network	
Suitability for installation Virtual Private Network	Yes
Product function	
• password protection for VPN	Yes
• MSC client via GPRS modem with MSC capability	Yes
Protocol is supported MSC protocol	Yes
Number of possible connections	
• as MSC client with VPN connection	1
• as MSC server with VPN connection	0
Protocol with Virtual Private Network MSC is supported	TCP/IP
Key length for MSC with Virtual Private Network	128 bit
Type of authentication with Virtual Private Network PSK	Yes
Operating mode Virtual Private Network	-
note	
Product functions Time	
Product component Hardware real-time clock	-
Product property battery-backed hardware real-time clock	-
Accuracy of hardware real-time clock per day maximum	-

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Ordering data	Order No.
TIM 3V-IE Advanced communications module With an RS232 interface and an RJ45 interface for SINAUT communication via a conventional WAN and an IP-based network (WAN or LAN)	**6NH7 800-3CA00**
SINAUT Engineering Software V5.3 On CD-ROM, comprising • SINAUT Engineering Software V5.3 for the programming device • SINAUT TD7 block library • Electronic manual in German and English	**6NH7 997-0CA53-0AA0**
SINAUT Engineering Software V5.3 Upgrade from V5.0, 5.1 or 5.2 for adding functional expansions; the functional expansions are for transferring larger data quantities of 1 KB and SMS functionality in GPRS mode	**6NH7 997-0CA53-0GA0**
SINAUT ST7 Engineering Software V5.0 Edition 09/2009 (Upgrade) for STEP 7 V5.4 SP4, for owners of older versions of SINAUT ST7 engineering software	**6NH7 997-0CA50-0GA0**

	Order 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	**6XV1 840-2AH10**
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	**6GK1 901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1 901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1 901-1BB10-2AE0**
IE FC Stripping Tool Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	**6GK1 901-1GA00**
Connecting cable For connecting a TIM (RS232) with a SINAUT ST7 MD2, MD3 or MD4 (RS232) modem; cable length 1.5 m	**6NH7 701-4AL**
Connecting cable For connecting a TIM (RS232) with the GSM modem MD720-3; also suitable for third-party modems or radio equipment with standard RS232 interface; cable length 2.5 m	**6NH7 701-5AN**
Connecting cable with one end open for connecting a TIM (RS232) to a third-party modem or radio unit (RS232); cable length 2.5 m	**6NH7 701-4BN**
Connecting cable For connecting two TIM modules via their RS232 interface without modems ("null modem"); cable length 6 m	**6NH7 701-0AR**

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TIM 4R-IE for WAN and Ethernet

Overview

- SINAUT communications module TIM with four interfaces for SIMATIC S7-300 or as self-contained unit for the S7-400 for use in the wide area network (WAN)
- For universal use in a SINAUT station, node station and control center
- Internet communication via integrated MSC-VPN tunnel with direct connection to DSL router or operation via IPsec VPN with additional SIMATIC NET components
- Wireless communication via 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

Order No.	6NH7 800-4BA00
Product-type designation	**TIM 4R-IE**
Transmission rate	
Transfer rate	
• for Industrial Ethernet	10 … 100 Mbit/s
• in accordance with RS 232	50 … 38 400 bit/s
Interfaces	
Number of interfaces according to Industrial Ethernet	2
Number of electrical connections	
• for external data transmission in accordance with RS 232	2
• for power supply	1
Design of electrical connection	
• the Industrial Ethernet Interface	
• at interface 1 for external data transmission	
• at interface 2 for external data transmission	
• for power supply	
design of the removable storage C-PLUG	Yes
Supply voltage, current consumption, power loss	
Type of voltage of supply voltage	DC
Supply voltage	24 V
• minimum	20.4 V
• maximum	28.8 V
Consumed current	
• from backplane bus at 24 V for DC maximum	0.2 A
• from external supply voltage at 24 V at DC maximum	0.17 A
Resistive 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

Order No.	6NH7 800-4BA00
Product-type designation	**TIM 4R-IE**
Permitted ambient conditions	
Ambient temperature	
• during operating	0 … 60 °C
• during storage	-40 … +70 °C
• during transport	-40 … +70 °C
Relative humidity at 25 °C without condensation during operating maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	
Width	80 mm
Height	125 mm
Depth	120 mm
Net weight	0.4 kg
Product properties, functions, components general	
Number of modules note	Number of TIM 4R-IE per S7-300/S7-400: multiple, number depends on the connection resources of the CPU
Cable length	
• with RS232 interface maximum	6 m
• with RS485 interface maximum	30 m
Performance data	
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	64
• with PG connections maximum	2
• with OP connections maximum	62
• note	-
Service	
• SINAUT ST7 through S7 communication	Yes
• PG-/OP-communication	Yes

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Technical specifications (continued)

Order No.	6NH7 800-4BA00
Product-type designation	**TIM 4R-IE**
Performance data multi-protocol mode	
Number of active connections with multiprotocol mode	128
Performance data telecontrol	
Suitability for use	
• TIM node station	Yes
• TIM station	Yes
• TIM control center	Yes
• note	-
Protocol will be 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 user memory of S7 CPU	
- for TD7onCPU mode data blocks on CPU required	20 Kibyte
- 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 retentive 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 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 SINAUT ST7 protocol	spontaneous
Hamming distance	
• for SINAUT ST1 protocol	4
• for SINAUT ST7 protocol	4

Order No.	6NH7 800-4BA00
Product-type designation	**TIM 4R-IE**
Product functions management, configuration	
Configuration software	
• required	STEP7 V5.5 or higher plus SINAUT ST7 Engineering Software
• 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 Virtual Private Network	
Suitability for installation Virtual Private Network	Yes
Product function	
• password protection for VPN	Yes
• MSC client via GPRS modem with MSC capability	Yes
Protocol is supported MSC protocol	Yes
Number of possible connections	
• as MSC client with VPN connection	1
• as MSC server with VPN connection	128
Protocol with Virtual Private Network MSC is supported	TCP/IP
Key length for MSC with Virtual Private Network	128 bit
Type of authentication with Virtual Private Network PSK	Yes
Operating mode Virtual Private Network note	-
Product functions Time	
Product component Hardware real-time clock	Yes
Product property battery-backed hardware real-time clock	Yes
Accuracy of hardware real-time clock per day maximum	4 s

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TIM 4R-IE for WAN and Ethernet

Ordering data	Order No.
TIM 4R-IE communications module With two combined RS232/RS485 interfaces for SINAUT communication via conventional WANs and two RJ45 interfaces for SINAUT communication via IP-based networks (WAN or LAN)	**6NH7 800-4BA00**
SINAUT Engineering Software V5.3 On CD-ROM, comprising • SINAUT Engineering Software V5.3 for the programming device • SINAUT TD7 block library • Electronic manual in German and English	**6NH7 997-0CA53-0AA0**
SINAUT Engineering Software V5.3 Upgrade from V5.0, 5.1 or 5.2 for adding functional expansions; the functional expansions are for transferring larger data quantities of 1 KB and SMS functionality in GPRS mode	**6NH7 997-0CA53-0GA0**
SINAUT ST7 Engineering Software V5.0 Edition 09/2009 (Upgrade) for STEP 7 V5.4 SP4, for owners of older versions of SINAUT ST7 engineering software	**6NH7 997-0CA50-0GA0**

Accessories	Order No.
Backup battery 3.6 V/2.3 Ah for TIM 4R-IE	**6ES7 971-0BA00**
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	**6XV1 840-2AH10**
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	**6GK1 901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1 901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1 901-1BB10-2AE0**
IE FC Stripping Tool Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	**6GK1 901-1GA00**
Connecting cable For connecting a TIM (RS232) with a SINAUT ST7 MD2, MD3 or MD4 (RS232) modem; cable length 1.5 m	**6NH7 701-4AL**
Connecting cable For connecting a TIM (RS485) with a SINAUT ST7 MD2, MD3 or MD4 (RS485) modem; cable length 1.5 m	**6NH7 701-4DL**
Connecting cable For connecting a TIM (RS232) with the GSM modem MD720-3; also suitable for third-party modems or radio equipment with standard RS232 interface; cable length 2.5 m	**6NH7 701-5AN**
Connecting cable with one end open for connecting a TIM (RS232) to a third-party modem or radio unit (RS232); cable length 2.5 m	**6NH7 701-4BN**
Connecting cable For connecting two TIM modules via their RS232 interface without modems ("null modem"); cable length 6 m	**6NH7 701-0AR**
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	**6EP1 331-5BA00**

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Overview

In an S7 station, the communications module TIM 3V-IE DNP3 (**T**elecontrol **I**nterface **M**odule) processes the data traffic for the S7-CPU to the assigned master system SIMATIC PCS7 TeleControl V7.1 SP2 using the open protocol DNP3 (**D**istributed **N**etwork **P**rotocol).

- with the S7-300 housing, can be fully integrated into the S7-300 system
- RS232 interface for the connection of an external modem for data transmission via a conventional WAN or the connection of a Modbus RTU slave to an S7-300 system
- RJ45 port for data transmission via IP-based networks

Technical specifications

Order No.	6NH7 803-3BA00-0AA0
Product-type designation	**TIM 3V-IE DNP3**
Transmission rate	
Transfer rate	
• for Industrial Ethernet	10 … 100 Mbit/s
• in accordance with RS 232	300 … 38 400 bit/s
Interfaces	
Number of interfaces according to Industrial Ethernet	1
Number of electrical connections	
• for external data transmission in accordance with RS 232	1
• for power supply	1
Design of electrical connection	
• the Industrial Ethernet Interface	
• at interface 1 for external data transmission	
• at interface 2 for external data transmission	-
• for power supply	
design of the removable storage C-PLUG	No
Supply voltage, current consumption, power loss	
Type of voltage of supply voltage	DC
Supply voltage	24 V
• minimum	20.4 V
• maximum	28.8 V
Consumed current	
• from backplane bus at 24 V for DC maximum	0.2 A
• from external supply voltage at 24 V at DC maximum	0.2 A
Resistive loss	5.8 W
Product expansion optional backup battery	No
Type of battery	-
Backup current	
• typical	-
• maximum	-

Order No.	6NH7 803-3BA00-0AA0
Product-type designation	**TIM 3V-IE DNP3**
Permitted ambient conditions	
Ambient temperature	
• during operating	0 … 60 °C
• during storage	-40 … +70 °C
• during transport	-40 … +70 °C
Relative humidity at 25 °C without condensation during operating maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.25 kg
Product properties, functions, components general	
Number of modules note	Number of TIMs per S7-300: 1
Cable length	
• with RS232 interface maximum	6 m
• with RS485 interface maximum	-
Performance data	
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	
• SINAUT ST7 through S7 communication	-
• PG-/OP-communication	Yes
Performance data multi-protocol mode	
Number of active connections with multiprotocol mode	-

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TIM 3V-IE DNP3

Technical specifications (continued)

Order No.	6NH7 803-3BA00-0AA0
Product-type designation	**TIM 3V-IE DNP3**
Performance data telecontrol	
Suitability for use	
• TIM node station	No
• TIM station	Yes
• TIM control center	No
• note	-
Protocol will be supported TCP/IP	Yes
Protocol is supported DNP3	Yes
Protocol will be supported SINAUT ST1 protocol	No
Protocol will be supported SINAUT ST7 protocol	No
Number of DNP3 masters Number of DNP3 masters	
• with Ethernet maximum	8
• with RS 232 interface maximum	1
Product function data buffering if connection is aborted	Yes
• note	

Order No.	6NH7 803-3BA00-0AA0
Product-type designation	**TIM 3V-IE DNP3**
Product functions management, configuration	
Configuration software required	STEP7 V5.5 or higher plus SINAUT ST7 Engineering Software
Storage location of TIM configuration data	On the CPU or TIM
Product functions Time	
Product component Hardware real-time clock	-
Product property battery-backed hardware real-time clock	-
Accuracy of hardware real-time clock per day maximum	-

Ordering data

	Order No.
TIM 3V-IE DNP3 communications module With an RS232 interface for SINAUT communication via a conventional WAN and an IP-based network (WAN or LAN)	**6NH7 803-3BA00-0AA0**
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	**6NH7 997-0CA53-0AA0**
SINAUT Engineering Software V5.3 Upgrade from V5.0, 5.1, or V5.2 For adding functional expansions; the functional expansions are for transferring larger data quantities of 1 KB and SMS functionality in GPRS mode	**6NH7 997-0CA53-0GA0**
SINAUT ST7 Engineering Software V5.0 Edition 09/2009 (Upgrade) for STEP 7 V5.4 SP4, for owners of older versions of SINAUT ST7 engineering software	**6NH7 997-0CA50-0GA0**
Accessories	
IE FC TP Standard Cable GP 2 x 2 (Type A) 4-core, shielded TP installation cable for connection to IE FC RJ45 outlet / IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. length 1000 m, minimum order 20 m	**6XV1 840-2AH10**

	Order No.
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	**6GK1 901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1 901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1 901-1BB10-2AE0**
IE FC stripping tool Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	**6GK1 901-1GA00**
Connecting cable For connecting a TIM (RS232) with a SINAUT ST7 MD2, MD3 or MD4 (RS232) modem; cable length 1.5 m	**6NH7 701-4AL**
Connecting cable For connecting a TIM (RS232) with the GSM modem MD720-3; also suitable for third-party modems or wireless equipment with standard RS232 interface; cable length 2.5 m	**6NH7 701-5AN**
Connecting cable with one end open for connecting a TIM (RS232) to a third-party modem or wireless device (RS232); cable length 2.5 m	**6NH7 701-4BN**
Connecting cable For connecting two TIM modules via their RS232 interface without modems ('Null modem'). Cable length 6 m	**6NH7 701-0AR**

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Overview

In an S7 station, the communications module TIM 4R-IE DNP3 (**T**elecontrol **I**nterface **M**odule) processes the data traffic for the S7-CPU to the assigned master system SIMATIC PCS7 TeleControl V7.1 SP2 using the open protocol DNP3 (**D**istributed **N**etwork **P**rotocol).

- with the double-width S7-300 housing, can be fully integrated into the S7-300 system
- Can be connected as a stand-alone to a SIMATIC S7-400 and SIMATIC S7-400 H System
- Two RS232/RS485 interfaces for the connection of an external modem for data transmission via a conventional WAN or of a Modbus RTU slave to an S7-300 system
- Two RJ45 interfaces for data transmission via IP-based networks
- By the use of physically separate connection paths, the module permits media redundancy without loss of data during the switchover

Technical specifications

Order No.	6NH7 803-4BA00-0AA0
Product-type designation	**TIM 4R-IE DNP3**
Transmission rate	
Transfer rate	
• for Industrial Ethernet	10 … 100 Mbit/s
• in accordance with RS 232	300 … 115 200 bit/s
Interfaces	
Number of interfaces according to Industrial Ethernet	2
Number of electrical connections	
• for external data transmission in accordance with RS 232	2
• for power supply	1
Design of electrical connection	
• the Industrial Ethernet Interface	
• at interface 1 for external data transmission	
• at interface 2 for external data transmission	
• for power supply	
design of the removable storage C-PLUG	Yes
Supply voltage, current consumption, power loss	
Type of voltage of supply voltage	DC
Supply voltage	24 V
• minimum	20.4 V
• maximum	28.8 V
Consumed current	
• from backplane bus at 24 V for DC maximum	0.2 A
• from external supply voltage at 24 V at DC maximum	0.17 A
Resistive 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

Order No.	6NH7 803-4BA00-0AA0
Product-type designation	**TIM 4R-IE DNP3**
Permitted ambient conditions	
Ambient temperature	
• during operating	0 … 60 °C
• during storage	-40 … +70 °C
• during transport	-40 … +70 °C
Relative humidity at 25 °C without condensation during operating maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	
Width	80 mm
Height	125 mm
Depth	120 mm
Net weight	0.4 kg
Product properties, functions, components general	
Number of modules note	Number of TIMs per S7-300 / S7-400: 1
Cable length	
• with RS232 interface maximum	6 m
• with RS485 interface maximum	30 m
Performance data	
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	5
• with PG connections maximum	2
• with OP connections maximum	1
Number of possible connections for S7 communication note	only via LAN
Service	
• SINAUT ST7 through S7 communication	-
• PG-/OP-communication	Yes

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TIM 4R-IE DNP3

Technical specifications (continued)

Order No.	6NH7 803-4BA00-0AA0
Product-type designation	**TIM 4R-IE DNP3**
Performance data multi-protocol mode	
Number of active connections with multiprotocol mode	-
Performance data telecontrol	
Acceptability for application	
• TIM node station	No
• TIM station	Yes
• TIM control center	No
Suitability for use note	-
Protocol will be supported	
• TCP/IP	Yes
• DNP3	Yes
• SINAUT ST1 protocol	No
• SINAUT ST7 protocol	No
Number of DNP3 masters	
• with Ethernet maximum	8
• with RS 232 interface maximum	1
Product function data buffering if connection is aborted	Yes
• note	200 000 data points with one master

Order No.	6NH7 803-4BA00-0AA0
Product-type designation	**TIM 4R-IE DNP3**
Product functions management, configuration	
Configuration software required	STEP7 V5.5 or higher plus SINAUT ST7 Engineering Software
Storage location of TIM configuration data	On the CPU or TIM
Product functions Time	
Product component Hardware real-time clock	Yes
Product property battery-backed hardware real-time clock	Yes
Accuracy of hardware real-time clock per day maximum	4 s

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Ordering data

	Order No.
TIM 4R-IE DNP3 communications module With two combined RS232/RS485 interfaces for SINAUT communication via conventional WANs and two RJ45 interfaces for SINAUT communication via IP-based networks (WAN or LAN)	**6NH7 803-4BA00-0AA0**
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	**6NH7 997-0CA53-0AA0**
SINAUT Engineering Software V5.3 Upgrade from V5.0, 5.1, or V5.2 For adding functional expansions; the functional expansions are for transferring larger data quantities of 1 KB and SMS functionality in GPRS mode	**6NH7 997-0CA53-0GA0**
SINAUT ST7 Engineering Software V5.0 Edition 09/2009 (Upgrade) for STEP 7 V5.4 SP4, for owners of older versions of SINAUT ST7 engineering software	**6NH7 997-0CA50-0GA0**
Accessories	
Backup battery 3.6 V/2.3 Ah for TIM 4R-IE DNP3	**6ES7 971-0BA00**
IE FC TP Standard Cable GP 2 x 2 (Type A) 4-core, shielded TP installation cable for connection to IE FC RJ45 outlet / IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. quantity 1000 m, minimum order quantity 20 m	**6XV1 840-2AH10**
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	**6GK1 901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1 901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1 901-1BB10-2AE0**

	Order No.
IE FC stripping tool Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables	**6GK1 901-1GA00**
Connecting cable For connecting a TIM (RS232) with a SINAUT ST7 MD2, MD3 or MD4 (RS232) modem; cable length 1.5 m	**6NH7 701-4AL**
Connecting cable For connecting a TIM (RS485) with a SINAUT ST7 MD2, MD3 or MD4 (RS485) modem; cable length 1.5 m	**6NH7 701-4DL**
Connecting cable For connecting a TIM (RS232) with the GSM modem MD720-3; also suitable for third-party modems or wireless equipment with standard RS232 interface; cable length 2.5 m	**6NH7 701-5AN**
Connecting cable with one end open for connecting a TIM (RS232) to a third-party modem or wireless device (RS232); cable length 2.5 m	**6NH7 701-4BN**
Connecting cable For connecting two TIM modules via their RS232 interface without modems ('Null modem'). Cable length 6 m	**6NH7 701-0AR**
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	**6EP1 331-5BA00**
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	**6EP1 331-5BA00**

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MD741-1 EGPRS router

Overview

- EGPRS (GPRS with Edge) and GPRS router for wireless IP communication from Ethernet-based automation devices over GSM mobile radio networks
- Four times the transmission speed by means of EGPRS
- Integrated security functions with firewall and VPN (IPsec)

Technical specifications

Order No.	6NH9 741-1AA00
Product-type designation	**SINAUT MD 741-1 EGPRS router**
Transmission rate	**-**
Transfer rate	
• 1 for Industrial Ethernet	10 Mbit/s
• 2 for Industrial Ethernet	100 Mbit/s
• for GSM transmission	9 600 bit/s
• with GPRS transmission	
- with downlink maximum	85.6 kbit/s
- with uplink maximum	85.6 kbit/s
• with eGPRS transmission	
- with downlink maximum	236.8 kbit/s
- with uplink maximum	236.8 kbit/s
Interfaces	-
Number of electrical connections	
• for network components and terminal equipment	1
• for external antenna(s)	1
• for power supply	1
Design of electrical connection	
• for network components and terminal equipment	-
• for external antenna(s)	SMA antenna socket (50 ohms)
Inputs/outputs	-
Number of electrical connections	
• for digital input signals	-
• for digital output signals	-
Design of electrical connection	
• for digital input signals	-
• for digital output signals	-

Order No.	6NH9 741-1AA00
Product-type designation	**SINAUT MD 741-1 EGPRS router**
WAN connection	-
Type of mobile wireless network is supported	
• GSM	Yes
Type of mobile wireless service is supported	
• GPRS	Yes
• eGPRS	Yes
Operating frequency for GSM transmission	
• 850 MHz	Yes
• 900 MHz	Yes
• 1800 MHz	Yes
• 1900 MHz	Yes
Type of GPRS time slot method Multislot Class 10	-
Supply voltage, current consumption, power loss	-
Type of voltage of supply voltage	DC
Supply voltage	24 V
• minimum	12 V
• maximum	30 V
Consumed current maximum	600 mA
Active power loss typical	4 W

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Technical specifications (continued)

Order No.	6NH9 741-1AA00
Product-type designation	**SINAUT MD 741-1 EGPRS router**
Permitted ambient conditions	-
Ambient temperature	
• during operating	-20 … +60 °C
• during storage	-40 … +70 °C
Relative humidity at 25 °C during operating maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	-
Design	compact
Depth	114 mm
Height	99 mm
Width	45 mm
Net weight	280 g
Type of mounting 35 mm DIN rail mounting	-
Type of mounting	-
Product properties, functions, components general	-
Product function DynDNS client	Yes
Product functions management, configuration	-
Product function	
• CLI	No
• web-based management	Yes
Protocol is supported	
• Telnet	No
• HTTP	No
• HTTPS	Yes
Type of configuration	Web interface
Product functions Diagnosis	-
Product function	
• Statistics Packet Size	No
• Statistics packet type	No
• Error statistics	No
• SysLog	Yes
• Packet Filter Log	Yes
Product functions DHCP	-
Product function	
• DHCP client	Yes
• DHCP server - internal network	Yes
Product functions Routing	-
Router function	
• NAT (IP masquerading)	Yes
• Port Forwarding	Yes
• NAT traversal	Yes
• 1:1 NAT	Yes
• DNS cache	Yes

Order No.	6NH9 741-1AA00
Product-type designation	**SINAUT MD 741-1 EGPRS router**
Product functions Security	-
Design of the firewall	-
Product function	
• Password protection	Yes
• Broadcast/Multicast/Unicast Limiter	-
• broadcast blocking	-
Suitability for installation Virtual Private Network	Yes
Product function with VPN connection	T
Number of possible connections for VPN connection	10
Number of network stations for internal network with VPN connection maximum	-
Type of authentication with Virtual Private Network PSK	Yes
Protocol will be supported IPsec tunnel and transport mode	Yes
Key length	
• with IPsec DES with Virtual Private Network	56 bit
• 1 with IPsec AES with Virtual Private Network	128 bit
• 2 with IPsec AES with Virtual Private Network	192 bit
• 3 with IPsec AES with Virtual Private Network	256 bit
Type of Internet key exchange with Virtual Private Network main mode	Yes
Key length with IPsec 3DES with Virtual Private Network	168 bit
Type of Internet key exchange with Virtual Private Network quick mode	Yes
Type of packet authentication with Virtual Private Network	-
IETF profile with Virtual Private Network X.509v3 certificate	Yes
Product functions Time	-
Router function NTP	Yes
Standards, specifications, approvals	-
Standard	
• for EMC	-
• for EMC from FM	-
• for hazardous zone	EN60079-15: II 3 G Ex nA IIC T4 Ta= -20°C to 60°C
• for safety of CSA and UL	UL 60950-1, CSA C22.2 Nr. 60950-1
• for hazardous area of CSA and UL	-
• for emitted interference	-
• for interference immunity	EN 61000-6-2
Verification of suitability	EN 61000-6-2
• CE mark	Yes
• C-Tick	-
• E1 approval	Yes
• e1 approval	Yes
• Railway application in accordance with EN 50155	No

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MD741-1 EGPRS router

Ordering data	Order No.
MD741-1 EGPRS router[1]	**6NH9 741-1AA00**
For wireless IP communication by industrial Ethernet-based programmable controllers via GSM mobile radio networks; integrated firewall and VPN router (IPsec); quad band GSM; EGPRS Multislot Class 12	
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	**6GK1 901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1 901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1 901-1BB10-2AE0**
ANT794-3M GSM/GPRS antenna	**6NH9 870-1AA00**
Flat panel antenna for GSM (2G) networks, for triband with 900/1800/1900 MHz; weather-resistant for indoor/outdoor use, 1.2 m cable with fixed connection to antenna; SMA connector, Incl. assembly adhesive tape	
ANT794-4MR GSM/GPRS antenna	**6NH9 860-1AA00**
Omnidirectional antenna for GSM (2G) and UMTS (3G) networks; weather-resistant for indoor and outdoor use; 5 m cable with fixed connection to antenna; SMA connector; including mounting bracket, screws, wall plugs	

	Order No.
SCALANCE S Industrial Security Modules	
For protection of programmable controllers and automation networks, and for safeguarding of industrial communication; configuring tool and electronic manual on CD-ROM; German, English, French, Italian, Spanish	
• **SCALANCE S612** uses the stateful inspection firewall to protect network segments against unauthorized access; protects up to 32 devices up to 64 VPN tunnels simultaneously	**6GK5 612-0BA00-2AA3**
• **SCALANCE S623**[2] uses the stateful inspection firewall to protect network segments against unauthorized access; protects up to 64 devices and up to 128 VPN tunnels simultaneously; enhanced temperature range (-20 to +70 °C)	**6GK5 623-0BA10-2AA3**
IE TP Cord RJ45/RJ45	
TP cable 4 x 2 with 2 RJ45 connectors	
• 0.5 m	**6XV1 870-3QE50**
• 1 m	**6XV1 870-3QH10**
• 2 m	**6XV1 870-3QH20**
• 6 m	**6XV1 870-3QH60**
• 10 m	**6XV1 870-3QN10**

[1] Please note national approvals under www.siemens.com/wireless-approvals

[2] Available soon

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Overview

- UMTS, EGPRS (Edge GPRS) and GPRS router for wireless IP communication of Industrial Ethernet-based PLCs over UMTS/ GSM mobile wireless networks
- High data transfer rate thanks to UMTS
- Integrated security functions with firewall
- *SCALANCE M875:*
  Use both as VPN server and as client (IPsec)

Technical specifications

Order No.	6GK5 873-0AA10-1AA2	6GK5 875-0AA10-1AA2
Product-type designation	**SCALANCE M873**	**SCALANCE M875**
Transmission rate		
Transfer rate		
• 1 for Industrial Ethernet	10 Mbit/s	10 Mbit/s
• 2 for Industrial Ethernet	100 Mbit/s	100 Mbit/s
• for GSM transmission	9 600 bit/s	9 600 bit/s
• with GPRS transmission		
- with downlink maximum	85.6 kbit/s	85.6 kbit/s
- with uplink maximum	85.6 kbit/s	42.8 kbit/s
• with eGPRS transmission		
- with downlink maximum	236.8 kbit/s	236.8 kbit/s
- with uplink maximum	236.8 kbit/s	118 kbit/s
• with UMTS transmission		
- with downlink maximum	3.6 Mbit/s	14.4 Mbit/s
- with uplink maximum	0.384 Mbit/s	5.76 Mbit/s
Interfaces		
Number of electrical connections		
• for network components and terminal equipment	1	2
• for external antenna(s)	1	2
• for power supply	1	1
Design of electrical connection		
• for network components and terminal equipment		
• for external antenna(s)	SMA antenna socket (50 ohms)	SMA antenna socket (50 ohms)
• for power supply	Terminal block	Terminal block
Inputs/outputs		
Number of electrical connections		
• for digital input signals	1	1
• for digital output signals	1	1
Design of electrical connection		
• for digital input signals	Terminal block	Terminal block
• for digital output signals	Terminal block	Terminal block

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Technical specifications (continued)

Order No.	6GK5 873-0AA10-1AA2	6GK5 875-0AA10-1AA2
Product-type designation	**SCALANCE M873**	**SCALANCE M875**
WAN connection		
Type of mobile wireless network is supported GSM	Yes	Yes
Type of mobile wireless service is supported		
• GPRS	Yes	Yes
• eGPRS	Yes	Yes
Type of mobile wireless network is supported UMTS	Yes	Yes
Type of mobile wireless service is supported		
• HSDPA	Yes	Yes
• HSUPA	No	Yes
Operating frequency		
• for GSM transmission		
- 850 MHz	Yes	Yes
- 900 MHz	Yes	Yes
- 1800 MHz	Yes	Yes
- 1900 MHz	Yes	Yes
• for UMTS transmission		
- 800 MHz	No	Yes
- 850 MHz	Yes	Yes
- 900 MHz	No	No
- 1700 MHz	No	Yes
- 1900 MHz	Yes	Yes
- 2100 MHz	Yes	Yes
Type of GPRS time slot method Multislot Class 10	-	-
Supply voltage, current consumption, power loss		
Type of voltage of supply voltage	DC	DC
Supply voltage	24 V	24 V
• minimum	12 V	12 V
• maximum	30 V	30 V
Consumed current maximum	450 mA	450 mA
Active power loss typical	4 W	4 W
Permitted ambient conditions		
Ambient temperature		
• during operating	-20 … +60 °C	-40 … +75 °C
• during storage	-40 … +70 °C	-40 … +85 °C
Relative humidity at 25 °C during operating maximum	95 %	95 %
Protection class IP	IP20	IP20
Design, dimensions and weight		
Design	compact	compact
Depth	114 mm	114 mm
Height	99 mm	99 mm
Width	45 mm	45 mm
Net weight	280 g	280 g
Type of mounting 35 mm DIN rail mounting	-	-
Type of mounting	-	-

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Technical specifications (continued)

Order No.	6GK5 873-0AA10-1AA2	6GK5 875-0AA10-1AA2
Product-type designation	**SCALANCE M873**	**SCALANCE M875**
Product properties, functions, components general		
Product function DynDNS client	Yes	Yes
Product functions management, configuration		
Product function		
• CLI	No	No
• web-based management	Yes	Yes
• MIB support	No	No
• TRAPs via email	No	No
Protocol is supported		
• Telnet	No	No
• HTTP	No	No
• HTTPS	Yes	Yes
Type of configuration	Web interface	Web interface
Product functions Diagnosis		
Product function		
• Statistics Packet Size	No	No
• Statistics packet type	No	No
• Error statistics	No	No
• SysLog	Yes	Yes
• Packet Filter Log	Yes	Yes
Product functions DHCP		
Product function		
• DHCP client	Yes	Yes
• DHCP server - internal network	Yes	Yes
Product functions Routing		
Router function		
• NAT (IP masquerading)	Yes	Yes
• Port Forwarding	Yes	Yes
• NAT traversal	Yes	Yes
• 1:1 NAT	Yes	Yes
• DNS cache	Yes	Yes
Product functions Security		
Design of the firewall		
Product function		
• Password protection	Yes	Yes
• packet filter	Yes	Yes
• Broadcast/Multicast/Unicast Limiter	-	-
• broadcast blocking	-	-
Suitability for installation Virtual Private Network	No	Yes
Product function with VPN connection	No	Yes
Number of possible connections for VPN connection	-	10
Number of network stations for internal network with VPN connection maximum	-	-
Type of authentication with Virtual Private Network PSK	No	Yes
Protocol will be supported IPsec tunnel and transport mode	No	Yes

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Technical specifications (continued)

Order No.	6GK5 873-0AA10-1AA2	6GK5 875-0AA10-1AA2
Product-type designation	**SCALANCE M873**	**SCALANCE M875**
Key length		
• with IPsec DES with Virtual Private Network	-	56 bit
• 1 with IPsec AES with Virtual Private Network	-	128 bit
• 2 with IPsec AES with Virtual Private Network	-	192 bit
• 3 with IPsec AES with Virtual Private Network	-	256 bit
Type of Internet key exchange with Virtual Private Network main mode	No	Yes
Key length with IPsec 3DES with Virtual Private Network	-	168 bit
Type of Internet key exchange with Virtual Private Network quick mode	No	Yes
Type of packet authentication with Virtual Private Network	-	
IETF profile with Virtual Private Network X.509v3 certificate	No	Yes
Product functions Time		
Router function NTP	Yes	Yes
Standards, specifications, approvals		
Standard		
• for EMC	-	-
• for EMC from FM	-	-
• for hazardous zone	-	-
• for safety of CSA and UL	-	
• for hazardous area of CSA and UL	-	-
• for emitted interference	EN 55022 Class A	EN 55022 Class A
• for interference immunity	EN 61000-6-2	EN 61000-6-2
Verification of suitability	EN 61000-6-2	EN 61000-6-2
• CE mark	Yes	Yes
• C-Tick	-	-
• E1 approval	Yes	Yes
• e1 approval	Yes	Yes
• Railway application in accordance with EN 50155	No	Yes

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Ordering data	Order No.
SCALANCE M 87x UMTS router	
UMTS router for wireless IP communication between Industrial Ethernet-based programmable controllers via UMTS/GSM mobile radio networks; EGPRS Multislot Class 12	
• **SCALANCE M873**[1] with integral firewall; 1 x RJ45 port, 1 x antenna connection	**6GK5 873-0AA10-1AA2**
• **SCALANCE M875**[1] with integral firewall and VPN with IPsec; 2 x RJ45 ports, 2 x antenna connections	**6GK5 875-0AA10-1AA2**
Accessories	
IE FC RJ45 Plug 180	
RJ45 plug-in connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface	
• 1 pack = 1 unit	**6GK1 901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1 901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1 901-1BB10-2AE0**
ANT794-4MR antenna	**6NH9 860-1AA00**
Omnidirectional antenna for GSM (2G) and UMTS (3G) networks; weather-resistant for indoor and outdoor use; 5 m cable with fixed connection to antenna; SMA connector; including mounting bracket, screws, wall plugs	
SCALANCE S Industrial Security Modules	
For protection of programmable controllers and automation networks, and for safeguarding of industrial communication; configuring tool and electronic manual on CD-ROM; German, English, French, Italian, Spanish	
• **SCALANCE S612** uses the stateful inspection firewall to protect network segments against unauthorized access; protects up to 32 devices up to 64 VPN tunnels simultaneously	**6GK5 612-0BA10-2AA3**
• **SCALANCE S623** uses the stateful inspection firewall to protect network segments against unauthorized access; protects up to 64 devices and up to 128 VPN tunnels simultaneously; enhanced temperature range (-20 to +70 °C)	**6GK5 623-0BA10-2AA3**

	Order No.
CP 343-1 Advanced	**6GK7 343-1GX31-0XE0**
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); RJ45 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; e-mail; PROFINET CBA; C-Plug; mit Security (Firewall + VPN) und PROFIenergy (Controller + Device)	
CP 443-1 Advanced	**6GK7 443-1GX30-0XE0**
for connecting the SIMATIC S7-400 CPU to Industrial Ethernet: 1 x 10/100/1000 Mbit/s; 4 x 10/100 Mbit/s (IE SWITCH); RJ45 ports; ISO; TCP; UDP; PROFINET IO controller, S7 communication; open communication (SEND/RECEIVE); S7 routing; IP configuration via DHCP/block; IP Access Control List; time synchronization; expanded Web diagnostics; Fast Startup; PROFIenergy support; IP routing; FTP; Web server; e-mail; PROFINET CBA; mit Security (Firewall/VPN)	
IE TP Cord RJ45/RJ45	
TP cable 4 x 2 with 2 RJ45 connectors	
• 0.5 m	**6XV1 870-3QE50**
• 1 m	**6XV1 870-3QH10**
• 2 m	**6XV1 870-3QH20**
• 6 m	**6XV1 870-3QH60**
• 10 m	**6XV1 870-3QN10**

[1] Please note national approvals under www.siemens.com/wireless-approvals

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ASM 475

Overview

The ASM 475 is a low-cost 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

Order No.	6GT2 002-0GA10
Product-type designation	**ASM 475 communications module**
Suitability for installation	
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	
Resistance against shock	According to IEC 61131-2
Resistance against shock	150 m/s^2
Resistance against vibration	10 m/s^2

Order No.	6GT2 002-0GA10
Product-type designation	**ASM 475 communications module**
Design, dimensions and weight	
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.2 kg
Type of mounting	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 will be 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

	Order No.
ASM 475 communications module For SIMATIC S7-300 and ET 200M, parameterizable	**6GT2 002-0GA10**
Accessories	
Front connector (1 x per ASM 475)	
• with screw terminals	**6ES7 392-1AJ00-0AA0**
• with spring-loaded terminals	**6ES7 392-1BJ00-0AA0**
MOBY U connecting cable pre-assembled, between the ASM 475 and reader, angled connector, PUR material, in the following lengths:	
2 m	**6GT2 091-4EH20**
5 m	**6GT2 091-4EH50**
10 m	**6GT2 091-4EN10**
20 m	**6GT2 091-4EN20**
50 m	**6GT2 091-4EN50**
MOBY D connecting cable pre-assembled, 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	**6GT2 491-4EH50**
20 m	**6GT2 491-4EN20**
50 m	**6GT2 491-4EN50**

	Order No.
SIMATIC RF200 / RF300 / RF600 / MV400 connecting cable pre-assembled, 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	**6GT2 891-4EH20**
5 m	**6GT2 891-4EH50**
Extension cable SIMATIC RF200 / RF300 / RF600 / MV400, PUR material, CMG approval, suitable for cable carriers, straight connector	
2 m	**6GT2 891-4FH20**
5 m	**6GT2 891-4FH50**
10 m	**6GT2 891-4FN10**
20 m	**6GT2 891-4FN20**
50 m	**6GT2 891-4FN50**
DVD "RFID Systems Software & Documentation"	**6GT2 080-2AA20**

[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.

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SIPLUS CP 340

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 Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

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SIPLUS CP 340 version	**RS 232 (V.24)**		**RS 422/485 (X.27)**
Order No.	**6AG1 340-1AH02-2AE0**	**6AG1 340-1AH02-2AY0**	**6AG1 340-1CH02-2AE0**
Order number based on	**6ES7 340-1AH02-0AE0**	**6ES7 340-1AH02-0AE0**	**6ES7 340-1CH02-0AE0**
Ambient temperature range	-25 ... +60 °C	-25 ... +60 °C	-25 ... +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.		
Conforms with standard for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	No	Yes	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 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 (-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:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS CP 340 communications processor	
(extended temperature range and medial exposure)	
with one RS 232C interface (V.24)	**6AG1 340-1AH02-2AE0**
with one RS 232C interface (V.24); compliant with EN 50155	**6AG1 340-1AH02-2AY0**
with one RS 422/485 interface (X.27)	**6AG1 340-1CH02-2AE0**

	Order No.
Accessories	See SIMATIC CP 340, page 5/160

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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 parameterization using tool integrated in STEP 7

Note:

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

SIPLUS CP 341	**RS 232C interface (V.24)**	**RS 422/485 (X.27) interface**
Order No.	**6AG1 341-1AH02-7AE0**	**6AG1 341-1CH02-7AE0**
Order No. based on	**6ES7 341-1AH02-0AE0**	**6ES7 341-1CH02-0AE0**
Ambient temperature range	-25 ... +70 °C	-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 (-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:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS CP 341 communications processor	
(extended temperature range and medial exposure)	
with RS 232C interface (V.24)	**6AG1 341-1AH02-7AE0**
with RS 422/485 (X.27) interface	**6AG1 341-1CH02-7AE0**

	Order No.
Accessories	See SIMATIC CP 341, page 5/162

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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 I/O
  - 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 programming device/operator panel communication through S7 routing
- Diagnostics possibilities in STEP 7 and via web browser

Note:

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

SIPLUS CP 343-1 Lean		
Order number	**6AG1 343-1CX10-2XE0**	**6AG1 343-1CX10-4XE0**
Order number based on	**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 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 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)	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:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS CP 343-1 Lean communications processor	
(extended temperature range and medial exposure)	
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	
Ambient temperature 0 ... +60 °C	**6AG1 343-1CX10-4XE0**
Ambient temperature -25 ... +60 °C	**6AG1 343-1CX10-2XE0**
Accessories	See SIMATIC CP 343-1 Lean communications processor, page 5/175

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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 Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS CP 343-1		
Order number	**6AG1 343-1EX30-4XE0**	**6AG1 343-1EX30-7XE0**
Order number based on	**6GK7 343-1EX30-0XE0**	**6GK7 343-1EX30-0XE0**
Ambient temperature range	0 ... +60 °C	-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 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)	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:
www.siemens.com/siplus-extreme

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SIPLUS CP 343-1

Ordering data	Order No.
SIPLUS CP 343-1 communications processor	
(extended temperature range and medial exposure)	
for connecting SIMATIC S7-300 to Industrial Ethernet via 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 or without RFC 1006, multicast, DHCP, CPU clock set via SIMATIC procedure and NTP, diagnostics, SNMP, access control via IP access list, initialization over LAN 10 /100 Mbit/s; with electronic manual on DVD	
Ambient temperature 0 ... +60 °C	**6AG1 343-1EX30-4XE0**
Ambient temperature -25 ... +70 °C	**6AG1 343-1EX30-7XE0**

	Order No.
Accessories	See SIMATIC CP 343-1 communications processor, page 5/178

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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 10/100/1000 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
  (also file system for IT functions)
- Extensive diagnostic functions for all modules in the rack
- IT communication
  - Web function
  - E-mail function
  - FTP
- Integration into network management systems through the support of SNMP V1 MIB-II

[1)] Possible combinations in parallel 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 Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS CP 343-1 Advanced	
Order number	**6AG1 343-1GX30-4XE0**
Order number based on	**6GK7 343-1GX30-0XE0**
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 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 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)	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:
www.siemens.com/siplus-extreme

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SIPLUS CP 343-1 Advanced

Ordering data	Order No.
SIPLUS CP 343-1 Advanced communications processor (medial exposure) 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	**6AG1 343-1GX30-4XE0**

Accessories	Order No.
	See SIMATIC CP 343-1 Advanced communications processor, page 5/183

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Overview

- SINAUT communications module SIPLUS TIM for SIMATIC S7-300 for use in a wide area network (WAN)
- IP communication via secure VPN (virtual private network) using the Internet
- Wireless communication via GPRS router, GPRS modem, or radio devices
- Wired communication via Ethernet, DSL, dialup modems or dedicated line modem
- Complete migration of existing wireless, dedicated line and dial-up technology to IP-based network
- Message frame memory for seamless recording of data
- Simple configuration and operation without specialist IT knowledge

Note:

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

SIPLUS TIM 3V-IE	
Order number	**6AG1 800-3BA00-7AA0**
Order 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 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)	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:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS TIM 3V-IE communications module With an RS232 interface for SINAUT communication via a conventional WAN or an IP-based network (WAN or LAN)	**6AG1 800-3BA00-7AA0**

	Order No.
Accessories	See TIM 3V-IE communications module, page 5/192

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SIPLUS TIM 4R-IE for WAN and Ethernet

Overview

SINAUT communications 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 Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS TIM 4R-IE	
Order number	**6AG1 800-4BA00-7AA0**
Order 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 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)	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:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS TIM 4R-IE communications module With two combined RS232/RS485 interfaces for SINAUT communication via conventional WANs and two RJ45 interfaces for SINAUT communication via IP-based networks (WAN or LAN)	**6AG1 800-4BA00-7AA0**

	Order No.
Accessories	See TIM 4R-IE communications module, page 5/198

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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

Ordering data	Order No.
Front connectors	
20-pin, with screw contacts	
• 1 unit	**6ES7 392-1AJ00-0AA0**
• 100 units	**6ES7 392-1AJ00-1AB0**
20-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BJ00-0AA0**
• 100 units	**6ES7 392-1BJ00-1AB0**
40-pin, with screw contacts	
• 1 unit	**6ES7 392-1AM00-0AA0**
• 100 units	**6ES7 392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BM01-0AA0**
• 100 units	**6ES7 392-1BM01-1AB0**
Front door, elevated design e.g. for 32 channel modules; enables connection of 1.3 mm^2/16 AWG wires	**6ES7 328-0AA00-7AA0**
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	**6ES7 328-7AA10-0AA0**

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SIMATIC TOP connect for SIMATIC S7-300 and ET 200M

Overview

Wiring of SIMATIC S7 I/O modules with the sensors/actuators is a significant factor with respect to time/cost overhead, configuring, control cabinet installation, procurement and ease of service.

With SIMATIC TOP connect system cabling, it is simple and quick to establish a reliable connection for your SIMATIC S7-300/400.

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

www.siemens.com/tia-selection-tool

Design

Two cabling variants are available for the most diverse control cabinet concepts:

Fully modular connection

Each component is individually inserted.

The system consists of:

- Front connector module
- Connecting cable
- Connection modules in the following versions: Basic module, signal module and function module

Connection errors are thus practically excluded and installation overhead is minimized. Systematic connection of the SIMATIC system. The assembly overhead for the connecting cables is drastically reduced as cables sold by the meter that are either pre-assembled or that can be assembled easily can be used.

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.

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Overview

The fully modular connection is the standard connection for the SIMATIC S7-300/400. The fully modular connection allows the peripherals to be conveniently and quickly connected to the SIMATIC S7-300/400 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 versions. For the SIMATIC S7-300 and SIMATIC S7-400, digital or analog. 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 (to 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 connection module.

Connection module

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

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

Basic module:

Connection 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 connection modules that are fitted with relays or optocouplers.

If other voltage or power levels are required in the field, the connection module for output signals TPRo or TPOo is used. For the TPRo connection module, relays are used for the implementation. For the TPOo connection 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 connection 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.

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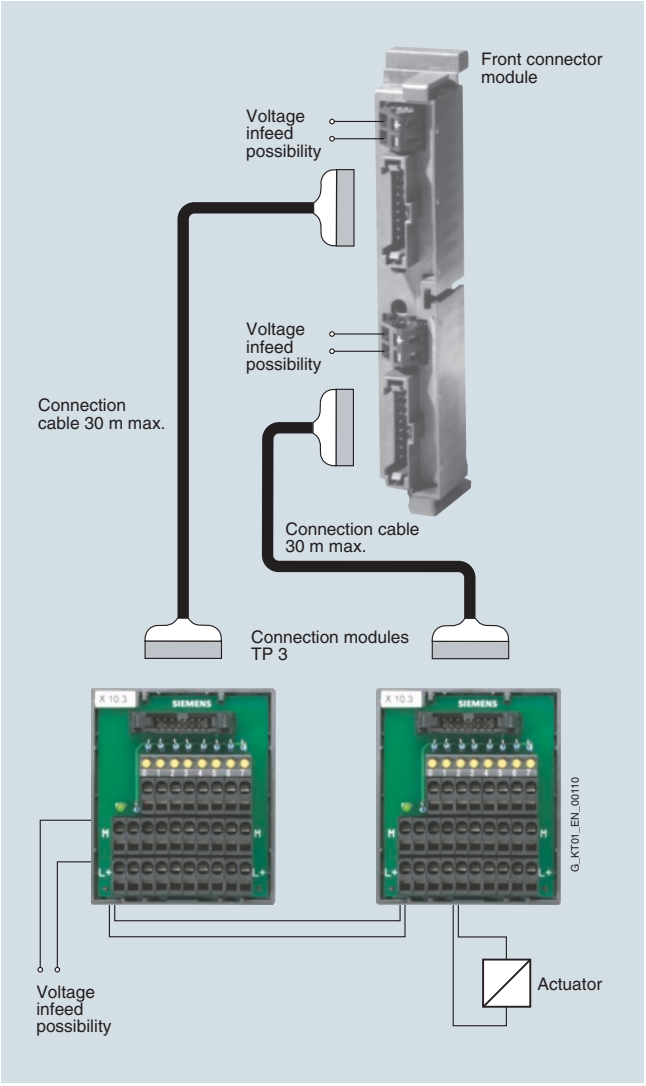
Design (continued)



Design of the fully modular connection (16-channel in example)

Technical specifications Front connector module

Rated operating voltage	24 V DC
Max. permissible operating voltage	60 V DC
Max. permissible continuous current • per connector pin	1 A
Max. permissible summation current	4 A/byte
Permissible ambient temperature	0 to + 60°C
Test voltage	0.5 kV, 50 Hz, 60 sec.
Air gaps and creepage distances	IEC 664 (1980), IEC 664 A (1981), in accordance with DIN VDE 0110 (01.89), overvoltage class II, pollution degree 2

Wiring rules for 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 • flexible cables with/without wire end ferrule	No 0,25 to 1.5 mm^2	
Number of wires per connection	1 or a combination of 2 conductors up to 1.5 mm^2 (total) in a common wire end ferrule	
Max. diameter of the cable insulation	3.1 mm	
Stripping length of the cables		
• without insulating collar • with insulating collar	6 mm -	
Wire-end ferrules in acc. with DIN 46228		
• without insulating collar • with insulating collar 0.25 to 1.0 mm^2 • with insulating collar 1.5 mm^2	Form A; 5 to 7 mm long - -	
Blade width of the screwdriver	3.5 mm (cylindrical shape)	
Tightening torque for connecting the cables	-	0.4 to 0.7 Nm

Front connector module SIMATIC TOP connect, connection for potential infeed		
	Spring connection	Screw connection
	Modules up to 8 connections	
Connectable cable cross-sections		
• solid cables • flexible cables with/without wire end ferrule	No 0.25 to 0.75 mm^2	
Number of cables per connection	1 or a combination of 2 wires up to 0.75 mm^2 (total) in a common wire end ferrule	
Max. diameter of the cable insulation	2.0 mm	
Stripping length of the cables		
• without insulating collar • with insulating collar	6 mm -	
Wire-end ferrules in acc. with DIN 46228		
• without insulating collar • with insulating collar 0.25 to 1.0 mm^2 • with insulating collar 1.5 mm^2	Form A; 5 to 7 mm long - -	
Blade width of the screwdriver	3.5 mm (cylindrical shape)	
Tightening torque for connecting the cables	-	0.4 to 0.7 Nm

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Technical specifications Connecting cable

Technical data of connecting cable from SIMATIC S7 to connection module	
Operating voltage	60 V DC
Continuous current per signal conductor	1 A
Max. summation current	4 A/byte
Operating temperature	0 to +60°C
Outer diameter of pre-assembled round cable in mm, unshielded/shielded	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

Technical specifications Basic module

Connection module TP1, TP3 and TPK	
Max. operating voltage	60 V DC
Continuous current per signal	1 A
Max. summation current (voltage infeed)	4 A/byte
Operating temperature	0 to + 60°C
Mounting position	Any
Air gaps and creepage distances	IEC Report 664, IEC 664 A, IEC 1131 T2, CSA C22.2 No 142 UL 508, VDE 0160 (12.90), overvoltage category II, pollution degree 3
Dimensions (W x H x D) in mm	
• 1-wire connection 6ES7924-0AA10-0A_0	Approx. 55 x 43.2 x 63
• for 3-wire initiators 6ES7924-0CA10-0A_0	Approx. 68 x 43.2 x 80
• for 2 x 8 signals 6ES7924-1AA10-0A_0	Approx. 100 x 43.2 x 80

Connection module TP2	
Max. operating voltage	60 V DC
Continuous current signal conductor	2 A
Operating temperature	0 to + 60°C
Mounting position	Any
Air gaps and creepage distances	IEC Report 664, IEC 664 A, IEC 1131 T2, CSA C22.2 No 142 UL 508, VDE 0160 (12.90), overvoltage category II, pollution degree 3
Dimensions (W x H x D) in mm	
• for 2 ampere modules 6ES7924-0BB10-0A_0	Approx. 68 x 43.2 x 80

Connection module TPA	
Max. operating voltage	60 V DC
Continuous current signal conductor	1 A
Operating temperature	0 to + 60°C
Mounting position	Any
Air gaps and creepage distances	IEC Report 664, IEC 664 A, IEC 1131 T2, CSA C22.2 No 142 UL 508, VDE 0160 (12.90), overvoltage category II, pollution degree 3
Dimensions (W x H x D) in mm	
• for 2 analog modules 6ES7924-0CC10-0A_0	Approx. 68 x 43.2 x 80

Wiring rules for the connection modules

Connection module TPA, TP1, TP2, TP3, TPK	Spring connection	Screw connection
Connectable cable cross-sections		
• solid cables	No	
• flexible cables without wire end ferrule	0.5 to 2.5 mm²	
• flexible cables with wire end ferrule in accordance with DIN 46228/1	0.5 to 1.5 mm²	0.5 to 2.5 mm² (2.5 mm² with a crimp in accordance with EN 60947-1)
• flexible cables with wire end ferrule and plastic collar in accordance with DIN 46228/4	0.5 to 1.5 mm²	
Number of cables per connection	1 or a combination of 2 cables up to the cross-sections specified above (total) in a shared wire end ferrule	
Blade width of the screwdriver	3.5 mm (cylindrical shape)	
Tightening torque for connecting the cables	-	0.4 to 0.7 Nm

Technical specifications Signal module

Connection module TP1, TP3 and TPK with LED	
Max. operating voltage	24 V DC
Continuous current per signal	1 A
Max. summation current (voltage infeed)	4 A/byte
Operating temperature	0 to + 60 °C
Mounting position	Any
Air gaps and creepage distances	IEC Report 664, IEC 664 A, IEC 1131 T2, CSA C22.2 No 142 UL 508, VDE 0160 (12.90), overvoltage category II, pollution degree 3
Dimensions (W x H x D) in mm	
• 1-wire connection with LED 6ES7924-0AA10-0B_0	Approx. 55 x 43.2 x 63
• for 3-wire initiators with LED 6ES7924-0CA10-0B_0	Approx. 68 x 43.2 x 80
• for 2 x 8 signals with LED 6ES7924-1AA10-0B_0	Approx. 100 x 43.2 x 80

Connection module TP2 with LED	
Max. operating voltage	24 V DC
Continuous current per signal conductor	2 A
Operating temperature	0 to + 60 °C
Mounting position	Any
Air gaps and creepage distances	IEC Report 664, IEC 664 A, IEC 1131 T2, CSA C22.2 No 142 UL 508, VDE 0160 (12.90), overvoltage category II, pollution degree 3
Dimensions (W x H x D) in mm	
• for 2-ampere modules with LED 6ES7924-0BB10-0B_0	Approx. 68 x 43.2 x 80

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Technical specifications Signal module (continued)

Wiring rules for the connection modules

Connection module TP1 LED, TPK LED, TP2 LED, TP3 LED	Spring connection	Screw connection
Connectable cable cross-sections		
• solid cables	No	
• flexible cables without wire end ferrule	0.5 to 2.5 mm²	
• flexible cables with wire end ferrule in accordance with DIN 46228/1	0.5 to 1.5 mm²	0.5 to 2.5 mm² (2.5 mm² with a crimp in accordance with EN 60947-1)
• flexible cables with wire end ferrule and plastic collar in accordance with DIN 46228/4	0.5 to 1.5 mm²	
Number of wires per connection	1 or a combination of 2 conductors up to the cross-sections specified above (total) in a shared wire end ferrule	
Blade width of the screwdriver	3.5 mm (cylindrical shape)	
Tightening torque for connecting the cables	-	0.4 to 0.7 Nm

Technical specifications Function module

Connection module with relay for outputs (TPRo)	
Energizing side	
Operating voltage for coil	24 V DC
Input circuit	Reverse polarity protection and freewheeling diodes
Contact side	
Number of relay outputs	8 (NO contacts)
Contact design	Single contact, 1 NO contact
Switching capacity (resistive load)	max. 4 A/250 V AC max. 3 A/30 V DC max. 0.6 A/48 V DC max. 0.4 A/60 V DC recommended minimum load ≥ 10 mA
Switching frequency	20 cycles/minute
Service life • Mechanical • Electrical	 5 x 10^6 switching cycles 3 x 10^4 operating cycles at 230 V AC/2 A/ cos ϒ = 1
Operating temperature	0 ... +60 °C
Mounting position	Any
Clearance and creepage distances	Basic standard IEC 60664-1; UL 508; Cul (Reference CSA C22.2 No. 142) Overvoltage category III Pollution degree 2
Dimensions (W x H x D) in mm	
6ES7924-0BD10-0B_0	Approx. 100 x 45 x 80

Connection module with optocoupler for outputs (TPOo)	
Input data	
Power supply	
Potential connection (L1/M1)	24 V DC (20.4 ... 28.8 V DC)
Status indicator "L1"	Green LED
Switching inputs	
Number	8 channels (channel 0 ... 7) with reverse polarity protection

Connection module with optocoupler for outputs (TPOo)	
Input voltage "off"	0 V DC (0 ... 5 V DC)
Input voltage "on"	24 V DC (15 ... 28.8 V DC)
Input current	min. 5 mA with 20 V DC, per channel
Status indicator "on"	Green LED per channel
Output data	
Power supply	
Operating voltage U_B (L2/M2, L3/M3)	24 V DC (20 ... 30 V DC) per group of 4 one V_B
U_B conditionally protected against polarity reversal [1]	Up to 30 V DC
Current consumption	approx. 10 mA for 24 V DC + output currents per group of 4
Aggregate current	max. 8 A per group of 4
Switching outputs	
Number	8 channels (channel 0 ... 7)
Short-circuit protection [2]	for U_B < 24 V DC or 24 ... 30 V DC/max. 20 A
Output voltage	typ. U_B – 1 V (for input "on")
Output current • Lamp load	Max. 4 A per channel max. 20 W at 24 V per channel
Demand factor per group of 4	50 %, max. 2 outputs active under full load (4 A)
Short-circuit response	Clocked output signal (approx. 2 ... 20 ms)
On/off-delay	typ. 100 µs/250 µs with resistive load
Switching frequency	max. 500 Hz with 4 A resistive load (square wave voltage, pulse/pause 1:1)
"Overload" fault indication • Wire break indication	Red LED per channel, in the event of wire breakage or short-circuit Active I_{out} < 0.1 A/ inactive I_{out} ≥ 0.9 A
Group fault messages SF1, SF2	
Monitored channels	SF1: Channels 0 ... 3, SF2: for channels 4 ... 7
Voltage U_{SF1}, U_{SF2} • No error at the switching output • Wire break at the switching output • Short-circuit at the switching output	 typ. U_B – 2 V Approx. 0 V 0 V to U_B, clocked
Current I_{SF1}, I_{SF2}	min. 4 mA/max. 200 mA
General data	
Degree of protection	IP20
Operating temperature	0 ... 60 °C
Mounting position	Any, except overhead
Connecting terminals	Screw-type or spring-loaded terminals
Stripped length	9 mm
Conductor cross-section • Finely stranded without end sleeve • with end sleeve for screw-type terminals • with end sleeve for spring-loaded terminals	 0.5 ... 2.5 mm² 0.5 ... 2.5 mm² according to DIN 46228-1 0.5 ... 1.5 mm² according to DIN 46228-1 and DIN 46228-4
Screwdriver	according to DIN 5264 B 0.6 x 3.5 mm
Tightening torque of screw-type terminals	0.4 Nm
Weight	Approx. 400 g
Dimensions (W x H x D) in mm	134 x 84 x 77

[1] Protected against polarity reversal, if the ground potential of the output load is directly connected to the 0 V supply of the power supply unit

[2] Not sustained short-circuit-proof, max. duration approx. 60 min.

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Technical specifications Function module (continued)

Connection module with relay for inputs (TPRi)	
Energizing side	
Operating voltage for coil	230 V AC
	from 207 – 280 V AC
Input circuit	Varistors
Contact side	
Number of relay outputs	8 (NO contacts)
Contact design	Single contact, 1 NO contact
Switching capacity (resistive load)	max. 50 A/24 V AC, max. 50 mA/48 V DC max. 50 mA/60 V DC recommended minimum load ≥ 5 mA
Switching frequency	200 cycles/minute
Service life • Mechanical • Electrical	 10 x 10^6 switching cycles 3 x 10^6 operating cycles at 230 V AC/50 mA/cos ϒ = 1
Operating temperature	0 ... +60 °C
Mounting position	Any
Clearance and creepage distances	Basic standard IEC 60664-1; UL 508; Cul (Reference CSA C22.2 No. 142) Overvoltage category III Pollution degree 2
Dimensions (W x H x D) in mm	
6ES7924-0BE10-0B_0	Approx. 130 x 45 x 80

Wiring rules for the connection modules

Connection modules TPRo and TPRi		
	Spring-loaded connection	Screw-type connection
Connectable cable cross-sections		
• Solid conductors	No	
• Flexible cables without end sleeve	0.5 ... 2.5 mm^2	
• Flexible cables with end sleeve according to DIN 46228/1	0.5 ... 1.5 mm^2	0.5 to 2.5 mm^2 (2.5 mm^2 with a crimp in accordance with EN 60947-1)
• Flexible cables with end sleeve and plastic collar according to DIN 46228/4	0.5 ... 1.5 mm^2	
Number of conductors per connection	1 or a combination of 2 conductors up to the cross-sections specified above (total) in a shared end sleeve	
Blade width of the screwdriver	3.5 mm (cylindrical design)	
Tightening torque for connecting the cables	-	0.4 ... 0.7 Nm

Ordering data

	Order No.
Front connector module	
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**
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**

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Ordering data

	Order No.
Connecting cable	
Pre-assembled round cable	
16-pole, 0.14 mm²	
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**
Round-sheath ribbon cable	
16-pole, 0.14 mm²	
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 mm²	
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)	

	Order No.
Basic module	
Connection module TP1	
for 1-wire initiators	
Packaging unit (1 unit)	
• Spring terminals	**6ES7924-0AA10-0AB0**
• Screw terminals	**6ES7924-0AA10-0AA0**
Connection module TP3	
for 3-wire initiators	
Packaging unit (1 unit)	
• Spring terminals	**6ES7924-0CA10-0AB0**
• Screw terminals	**6ES7924-0CA10-0AA0**
Connection module TPK	
for 2 x 8 signals	
Packaging unit (1 unit)	
• Spring terminals	**6ES7924-1AA10-0AB0**
• Screw terminals	**6ES7924-1AA10-0AA0**
Connection module TP2	
for 2 A modules	
for 2-wire initiators	
Packaging unit (1 unit)	
• Spring terminals	**6ES7924-0BB10-0AB0**
• Screw terminals	**6ES7924-0BB10-0AA0**
Connection module TPA	
for analog signals	
Packaging unit (1 unit)	
• Spring terminals	**6ES7924-0CC10-0AB0**
• Screw terminals	**6ES7924-0CC10-0AA0**
Accessories	
Labeling plates for connection modules	
Insertable labeling plate PU = 200 units	**6ES7928-2AB00-0AA0**
Self-adhesive labeling plate PU = 200 units	**6ES7928-2BB00-0AA0**
Shield plate	**6ES7928-1BA00-0AA0**
for analog connection module (4 units)	
Shield connection terminal	
for shield plate, 2 units, with cable diameter	
• 2 to 6 mm (2 cables)	**6ES7390-5AB00-0AA0**
• 3 to 8 mm	**6ES7390-5BA00-0AA0**
• 4 to 13 mm	**6ES7390-5CA00-0AA0**

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Ordering data

	Order No.
Signal module	
Connection module TP1 with LED	
for 1-wire initiators	
Packaging unit (1 unit)	
• Spring terminals	**6ES7924-0AA10-0BB0**
• Screw terminals	**6ES7924-0AA10-0BA0**
Connection module TP3 with LED	
for 3-wire initiators	
Packaging unit (1 unit)	
• Spring terminals	**6ES7924-0CA10-0BB0**
• Screw terminals	**6ES7924-0CA10-0BA0**
Connection module TPK with LED	
for 2 x 8 signals	
Packaging unit (1 unit)	
• Spring terminals	**6ES7924-1AA10-0BB0**
• Screw terminals	**6ES7924-1AA10-0BA0**
Connection module TP2 with LED	
for 2 A modules	
for 2-wire initiators	
Packaging unit (1 unit)	
• Spring terminals	**6ES7924-0BB10-0BB0**
• Screw terminals	**6ES7924-0BB10-0BA0**
Accessories	
Labeling plates for connection modules	
Insertable labeling plate PU = 200 units	**6ES7928-2AB00-0AA0**
Self-adhesive labeling plate PU = 200 units	**6ES7928-2BB00-0AA0**

	Order No.
Function module	
Connection module TPRo for output signals	
for 2-wire connection	
Packaging unit 1 unit	
• Spring-loaded terminals	**6ES7924-0BD10-0BB0**
• Screw-type terminals	**6ES7924-0BD10-0BA0**
Connection module optocoupler	
Packaging unit 1 unit	
• Spring-loaded terminals	**6ES7924-0BF10-0BB0**
• Screw-type terminals	**6ES7924-0BF10-0BA0**
Connection module TPRi for input signals	
for 2-wire connection	
Packaging unit 1 unit	
• Spring-loaded terminals	**6ES7924-0BE10-0BB0**
• Screw-type terminals	**6ES7924-0BE10-0BA0**
Accessories	
Labels for connection modules	
Insertable labels PU = 200 units	**6ES7928-2AB00-0AA0**
Self-adhesive labels PU = 200 units	**6ES7928-2BB00-0AA0**
Replacement relay for relay connection module PU = 4 units	
Replacement relay for TPRi	**6ES7928-3BA00-4AA0**
Replacement relay for TPRo	**6ES7928-3AA00-4AA0**
Optocoupler DC alternative for relay in the case of TPRo PU = 4 units	**6ES7928-3DA00-4AA0**
Optocoupler AC alternative for relay in the case of TPRo PU = 4 units	**6ES7928-3CA00-4AA0**

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SIMATIC TOP connect for SIMATIC S7 Flexible connection

Overview

The flexible connection guarantees a fast and direct connection from the input/output modules of the SIMATIC S7-300/400 to the individual elements in the cabinet.

Already attached single cores reduce the wiring effort.

The core cross-sections of 0,5 mm^2 also allow higher currents.

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

	Order 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**

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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

	6ES7 360-3AA01-0AA0	6ES7 361-3CA01-0AA0	6ES7 365-0BA01-0AA0
Supply voltage			
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
Weight			
Weight, approx.	225 g	505 g	580 g

Ordering data

	Order No.
IM 360 interface module	**6ES7 360-3AA01-0AA0**
for expanding the S7-300 with max. 3 EUs; can be plugged into CC	
IM 361 interface module	**6ES7 361-3CA01-0AA0**
for expanding the S7-300 with max. 3 EUs; can be plugged into EU	
Connecting cable	
between IM 360 and IM 361 or IM 361 and IM 361	
1 m	**6ES7 368-3BB01-0AA0**
2.5 m	**6ES7 368-3BC51-0AA0**
5 m	**6ES7 368-3BF01-0AA0**
10 m	**6ES7 368-3CB01-0AA0**
IM 365 interface module	**6ES7 365-0BA01-0AA0**
for expanding the S7-300 with max. 1 EU; 2 modules with permanent connecting cable (1 m)	

	Order No.
SIMATIC Manual Collection	**6ES7 998-8XC01-8YE0**
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	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	
S7-300 manual	
Design, CPU data, module data, instruction list	
German	**6ES7 398-8FA10-8AA0**
English	**6ES7 398-8FA10-8BA0**

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SIPLUS IM 365 interface modules

Overview

- SIPLUS IM 365: For configuration of 1 central controller and max. 1 expansion unit

Note:

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

SIPLUS IM 365 interface module	
Order No.	**6AG1 365-0BA01-2AA0**
Order number based on	**6ES7 365-0BA01-0AA0**
Ambient temperature range	-25 ... +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 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)	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:
www.siemens.com/siplus-extreme

Technical specifications

Interface module	**SIPLUS IM 365**
Order No.	**6AG1 365-0BA01-2AA0**
Order No. based on	**6ES7 365-0BA01-0AA0**
Ambient temperature range	-25 °C to +60 °C, condensation permissible
Ambient conditions	Suitable for extraordinary medial exposure (e.g. by chloric and sulphuric atmospheres).
Max. interface modules per CPU	1 pair
Supply voltage (external)	-
Current consumption • from 24 V DC line • from internal bus (5V)	 - 100 mA
Power loss typ.	0.5 W
Dimensions (W x H x D) in mm	40 x 125 x 120 per module
Weight, approx.	580 g (total)

Ordering data

	Order No.
SIPLUS IM 365 interface module (extended temperature range and medial exposure) for expansion of S7-300 with max. 1 EU; 2 modules with fixed connection cable (1 m)	**6AG1 365-0BA01-2AA0**

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Application

The proven power supply in the SIMATIC S7-300 design; with PS-CPU connecting comb and for mounting on S7 rail.

Technical specifications 1-phase, 24 V DC/2 A

Order No.	6ES7 307-1BA01-0AA0
Product	**PS 307**
Power supply, type	**24 V/2 A**
Input	
Input	1-phase AC
Supply voltage	
• 1 at AC nominal value	120 V
• 2 at AC nominal value	230 V
• at DC	
• Note	Automatic range selection
Input voltage	
• 1 at AC	85 … 132 V
• 2 at AC	170 … 264 V
• at DC	
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	0.02 s
Mains buffering	at V_{in} = 93/187 V
Rated line frequency	
• 1	50 Hz
• 2	60 Hz
Rated line range	47 … 63 Hz
Input current	
• at nominal level of the input voltage 120 V nominal value	0.9 A
• at nominal level of the input voltage 230 V nominal value	0.5 A
• at nominal level of the input voltage 24 V nominal value	
• at nominal level of the input voltage 110 V nominal value	
Switch-on current limiting (+25 °C), max.	22 A
Duration of current limiting at 25 °C maximum	3 ms
I^2t, max.	1 $A^2 \cdot s$
Built-in incoming fuse	T 1.6 A/250 V (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: 3 A, characteristic C

Order No.	6ES7 307-1BA01-0AA0
Product	**PS 307**
Power supply, type	**24 V/2 A**
Output	
Output	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V
Total tolerance, static ±	3 %
Static mains compensation, approx.	0.1 %
Static load balancing, approx.	0.2 %
Residual ripple peak-peak, max.	50 mV
Residual ripple peak-peak, typ.	5 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	150 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	20 mV
Product feature output voltage adjustable	No
Output voltage setting	-
Status display	Green LED for 24 V OK
On/off behavior	No overshoot of V_{out} (soft start)
Startup delay, max.	2 s
Voltage rise, typ.	10 ms
Rated current value $I_{out\ rated}$	2 A
Current range	0 … 2 A
Note	
delivered active power typ.	48 W
short-term overload current at short-circuit during run-up typical	9 A
Duration of overloading ability for excess current on short-circuiting during the start-up	90 ms
short-term overload current at short-circuit during operation typical	9 A
Duration of overloading ability for excess current on short-circuiting during the operational phase	90 ms
Parallel switching for enhanced performance	Yes
Numbers of parallel switchable units for enhanced performance	

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Technical specifications 1-phase, 24 V DC/2 A (continued)

Order No.	6ES7 307-1BA01-0AA0
Product	**PS 307**
Power supply, type	**24 V/2 A**
Efficiency	
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	84 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	9 W
Closed-loop control	
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.1 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	0.8 %
Load step setting time 50 to 100%, typ.	0.5 ms
Load step setting time 100 to 50%, typ.	0.5 ms
Setting time maximum	1 ms
Protection and monitoring	
Output overvoltage protection	Additional control loop, shutdown at < 28.8 V, automatic restart
Current limitation	2.2 … 2.6 A
Characteristic feature of the output short-circuit protected	Yes
Short-circuit protection	Electronic shutdown, automatic restart
Enduring short circuit current Effective level maximum	2 A
Overload/short-circuit indicator	-
Safety	
Primary/secondary isolation	Yes
Potential separation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I
stray current	
• maximum	3.5 mA
• typical	0.5 mA
CE mark	Yes
UL/CSA approval	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289, UL 1604 Class I Div. 2 Group A, B, C, D, File E330455
Explosion protection	ATEX (EX) II 3G Ex nA II T4; UL 1604 Class I, Div. 2, Group ABCD
FM approval	Yes Class I, Div. 2, Group ABCD, T4
CB approval	No
Marine approval	In S7-300 system
Degree of protection (EN 60529)	IP20

Order No.	6ES7 307-1BA01-0AA0
Product	**PS 307**
Power supply, type	**24 V/2 A**
EMC	
Emitted interference	EN 55022 Class B
Supply harmonics limitation	not applicable
Noise immunity	EN 61000-6-2
Operating data	
Ambient temperature	
• in operation	0 … 60 °C
- Note	with natural convection
Ambient temparature	
• on transport	-40 … +85 °C
Ambient temparature	
• in storage	-40 … +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation
Mechanics	
Connection technology	screw-type terminals
Connections	
• Supply input	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
• Auxiliary	-
Width of the housing	40 mm
Height of the housing	125 mm
Depth of the housing	120 mm
Installation width	40 mm
Installation height	205 mm
Weight, approx.	0.4 kg
Product feature of the housing housing for side-by-side mounting	Yes
Type of mounting wall mounting	No
Type of fixing cap rail mounting	No
Type of mounting S7-300 rail mounting	Yes
Installation	Can be mounted onto S7 rail
Mechanical accessories	Mounting adapter for standard mounting rail (6EP1971-1BA00)

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Technical specifications 1-phase, 24 V DC/5 A

Order No.	6ES7 307-1EA01-0AA0
Product	**PS 307**
Power supply, type	**24 V/5 A**
Input	
Input	1-phase AC
Supply voltage	
• 1 at AC nominal value	120 V
• 2 at AC nominal value	230 V
• at DC	
• Note	Automatic range selection
Input voltage	
• 1 at AC	85 … 132 V
• 2 at AC	170 … 264 V
• at DC	
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	20 ms
Mains buffering	at V_{in} = 93/187 V
Rated line frequency	
• 1	50 Hz
• 2	60 Hz
Rated line range	47 … 63 Hz
Input current	
• at nominal level of the input voltage 120 V nominal value	2.3 A
• at nominal level of the input voltage 230 V nominal value	1.2 A
• at nominal level of the input voltage 24 V nominal value	
• at nominal level of the input voltage 110 V nominal value	
Switch-on current limiting (+25 °C), max.	20 A
Duration of current limiting at 25 °C maximum	3 ms
I^2t, max.	1.2 $A^2 \cdot s$
Built-in incoming fuse	T 3,15 A/250 V (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 6 A, characteristic C
Output	
Output	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V
Total tolerance, static ±	3 %
Static mains compensation, approx.	0.1 %
Static load balancing, approx.	0.5 %
Residual ripple peak-peak, max.	50 mV
Residual ripple peak-peak, typ.	10 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	150 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	20 mV
Product feature output voltage adjustable	No
Output voltage setting	-

Order No.	6ES7 307-1EA01-0AA0
Product	**PS 307**
Power supply, type	**24 V/5 A**
Status display	Green LED for 24 V OK
On/off behavior	No overshoot of V_{out} (soft start)
Startup delay, max.	2 s
Voltage rise, typ.	10 ms
Rated current value $I_{out\ rated}$	5 A
Current range	0 … 5 A
Note	
delivered active power typ.	120 W
short-term overload current at short-circuit during run-up typical	20 A
Duration of overloading ability for excess current on short-circuiting during the start-up	100 ms
short-term overload current at short-circuit during operation typical	20 A
Duration of overloading ability for excess current on short-circuiting during the operational phase	100 ms
Parallel switching for enhanced performance	Yes
Numbers of parallel switchable units for enhanced performance	
Efficiency	
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	87 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	18 W
Closed-loop control	
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.1 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	1 %
Load step setting time 50 to 100%, typ.	0.3 ms
Load step setting time 100 to 50%, typ.	0.3 ms
Setting time maximum	
Protection and monitoring	
Output overvoltage protection	Additional control loop, shutdown at < 28.8 V, automatic restart
Current limitation	5.5 … 6.5 A
Characteristic feature of the output short-circuit protected	Yes
Short-circuit protection	Electronic shutdown, automatic restart
Enduring short circuit current Effective level maximum	7 A
Overload/short-circuit indicator	

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Technical specifications 1-phase, 24 V DC/5 A (continued)

Order No.	6ES7 307-1EA01-0AA0
Product	PS 307
Power supply, type	24 V/5 A
Safety	
Primary/secondary isolation	Yes
Potential separation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I
stray current	
• maximum	3.5 mA
• typical	0.5 mA
CE mark	Yes
UL/CSA approval	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289, UL 1604 Class I Div. 2 Group A, B, C, D, File E330455
Explosion protection	ATEX (EX) II 3G Ex nA II T4; UL 1604 Class I, Div. 2, Group ABCD
FM approval	Yes
FM approval	Class I, Div. 2, Group ABCD, T4
CB approval	No
Marine approval	In S7-300 system
Degree of protection (EN 60529)	IP20
EMC	
Emitted interference	EN 55022 Class B
Supply harmonics limitation	EN 61000-3-2
Noise immunity	EN 61000-6-2
Operating data	
Ambient temperature	
• in operation	0 … 60 °C
- Note	with natural convection
Ambient temparature	
• on transport	-40 … +85 °C
Ambient temparature	
• in storage	-40 … +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation

Order No.	6ES7 307-1EA01-0AA0
Product	PS 307
Power supply, type	24 V/5 A
Mechanics	
Connection technology	screw-type terminals
Connections	
• Supply input	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm² single-core/finely stranded
• Output	L+, M: 3 screw terminals each for 0.5 ... 2.5 mm²
• Auxiliary	-
Width of the housing	60 mm
Height of the housing	125 mm
Depth of the housing	120 mm
Installation width	60 mm
Installation height	205 mm
Weight, approx.	0.6 kg
Product feature of the housing housing for side-by-side mounting	Yes
Type of mounting wall mounting	No
Type of fixing cap rail mounting	No
Type of mounting S7-300 rail mounting	Yes
Installation	Can be mounted onto S7 rail
Mechanical accessories	Mounting adapter for standard mounting rail (6EP1971-1BA00)

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Technical specifications 1-phase, 24 V DC/10 A

Order No.	6ES7 307-1KA02-0AA0
Product	**PS 307**
Power supply, type	**24 V/10 A**
Input	
Input	1-phase AC
Supply voltage	
• 1 at AC nominal value	120 V
• 2 at AC nominal value	230 V
• at DC	
• Note	Automatic range selection
Input voltage	
• 1 at AC	85 … 132 V
• 2 at AC	170 … 264 V
• at DC	
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	20 ms
Mains buffering	at V_{in} = 93/187 V
Rated line frequency	
• 1	50 Hz
• 2	60 Hz
Rated line range	47 … 63 Hz
Input current	
• at nominal level of the input voltage 120 V nominal value	4.2 A
• at nominal level of the input voltage 230 V nominal value	1.9 A
• at nominal level of the input voltage 24 V nominal value	
• at nominal level of the input voltage 110 V nominal value	
Switch-on current limiting (+25 °C), max.	55 A
Duration of current limiting at 25 °C maximum	3 ms
I^2t, max.	3.3 $A^2 \cdot s$
Built-in incoming fuse	T 6.3 A/250 V (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 10 A, characteristic C
Output	
Output	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V
Total tolerance, static ±	3 %
Static mains compensation, approx.	0.1 %
Static load balancing, approx.	0.5 %
Residual ripple peak-peak, max.	50 mV
Residual ripple peak-peak, typ.	15 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	150 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	60 mV
Product feature output voltage adjustable	No
Output voltage setting	-

Order No.	6ES7 307-1KA02-0AA0
Product	**PS 307**
Power supply, type	**24 V/10 A**
Status display	Green LED for 24 V OK
On/off behavior	No overshoot of V_{out} (soft start)
Startup delay, max.	2 s
Voltage rise, typ.	10 ms
Rated current value $I_{out\ rated}$	10 A
Current range	0 … 10 A
Note	
delivered active power typ.	240 W
short-term overload current at short-circuit during run-up typical	38 A
Duration of overloading ability for excess current on short-circuiting during the start-up	80 ms
short-term overload current at short-circuit during operation typical	38 A
Duration of overloading ability for excess current on short-circuiting during the operational phase	80 ms
Parallel switching for enhanced performance	Yes
Numbers of parallel switchable units for enhanced performance	
Efficiency	
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	90 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	27 W
Closed-loop control	
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.1 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	2 %
Load step setting time 50 to 100%, typ.	
Load step setting time 100 to 50%, typ.	
Setting time maximum	0.1 ms
Protection and monitoring	
Output overvoltage protection	Additional control loop, shutdown at < 28.8 V, automatic restart
Current limitation	11 … 12 A
Characteristic feature of the output short-circuit protected	Yes
Short-circuit protection	Electronic shutdown, automatic restart
Enduring short circuit current Effective level maximum	12 A
Overload/short-circuit indicator	-

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Technical specifications 1-phase, 24 V DC/10 A (continued)

Order No.	6ES7 307-1KA02-0AA0
Product	**PS 307**
Power supply, type	**24 V/10 A**
Safety	
Primary/secondary isolation	Yes
Potential separation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I
stray current	
• maximum	3.5 mA
• typical	0.6 mA
CE mark	Yes
UL/CSA approval	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289, UL 1604 Class I Div. 2 Group A, B, C, D, File E330455
Explosion protection	ATEX (EX) II 3G Ex nA II T4; UL 1604 Class I, Div. 2, Group ABCD
FM approval	Yes
FM approval	Class I, Div. 2, Group ABCD, T4
CB approval	No
Marine approval	In S7-300 system
Degree of protection (EN 60529)	IP20
EMC	
Emitted interference	EN 55022 Class B
Supply harmonics limitation	EN 61000-3-2
Noise immunity	EN 61000-6-2

Order No.	6ES7 307-1KA02-0AA0
Product	**PS 307**
Power supply, type	**24 V/10 A**
Operating data	
Ambient temperature	
• in operation	0 … 60 °C
- Note	with natural convection
Ambient temparature	
• on transport	-40 … +85 °C
Ambient temparature	
• in storage	-40 … +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation
Mechanics	
Connection technology	screw-type terminals
Connections	
• Supply input	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm² single-core/finely stranded
• Output	L+, M: 4 screw terminals each for 0.5 ... 2.5 mm²
• Auxiliary	-
Width of the housing	80 mm
Height of the housing	125 mm
Depth of the housing	120 mm
Installation width	80 mm
Installation height	205 mm
Weight, approx.	0.8 kg
Product feature of the housing housing for side-by-side mounting	Yes
Type of mounting wall mounting	No
Type of fixing cap rail mounting	No
Type of mounting S7-300 rail mounting	Yes
Installation	Can be mounted onto S7 rail
Mechanical accessories	Mounting adapter for standard mounting rail (6EP1971-1BA00)

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Technical specifications 1-phase, 24 V DC/5 A (outdoor)

Order No.	6ES7 307-1EA80-0AA0
Product	**PS 307**
Power supply, type	**24 V/5 A**
Input	
Input	1-phase AC
Supply voltage	
• 1 at AC nominal value	120 V
• 2 at AC nominal value	230 V
• at DC	
• Note	Set by means of selector switch on the device
Input voltage	
• 1 at AC	93 … 132 V
• 2 at AC	187 … 264 V
• at DC	
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	20 ms
Mains buffering	at V_{in} = 93/187 V
Rated line frequency	
• 1	50 Hz
• 2	60 Hz
Rated line range	47 … 63 Hz
Input current	
• at nominal level of the input voltage 120 V nominal value	2.1 A
• at nominal level of the input voltage 230 V nominal value	1.2 A
• at nominal level of the input voltage 24 V nominal value	
• at nominal level of the input voltage 110 V nominal value	
Switch-on current limiting (+25 °C), max.	45 A
Duration of current limiting at 25 °C maximum	3 ms
I^2t, max.	1.8 $A^2 \cdot s$
Built-in incoming fuse	T 3,15 A/250 V (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 10 A, characteristic C, or from 6 A, characteristic D
Output	
Output	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V
Total tolerance, static ±	3 %
Static mains compensation, approx.	0.2 %
Static load balancing, approx.	0.4 %
Residual ripple peak-peak, max.	150 mV
Residual ripple peak-peak, typ.	40 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	240 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	90 mV

Order No.	6ES7 307-1EA80-0AA0
Product	**PS 307**
Power supply, type	**24 V/5 A**
Product feature output voltage adjustable	No
Output voltage setting	-
Status display	Green LED for 24 V OK
On/off behavior	No overshoot of V_{out} (soft start)
Startup delay, max.	3 s
Voltage rise, typ.	100 ms
Rated current value $I_{out\ rated}$	5 A
Current range	0 … 5 A
Note	
delivered active power typ.	120 W
short-term overload current at short-circuit during run-up typical	20 A
Duration of overloading ability for excess current on short-circuiting during the start-up	180 ms
short-term overload current at short-circuit during operation typical	20 A
Duration of overloading ability for excess current on short-circuiting during the operational phase	80 ms
Parallel switching for enhanced performance	No
Numbers of parallel switchable units for enhanced performance	
Efficiency	
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	84 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	23 W
Closed-loop control	
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.3 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	3 %
Load step setting time 50 to 100%, typ.	0.2 ms
Load step setting time 100 to 50%, typ.	0.2 ms
Setting time maximum	5 ms
Protection and monitoring	
Output overvoltage protection	Additional control loop, shutdown at approx. 30 V, automatic restart
Current limitation	5.5 … 6.5 A
Characteristic feature of the output short-circuit protected	Yes
Short-circuit protection	Electronic shutdown, automatic restart
Enduring short circuit current Effective level maximum	5 A
Overload/short-circuit indicator	

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Technical specifications 1-phase, 24 V DC/5 A (outdoor) (continued)

Order No.	6ES7 307-1EA80-0AA0
Product	PS 307
Power supply, type	24 V/5 A
Safety	
Primary/secondary isolation	Yes
Potential separation	Safety extra low output voltage V_{out} according to EN 60950-1 and EN 50178, creepage distances and clearances > 5 mm
Protection class	Class I
stray current	
• maximum	3.5 mA
• typical	0.3 mA
CE mark	Yes
UL/CSA approval	Yes
UL/cUL (CSA) approval	UL-Listed (UL 508), File E143289, CSA (CSA C22.2 No. 142)
Explosion protection	-
FM approval	No
FM approval	
CB approval	No
Marine approval	-
Degree of protection (EN 60529)	IP20
EMC	
Emitted interference	EN 55011 Class A
Supply harmonics limitation	-
Noise immunity	EN 61000-6-2
Operating data	
Ambient temperature	
• in operation	-25 … +70 °C
- Note	with natural convection
Ambient temparature	
• on transport	-40 … +85 °C
Ambient temparature	
• in storage	-40 … +85 °C
Humidity class according to EN 60721	Climate class 3K5, transient condensation permitted

Order No.	6ES7 307-1EA80-0AA0
Product	PS 307
Power supply, type	24 V/5 A
Mechanics	
Connection technology	screw-type terminals
Connections	
• Supply input	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm² single-core/finely stranded
• Output	L+, M: 3 screw terminals each for 0.5 ... 2.5 mm²
• Auxiliary	-
Width of the housing	80 mm
Height of the housing	125 mm
Depth of the housing	120 mm
Installation width	80 mm
Installation height	205 mm
Weight, approx.	0.57 kg
Product feature of the housing housing for side-by-side mounting	Yes
Type of mounting wall mounting	No
Type of fixing cap rail mounting	No
Type of mounting S7-300 rail mounting	Yes
Installation	Can be mounted onto S7 rail
Mechanical accessories	Mounting adapter for standard mounting rail (6ES7390-6BA00-0AA0)

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Ordering data	Order No.
PS 307 load current supply, 2 A incl. connecting comb 120/230 V AC; 24 V DC Output current 2 A (dimensions 40 x 125 x 120)	**6ES7 307-1BA01-0AA0**
PS 307 load current supply, 5 A incl. connecting comb 120/230 V AC; 24 V DC Output current 5 A (dimensions 60 x 125 x 120)	**6ES7 307-1EA01-0AA0**
PS 307 load current supply, 10 A incl. connecting comb 120/230 V AC; 24 V DC Output current 10 A (dimensions 80 x 125 x 120)	**6ES7 307-1KA02-0AA0**
SIPLUS S7-300 PS 307, 10 A (extended temperature range -25 ... +70 °C and medial loading)	**6AG1307-1KA02-7AA0**
SIPLUS S7-300 PS 307 -25 …+70°C with Conformal Coating EN 50155 certified based on 6ES7307-1EA80-0AA0 stabilized power supply Input: 120/230 V AC Output: 24 V DC/5 A	**6AG1307-1EA80-2AA0**

	Order No.
Accessories	
Mounting adapter For snapping the new PS 307 onto a 35 mm DIN rail (EN 50022) Spare part	**6EP1 971-1BA00**
SIMATIC S7-300 mounting adapter for snapping the PS307 onto 35 mm standard rails	**6ES7390-6BA00-0AA0**

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SIPLUS S7-300 PS 305

Overview

Note:

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

SIPLUS S7-300 PS 305	
Order number	**6AG1 305-1BA80-2AA0**
Order number based on	**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 extraordinary medial exposure (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 railway 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 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 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)	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:
www.siemens.com/siplus-extreme

Ordering data	**Order No.**
SIPLUS S7-300 PS 305 load power supply (extended temperature range and medial exposure) Stabilized power supply PS305 Input: 24 … 110 V DC Output: 24 V DC/2 A	**6AG1 305-1BA80-2AA0**
Accessories	See SITOP power supplies for S7-300, 24 V DC/2 A (outdoor), page 5/243

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SIPLUS S7-300 PS 307, 5 A

Overview

Note:

SIPLUS extreme products are based on Siemens Industry 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	
Order number	**6AG1 307-1EA01-7AA0**
Order number based on	**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 railway 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 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 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)	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:
www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS S7-300 PS 307 load power supply, 5 A (extended temperature range and medial exposure) Incl. connection bracket 120/230 V AC; 24 V DC Output current 5 A (dimensions 60 x 125 x 120)	**6AG1 307-1EA01-7AA0**
Accessories	See SITOP power supplies for S7-300, 24 V DC/5 A, page 5/243

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SIPLUS S7-300 PS 307, 10 A

Overview

Note:

SIPLUS extreme products are based on Siemens Industry 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	
Order number	**6AG1 307-1KA02-7AA0**
Order number based on	**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 railway 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 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 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)	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:
www.siemens.com/siplus-extreme

Ordering data	**Order No.**
SIPLUS S7-300 PS 307 load power supply, 10 A (extended temperature range and medial exposure) Incl. connection bracket 120/230 V AC; 24 V DC Output current 10 A (dimensions 80 x 125 x 120)	**6AG1 307-1KA02-7AA0**
Accessories	See SITOP power supplies for S7-300, 24 V DC/10 A, page 5/243

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Overview

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

Ordering data

	Order No.
DIN rail	
160 mm	**6ES7 390-1AB60-0AA0**
482 mm	**6ES7 390-1AE80-0AA0**
530 mm	**6ES7 390-1AF30-0AA0**
830 mm	**6ES7 390-1AJ30-0AA0**
2000 mm	**6ES7 390-1BC00-0AA0**

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Labeling sheets

Overview

Label 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

	Order No.
Label sheets	
for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
petrol	**6ES7 392-2AX00-0AA0**
light-beige	**6ES7 392-2BX00-0AA0**
yellow	**6ES7 392-2CX00-0AA0**
red	**6ES7 392-2DX00-0AA0**
for modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units	
petrol	**6ES7 392-2AX10-0AA0**
light-beige	**6ES7 392-2BX10-0AA0**
yellow	**6ES7 392-2CX10-0AA0**
red	**6ES7 392-2DX10-0AA0**