

## SIMATIC S7-300 Advanced Controllers



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5/256	- Flexible connection
5/256	- Front connector with single wires
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### Overview



#### S7-300

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

#### S7-300F

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

#### Availability

As part of our established product portfolio, the SIMATIC S7-300/ET 200M system families will generally be available until 2023.

Following the product phase-out declaration, products will be available as spare parts for another ten years.

### Technical specifications

#### General technical data SIMATIC S7-300

Degree of protection	IP20 according to IEC 60 529
Ambient temperature	0 to 60 °C
• For horizontal installation	0 to 60 °C
• For vertical installation	0 to 40 °C
Relative humidity	10 to 95%, non-condensing, corresponds to relative humidity (RH), stress level 2 acc. to IEC 61131, Part 2
Air pressure	From 1080 to 795 hPa (corresponds to an altitude of -1000 to +2000 m)
Insulation	500 V DC test voltage
• < 50 V	2500 V DC test voltage
• < 150 V	4000 V DC test voltage
• < 250 V	
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

# SIMATIC S7-300 Advanced Controllers

## Introduction

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

#### Technical specifications (continued)

##### General technical data of SIPLUS S7-300

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

##### Ambient conditions

Extended range of environmental conditions	
<ul style="list-style-type: none"> <li>with reference to ambient temperature, air pressure and altitude</li> </ul>	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)
<ul style="list-style-type: none"> <li>At cold restart, min.</li> </ul>	0° C
Relative humidity	
<ul style="list-style-type: none"> <li>with condensation, max.</li> </ul>	100 %; RH incl. bedewing/frost (no commissioning in bedewed state)
Resistance	
<ul style="list-style-type: none"> <li>to biologically active substances/ compliance with EN 60721-3-3</li> </ul>	Yes; Class 3B2 mold and fungal spores (except fauna); the supplied plug covers must remain in place on the unused interfaces during operation.
<ul style="list-style-type: none"> <li>to chemically active substances/ compliance with EN 60721-3-3</li> </ul>	Yes; Class 3C4 (RH < 75%) incl. salt spray in accordance with EN 60068-2-52 (severity 3); the supplied plug covers must remain in place on the unused interfaces during operation.
<ul style="list-style-type: none"> <li>to mechanically active substances, compliance with EN 60721-3-3</li> </ul>	Yes; Class 3S4 incl. sand, dust; the supplied plug covers must remain in place on unused interfaces during operation.

## 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.

## SIMATIC S7-300 Advanced Controllers

### Central processing units

#### Standard CPUs

##### Overview 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 non-Siemens PROFINET I/O Controller
- Component Based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- Integrated web server with the option of creating user-defined web pages
- Combined MPI/PROFIBUS DP master/slave interface
- Isochronous mode on PROFIBUS and PROFINET

SIMATIC Micro Memory Card required for operation of CPU.

##### Overview CPU 317-2 DP



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

SIMATIC Micro Memory Card required for operation of CPU.

## Overview CPU 317-2 PN/DP



- The CPU with a large program memory and quantity framework for demanding applications
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- High processing power in binary and floating-point arithmetic
- PROFINET interface with 2-port switch
- PROFINET I/O Controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as intelligent PROFINET device under a SIMATIC or non-Siemens 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.

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### Standard CPUs

#### Technical specifications

Article number	6ES7312-1AE14-0AB0 CPU312, 32KB	6ES7314-1AG14-0AB0 CPU314, 128 KB	6ES7315-2AH14-0AB0 CPU315-2DP, 256 KB	6ES7315-2EH14-0AB0 CPU315-2 PN/DP, 384 KB
<b>General information</b>				
<b>Engineering with</b>				
• Programming package	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.2 + SP1 or higher with HSP 218	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.2 + SP1 or higher with HSP 218	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.2 + SP1 or higher with HSP 218	STEP 7 V5.5 or higher
<b>Supply voltage</b>				
Rated value (DC)				
• 24 V DC	Yes	Yes	Yes	Yes
<b>Power loss</b>				
Power loss, typ.	4 W	4 W	4.5 W	4.65 W
<b>Memory</b>				
<b>Work memory</b>				
• integrated	32 kbyte	128 kbyte	256 kbyte	384 kbyte
• expandable	No	No	No	No
• Size of retentive memory for retentive data blocks	32 kbyte	64 kbyte	128 kbyte	128 kbyte
<b>Load memory</b>				
• Plug-in (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte	8 Mbyte
<b>CPU processing times</b>				
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
<b>Counters, timers and their retentivity</b>				
<b>S7 counter</b>				
• Number	256	256	256	256
<b>IEC counter</b>				
• present	Yes	Yes	Yes	Yes
<b>S7 times</b>				
• Number	256	256	256	256
<b>IEC timer</b>				
• present	Yes	Yes	Yes	Yes
<b>Data areas and their retentivity</b>				
<b>Flag</b>				
• Number, max.	256 byte	256 byte	2 048 byte	2 048 byte
<b>Address area</b>				
<b>I/O address area</b>				
• 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
<b>Process image</b>				
• 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
<b>Time of day</b>				
<b>Clock</b>				
• Hardware clock (real-time)		Yes	Yes	Yes
• Software clock	Yes			
<b>Operating hours counter</b>				
• Number	1	1	1	1
<b>1. Interface</b>				
Interface type				
Physics	Integrated RS 485 interface RS 485	Integrated RS 485 interface RS 485	Integrated RS 485 interface RS 485	Integrated RS 485 interface RS 485
<b>Protocols</b>				
• MPI	Yes	Yes	Yes	Yes
• PROFIBUS DP master	No	No	No	Yes
• PROFIBUS DP slave	No	No	No	Yes
• Point-to-point connection	No	No	No	No
<b>PROFIBUS DP master</b>				
• Number of DP slaves, max.				124



### Technical specifications (continued)

Article number	6ES7312-1AE14-0AB0 CPU312, 32KB	6ES7314-1AG14-0AB0 CPU314, 128 KB	6ES7315-2AH14-0AB0 CPU315-2DP, 256 KB	6ES7315-2EH14-0AB0 CPU315-2 PN/DP, 384 KB
<b>2. Interface</b>				
Interface type			Integrated RS 485 interface	PROFINET
Physics			RS 485	Ethernet RJ45
<b>Interface types</b>				
• Number of ports				2
<b>Protocols</b>				
• MPI			No	No
• PROFINET IO Controller				Yes; Also simultaneously with IO-Device functionality
• PROFINET IO Device				Yes; Also simultaneously with IO Controller functionality
• PROFINET CBA				Yes
• PROFIBUS DP master			Yes	No
• PROFIBUS DP slave			Yes	No
<b>PROFIBUS DP master</b>				
• Number of DP slaves, max.			124; Per station	
<b>PROFINET IO Controller</b>				
<b>Services</b>				
- Number of connectable IO Devices, max.				128
- Of which IO devices with IRT, max.				64
- Number of IO Devices with IRT and the option "high flexibility"				128
- Number of connectable IO Devices for RT, max..				128
<b>Protocols</b>				
<b>Open IE communication</b>				
• 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
<b>Web server</b>				
• supported				Yes
<b>Isochronous mode</b>				
Isochronous operation (application synchronized up to terminal)			Yes	Yes; Via PROFIBUS DP or PROFINET interface
<b>Communication functions</b>				
PG/OP communication	Yes	Yes	Yes	Yes
Data record routing	No	No	Yes	Yes
<b>Global data communication</b>				
• supported	Yes	Yes	Yes	Yes
<b>S7 basic communication</b>				
• supported	Yes	Yes	Yes	Yes
<b>S7 communication</b>				
• supported	Yes	Yes	Yes	Yes
<b>S5 compatible communication</b>				
• 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
<b>Number of connections</b>				
• overall	6	12	16	16

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### Standard CPUs

#### Technical specifications (continued)

Article number	<b>6ES7312-1AE14-0AB0</b> CPU312, 32KB	<b>6ES7314-1AG14-0AB0</b> CPU314, 128 KB	<b>6ES7315-2AH14-0AB0</b> CPU315-2DP, 256 KB	<b>6ES7315-2EH14-0AB0</b> CPU315-2 PN/DP, 384 KB
<b>Ambient conditions</b>				
<b>Ambient temperature during operation</b>				
• min.	0 °C	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C	60 °C
<b>Configuration</b>				
<b>Programming</b>				
<b>Programming language</b>				
- 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
<b>Know-how protection</b>				
• 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
<b>Dimensions</b>				
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
<b>Weights</b>				
Weight, approx.	270 g	280 g	290 g	340 g
Article number	<b>6ES7317-2AK14-0AB0</b> CPU317-2 DP, 1 MB	<b>6ES7317-2EK14-0AB0</b> CPU317-2 PN/DP, 1 MB	<b>6ES7318-3EL01-0AB0</b> CPU319-3 PN/DP, 2 MB	
<b>General information</b>				
<b>Engineering with</b>				
• Programming package	STEP 7 as of V5.5 + SP1 or STEP 7 V5.2 + SP1 or higher with HSP 202	STEP 7 V5.5 or higher	STEP 7 V5.5 or higher	
<b>Supply voltage</b>				
Rated value (DC)				
• 24 V DC	Yes	Yes	Yes	
<b>Power loss</b>				
Power loss, typ.	4.5 W	4.65 W	14 W	
<b>Memory</b>				
<b>Work memory</b>				
• integrated	1 024 kbyte	1 024 kbyte	2 048 kbyte	
• expandable	No	No	No	
• Size of retentive memory for retentive data blocks	256 kbyte	256 kbyte	700 kbyte	
<b>Load memory</b>				
• Plug-in (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte	
<b>CPU processing times</b>				
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	

### Technical specifications (continued)

Article number	<b>6ES7317-2AK14-0AB0</b> CPU317-2 DP, 1 MB	<b>6ES7317-2EK14-0AB0</b> CPU317-2 PN/DP, 1 MB	<b>6ES7318-3EL01-0AB0</b> CPU319-3 PN/DP, 2 MB
<b>Counters, timers and their retentivity</b>			
<b>S7 counter</b>			
• Number	512	512	2 048
<b>IEC counter</b>			
• present	Yes	Yes	Yes
<b>S7 times</b>			
• Number	512	512	2 048
<b>IEC timer</b>			
• present	Yes	Yes	Yes
<b>Data areas and their retentivity</b>			
<b>Flag</b>			
• Number, max.	4 096 byte	4 096 byte	8 192 byte
<b>Address area</b>			
<b>I/O address area</b>			
• Inputs	8 192 byte	8 192 byte	8 192 byte
• Outputs	8 192 byte	8 192 byte	8 192 byte
<b>Process image</b>			
• Inputs, adjustable	8 192 byte	8 192 byte	8 192 byte
• Outputs, adjustable	8 192 byte	8 192 byte	8 192 byte
<b>Time of day</b>			
<b>Clock</b>			
• Hardware clock (real-time)	Yes	Yes	Yes
<b>Operating hours counter</b>			
• Number	4	4	4
<b>1. Interface</b>			
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485
<b>Protocols</b>			
• MPI	Yes	Yes	Yes
• PROFIBUS DP master	Yes	Yes	Yes
• PROFIBUS DP slave	Yes; A DP slave at both interfaces simultaneously is not possible	Yes	Yes; A DP slave at both interfaces simultaneously is not possible
• Point-to-point connection	No	No	No
<b>PROFIBUS DP master</b>			
• Number of DP slaves, max.	124	124	124
<b>2. Interface</b>			
Interface type	Integrated RS 485 interface	PROFINET	Integrated RS 485 interface
Physics	RS 485	Ethernet RJ45	RS 485
<b>Interface types</b>			
• Number of ports		2	
<b>Protocols</b>			
• MPI	No	No	No
• 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
• PROFIBUS DP master	Yes	No	Yes
• PROFIBUS 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
<b>PROFIBUS DP master</b>			
• Number of DP slaves, max.	124		124
<b>PROFINET IO Controller</b>			
<b>Services</b>			
- Number of connectable IO Devices, max.		128	
- Of which IO devices with IRT, max.		64	
- Number of IO Devices with IRT and the option "high flexibility"		128	
- Number of connectable IO Devices for RT, max.		128	

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### Standard CPUs

#### Technical specifications (continued)

Article number	<b>6ES7317-2AK14-0AB0</b> CPU317-2 DP, 1 MB	<b>6ES7317-2EK14-0AB0</b> CPU317-2 PN/DP, 1 MB	<b>6ES7318-3EL01-0AB0</b> CPU319-3 PN/DP, 2 MB
<b>3. Interface</b>			
Interface type			PROFINET
Physics			Ethernet RJ45
<b>Interface types</b>			
• Number of ports			2
<b>Protocols</b>			
• MPI			No
• PROFINET IO Controller			Yes; Also simultaneously with I-Device functionality
• PROFINET IO Device			Yes; Also simultaneously with IO Controller functionality
• PROFINET CBA			Yes
• PROFIBUS DP master			No
• PROFIBUS DP slave			No
<b>PROFINET IO Controller Services</b>			
- Number of connectable IO Devices, max.			256
- Of which IO devices with IRT, max.			64
- Number of IO Devices with IRT and the option "high flexibility"			256
- Number of connectable IO Devices for RT, max..			256
<b>Protocols</b>			
<b>Open IE communication</b>			
• 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
<b>Web server</b>			
• supported		Yes	Yes
<b>Isochronous mode</b>			
Isochronous operation (application synchronized up to terminal)		Yes; Via PROFIBUS DP or PROFINET interface	Yes; Via 2nd PROFIBUS DP or PROFINET interface
<b>Communication functions</b>			
PG/OP communication	Yes	Yes	Yes
Data record routing	Yes	Yes	Yes
<b>Global data communication</b>			
• supported	Yes	Yes	Yes
<b>S7 basic communication</b>			
• supported	Yes	Yes	Yes
<b>S7 communication</b>			
• supported	Yes	Yes	Yes
<b>S5 compatible communication</b>			
• supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
<b>Number of connections</b>			
• overall	32	32	32
<b>Ambient conditions</b>			
<b>Ambient temperature during operation</b>			
• min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### Standard CPUs

#### Technical specifications (continued)

Article number	6ES7317-2AK14-0AB0	6ES7317-2EK14-0AB0	6ES7318-3EL01-0AB0
	CPU317-2 DP, 1 MB	CPU317-2 PN/DP, 1 MB	CPU319-3 PN/DP, 2 MB
<b>Configuration</b>			
<b>Programming</b>			
<b>Programming language</b>			
- 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
<b>Know-how protection</b>			
• 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
<b>Dimensions</b>			
Width	40 mm	40 mm	120 mm
Height	125 mm	125 mm	125 mm
Depth	130 mm	130 mm	130 mm
<b>Weights</b>			
Weight, approx.	360 g	340 g	1 250 g

#### Ordering data

Article No.	Article No.
<b>CPU 312</b> Work memory 32 KB, supply voltage 24 V DC, MPI; MMC required	<b>6ES7312-1AE14-0AB0</b>
<b>CPU 314</b> Work memory 128 KB, supply voltage 24 V DC, MPI; MMC required	<b>6ES7314-1AG14-0AB0</b>
<b>CPU 315-2 DP</b> Work memory 256 KB, supply voltage 24 V DC, MPI, PROFIBUS DP master/slave interface; MMC required	<b>6ES7315-2AH14-0AB0</b>
<b>CPU 315-2 PN/DP</b> Work memory 384 KB, 24 V DC power supply, combined MPI/PROFIBUS DP master/slave interface, Ethernet/PROFINET interface with 2-port switch; MMC required	<b>6ES7315-2EH14-0AB0</b>
<b>CPU 317-2 DP</b> Work memory 1 MB, supply voltage 24 V DC, MPI, PROFIBUS DP master/slave interface; MMC required	<b>6ES7317-2AK14-0AB0</b>
<b>CPU 317-2 PN/DP</b> Work memory 1 MB, 24 V DC power supply, combined MPI/PROFIBUS DP master/slave interface, Ethernet/PROFINET interface with 2-port switch; MMC required	<b>6ES7317-2EK14-0AB0</b>
<b>CPU 319-3 PN/DP</b> Work memory 2 MB, power supply 24 V DC, combined MPI/PROFIBUS DP master/slave interface, PROFIBUS DP master/ slave interface, Ethernet/PROFINET interface with 2-port switch; MMC required	<b>6ES7318-3EL01-0AB0</b>
<b>SIMATIC Micro Memory Card</b> 64 KB 128 KB 512 KB 2 MB 4 MB 8 MB	<b>6ES7953-8LF31-0AA0</b> <b>6ES7953-8LG31-0AA0</b> <b>6ES7953-8LJ31-0AA0</b> <b>6ES7953-8LL31-0AA0</b> <b>6ES7953-8LM31-0AA0</b> <b>6ES7953-8LP31-0AA0</b>
<b>MPI cable</b> for connection of SIMATIC S7 and PG via MPI; 5 m in length	<b>6ES7901-0BF00-0AA0</b>
<b>Slot number plates</b>	<b>6ES7912-0AA00-0AA0</b>
<b>SIMATIC Manual Collection</b> 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	<b>6ES7998-8XC01-8YE0</b>
<b>SIMATIC Manual Collection update service for 1 year</b> Current "Manual Collection" DVD and the three subsequent updates	<b>6ES7998-8XC01-8YE2</b>
<b>Power supply connector</b> 10 units, spare part	<b>6ES7391-1AA00-0AA0</b>
<b>USB A2 PC adapter</b> For connecting a PG/PC or notebook to PROFIBUS or MPI; USB cable included in scope of supply	<b>6GK1571-0BA00-0AA0</b>

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### Standard CPUs

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Ordering data	Article No.	Ordering data	Article No.
<b>PROFIBUS bus components</b>		<b>PROFINET bus components</b>	
<b>PROFIBUS DP bus connector RS 485</b>		<b>IE FC TP Standard Cable GP 2x2</b>	<b>6XV1840-2AH10</b>
<ul style="list-style-type: none"> <li>With 90° cable outlet, max. transfer rate 12 Mbps               <ul style="list-style-type: none"> <li>- without PG interface</li> <li>- with PG interface</li> </ul> </li> <li>with 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbps               <ul style="list-style-type: none"> <li>- without PG interface, 1 unit</li> <li>- without PG interface, 100 units</li> <li>- with PG interface, 1 unit</li> <li>- with PG interface, 100 units</li> </ul> </li> <li>with axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS</li> </ul>	<b>6ES7972-0BA12-0XA0</b> <b>6ES7972-0BB12-0XA0</b>	4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; Sold by the meter	
	<b>6ES7972-0BA52-0XA0</b> <b>6ES7972-0BA52-0XB0</b> <b>6ES7972-0BB52-0XA0</b> <b>6ES7972-0BB52-0XB0</b> <b>6GK1500-0EA02</b>	<b>FO Standard Cable GP (50/125)</b>	<b>6XV1873-2A</b>
<b>PROFIBUS Fast Connect bus cable</b>	<b>6XV1830-0EH10</b>	Standard cable, splittable, UL approval, sold by the meter	
Standard type with special design for quick mounting, 2-wire, shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m		<b>SCALANCE X204-2 Industrial Ethernet Switch</b>	<b>6GK5204-2BB10-2AA3</b>
<b>RS 485 repeater for PROFIBUS</b>	<b>6ES7972-0AA02-0XA0</b>	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 Mbps RJ45 ports and two FO ports	
Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure		<b>Compact Switch Module CSM 377</b>	<b>6GK7377-1AA00-0AA0</b>
		Unmanaged switch for connecting SIMATIC S7-300, ET 200M and up to three other stations to Industrial Ethernet with 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module incl. electronic manual on CD-ROM	
		<b>IE FC RJ45 plugs</b>	
		RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
		<b>IE FC RJ45 plug 145</b>	
		145° cable outlet	
		1 unit	<b>6GK1901-1BB30-0AA0</b>
		10 units	<b>6GK1901-1BB30-0AB0</b>
		50 units	<b>6GK1901-1BB30-0AE0</b>
		<b>IE FC RJ45 plug 180</b>	
		180° cable outlet	
		1 unit	<b>6GK1901-1BB10-2AA0</b>
		10 units	<b>6GK1901-1BB10-2AB0</b>
		50 units	<b>6GK1901-1BB10-2AE0</b>
		<b>PROFIBUS/PROFINET bus components</b>	See Catalogs IK PI, CA 01
		For establishing MPI/PROFIBUS/PROFINET communication	

## Overview SIPLUS CPU 314



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

SIPLUS Micro Memory Card required for operation of CPU.

Note:

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

## Overview SIPLUS 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

SIPLUS Micro Memory Card required for operation of CPU.

Note:

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

## SIMATIC S7-300 Advanced Controllers

Central processing units

### SIPLUS S7-300 standard CPUs

#### Overview SIPLUS CPU 315-2 PN/DP



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

SIMATIC Micro Memory Card required for operation of CPU.

Note:

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

#### Overview SIPLUS CPU 317-2 PN/DP



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

Micro Memory Card required for operation of CPU.

Note:

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



### Technical specifications

Article number	6AG1314-1AG14-2AY0	6AG1314-1AG14-7AB0	6AG1315-2AH14-2AY0	6AG1315-2AH14-7AB0
Based on	6ES7314-1AG14-0AB0 SIPLUS CPU314 EN50155	6ES7314-1AG14-0AB0 SIPLUS S7-300 CPU314	6ES7315-2AH14-0AB0 SIPLUS CPU 315-2DP EN50155	6ES7315-2AH14-0AB0 SIPLUS S7-300 CPU 315- 2DP
<b>Ambient conditions</b>				
<b>Ambient temperature during operation</b>				
• min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
<b>Altitude during operation relating to sea level</b>				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>				
<b>Use in stationary industrial systems</b>				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>				
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *		Yes; Class 5S3 incl. sand, dust; *	
<b>Use on ships/at sea</b>				
- to biologically active substances according to EN 60721-3-6		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6		Yes; Class 6S3 incl. sand, dust; *		Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### SIPLUS S7-300 standard CPUs

#### Technical specifications (continued)

Article number	6AG1315-2EH14-2AY0	6AG1315-2EH14-7AB0	6AG1317-2EK14-2AY0	6AG1317-2EK14-7AB0
Based on	6ES7315-2EH14-0AB0 SIPLUS S7-300 CPU315-2PN/DP EN50155	6ES7315-2EH14-0AB0 SIPLUS S7-300 CPU315-2PN/DP	6ES7317-2EK14-0AB0 SIPLUS S7-300 CPU317-2PN/DP EN50155	6ES7317-2EK14-0AB0 SIPLUS S7-300 CPU317-2PN/DP
<b>Ambient conditions</b>				
<b>Ambient temperature during operation</b>				
• min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; @ 60°C for UL/ATEX/FM use
<b>Altitude during operation relating to sea level</b>				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>				
<b>Use in stationary industrial systems</b>				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>				
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *		Yes; Class 5S3 incl. sand, dust; *	
<b>Use on ships/at sea</b>				
- to biologically active substances according to EN 60721-3-6		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6		Yes; Class 6S3 incl. sand, dust; *		Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### SIPLUS S7-300 standard CPUs

Ordering data	Article No.	Article No.	
<b>SIPLUS S7-300 CPU 314</b> <i>For industrial applications with extended ambient conditions</i> CPU, work memory 128 KB, power supply 24 V DC, MPI; MMC required Extended temperature range and exposure to media <i>For rolling stock railway applications</i> CPU, work memory 128 KB, power supply 24 V DC, MPI; MMC required Conforms to EN 50155	<b>6AG1314-1AG14-7AB0</b>	<b>SIPLUS S7-300 CPU 317-2 PN/DP</b> <i>For industrial applications with extended ambient conditions</i> CPU, work memory 1 MB, power supply 24 V DC, combined MPI/PROFIBUS DP master/slave interface, Ethernet/PROFINET interface; MMC required Extended temperature range and exposure to media <i>For rolling stock railway applications</i> CPU, work memory 1 MB, power supply 24 V DC, combined MPI/PROFIBUS DP master/slave interface, Ethernet/PROFINET interface; MMC required Conforms to EN 50155	<b>6AG1317-2EK14-7AB0</b>
<b>SIPLUS S7-300 CPU 315-2 DP</b> <i>For industrial applications with extended ambient conditions</i> CPU, work memory 256 KB, power supply 24 V DC, MPI, PROFIBUS DP master/slave interface; MMC required Extended temperature range and exposure to media <i>For rolling stock railway applications</i> CPU, work memory 256 KB, power supply 24 V DC, MPI, PROFIBUS DP master/slave interface; MMC required Conforms to EN 50155	<b>6AG1315-2AH14-7AB0</b>	<b>Accessories</b> <i>Mandatory</i> <b>SIMATIC Micro Memory Card</b> 64 KB 128 KB 512 KB 2 MB 4 MB 8 MB	<b>6ES7953-8LF31-0AA0</b> <b>6ES7953-8LG31-0AA0</b> <b>6ES7953-8LJ31-0AA0</b> <b>6ES7953-8LL31-0AA0</b> <b>6ES7953-8LM31-0AA0</b> <b>6ES7953-8LP31-0AA0</b>
<b>SIPLUS S7-300 CPU 315-2 PN/DP</b> <i>For industrial applications with extended ambient conditions</i> CPU, 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 Extended temperature range and exposure to media <i>For rolling stock railway applications</i> CPU, 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 Conforms to EN 50155	<b>6AG1315-2EH14-7AB0</b>	<b>PROFIBUS DP RS 485 bus connector</b> (Extended temperature range and exposure to media) With 90° cable outlet, max. transfer rate 12 Mbps • without PG interface • with PG interface With inclined cable outlet, max. transmission rate 12 Mbps • without PG interface • with PG interface With insulation displacement terminals, max. transfer rate 12 Mbps • with PG interface, grounding via control cabinet cover (Extended temperature range) With axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS	<b>6AG1972-0BA12-2XA0</b> <b>6AG1972-0BB12-2XA0</b> <b>6AG1972-0BA42-7XA0</b> <b>6AG1972-0BB42-7XA0</b> <b>6AG1972-0BB70-7XA0</b> <b>6AG1500-0EA02-2AA0</b>

## SIMATIC S7-300 Advanced Controllers

### Central processing units

#### SIPLUS S7-300 standard CPUs

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Ordering data	Article No.	Ordering data	Article No.
<b>IE FC RJ45 plug 180</b> (Extended temperature range and media exposure) 180° cable outlet • 1 unit	<b>6AG1901-1BB10-7AA0</b>	<b>IE FC TP Standard Cable GP 2x2</b> 4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; Sold by the meter	<b>6XV1840-2AH10</b>
<b>SIPLUS SCALANCE X-200 Industrial Ethernet Switches</b> Industrial Ethernet switches with integral SNMP access, web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager (except: SCALANCE X208PRO); incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM • With electrical and optical ports for glass multimode FOC up to 3 km • Extended temperature range and exposure to media • <b>SIPLUS SCALANCE X204-2</b> with four 10/100 Mbps RJ45 ports and two fiber-optic ports	<b>6AG1204-2BB10-4AA3</b>	<b>FO Standard Cable GP (50/125)</b> Standard cable, splittable, UL approval, sold by the meter <i>For commissioning</i>	<b>6XV1873-2A</b>
<b>PROFIBUS FastConnect bus cable</b> Standard type with special design for quick mounting, 2-wire, shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m	<b>6XV1830-0EH10</b>	<b>MPI cable</b> For connection of SIMATIC S7 and PG via MPI; 5 m in length	<b>6ES7901-0BF00-0AA0</b>
<b>RS 485 repeater for PROFIBUS</b> (Extended temperature range and exposure to media) Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure	<b>6AG1972-0AA02-7XA0</b>	<b>USB A2 PC adapter</b> For connecting a PG/PC or notebook to PROFIBUS or MPI; USB cable included in scope of supply <i>Consumables</i>	<b>6GK1571-0BA00-0AA0</b>
		<b>Power supply connector</b> 10 units, spare part	<b>6ES7391-1AA00-0AA0</b>
		<b>Slot number plates</b> <i>Documentation</i>	<b>6ES7912-0AA00-0AA0</b>
		<b>SIMATIC Manual Collection</b> Electronic manuals on DVD, multi-language: 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	<b>6ES7998-8XC01-8YE0</b>
		<b>SIMATIC Manual Collection update service for 1 year</b> Current "Manual Collection" DVD and the three subsequent updates	<b>6ES7998-8XC01-8YE2</b>

## SIMATIC S7-300 Advanced Controllers

### Central processing units

#### Compact CPUs

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#### 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.

## SIMATIC S7-300 Advanced Controllers

### Central processing units

#### Compact CPUs

5

##### 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 non-Siemens PROFINET IO controller
- Component Based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- Integrated web server with the option of creating user-defined web pages
- Isochronous mode on PROFINET

SIMATIC Micro Memory Card required for operation of CPU.

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### Compact CPUs

#### Technical specifications

Article number	<b>6ES7312-5BF04-0AB0</b> CPU312C, 10DI/6DO, 64 KB	<b>6ES7313-5BG04-0AB0</b> CPU313C, 24DI/16DO/5AI/2AO, 128 KB	<b>6ES7313-6BG04-0AB0</b> CPU313C-2 PTP, 16DI/16DO, 128 KB	<b>6ES7313-6CG04-0AB0</b> CPU313C-2 DP, 16DI/16DO, 128 KB
<b>General information</b>				
<b>Engineering with</b>				
• Programming package	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203	STEP 7 as of V5.5 + SP1 or STEP 7 V5.3 + SP2 or higher with HSP 204	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203
<b>Supply voltage</b>				
Rated value (DC)				
• 24 V DC	Yes	Yes	Yes	Yes
<b>Power loss</b>				
Power loss, typ.	8 W	12 W	9 W	9 W
<b>Memory</b>				
<b>Work memory</b>				
• integrated	64 kbyte	128 kbyte	128 kbyte	128 kbyte
• expandable	No	No	No	No
• Size of retentive memory for retentive data blocks	64 kbyte	64 kbyte	64 kbyte	64 kbyte
<b>Load memory</b>				
• Plug-in (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte	8 Mbyte
<b>CPU processing times</b>				
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
<b>Counters, timers and their retentivity</b>				
<b>S7 counter</b>				
• Number	256	256	256	256
<b>IEC counter</b>				
• present	Yes	Yes	Yes	Yes
<b>S7 times</b>				
• Number	256	256	256	256
<b>IEC timer</b>				
• present	Yes	Yes	Yes	Yes
<b>Data areas and their retentivity</b>				
<b>Flag</b>				
• Number, max.	256 byte	256 byte	256 byte	256 byte
<b>Address area</b>				
<b>I/O address area</b>				
• 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
<b>Process image</b>				
• 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
<b>Time of day</b>				
<b>Clock</b>				
• Hardware clock (real-time)		Yes	Yes	Yes
• Software clock	Yes			
<b>Operating hours counter</b>				
• Number	1	1	1	1
<b>Digital inputs</b>				
integrated channels (DI)	10	24	16	16
<b>Digital outputs</b>				
integrated channels (DO)	6	16	16	16

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### Compact CPUs

#### Technical specifications (continued)

Article number	<b>6ES7312-5BF04-0AB0</b> CPU312C, 10DI/6DO, 64 KB	<b>6ES7313-5BG04-0AB0</b> CPU313C, 24DI/16DO/5AI/2AO, 128 KB	<b>6ES7313-6BG04-0AB0</b> CPU313C-2 PTP, 16DI/16DO, 128 KB	<b>6ES7313-6CG04-0AB0</b> CPU313C-2 DP, 16DI/16DO, 128 KB
<b>Analog inputs</b>				
integrated channels (AI)	0	5; 4x current/voltage, 1x resistance	0	0
<b>Input ranges</b>				
• 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		
<b>Analog outputs</b>				
integrated channels (AO)	0	2	0	0
<b>Output ranges, voltage</b>				
• 0 to 10 V		Yes		
• -10 V to +10 V		Yes		
<b>Output ranges, current</b>				
• 0 to 20 mA		Yes		
• -20 mA to +20 mA		Yes		
• 4 mA to 20 mA		Yes		
<b>1. Interface</b>				
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485	RS 485
<b>Protocols</b>				
• MPI	Yes	Yes	Yes	Yes
• PROFIBUS DP master	No	No	No	No
• PROFIBUS DP slave	No	No	No	No
• Point-to-point connection	No	No	No	No
<b>2. Interface</b>				
Interface type			Integrated RS 422/ 485 interface	Integrated RS 485 interface
Physics			RS 422 / 485 (X.27)	RS 485
<b>Protocols</b>				
• MPI			No	No
• PROFINET IO Controller			No	No
• PROFINET IO Device			No	No
• PROFINET CBA			No	No
• PROFIBUS DP master			No	Yes
• PROFIBUS DP slave			No	Yes
<b>PROFIBUS DP master</b>				
• Number of DP slaves, max.				124
<b>Communication functions</b>				
PG/OP communication	Yes	Yes	Yes	Yes
Data record routing	No	No	No	Yes
<b>Global data communication</b>				
• supported	Yes	Yes	Yes	Yes
<b>S7 basic communication</b>				
• supported	Yes	Yes	Yes; Server	Yes
<b>S7 communication</b>				
• supported	Yes	Yes	Yes	Yes
<b>S5 compatible communication</b>				
• 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
<b>Number of connections</b>				
• overall	6	8	8	8



# SIMATIC S7-300 Advanced Controllers

## Central processing units

### Compact CPUs

#### Technical specifications (continued)

Article number	<b>6ES7312-5BF04-0AB0</b> CPU312C, 10DI/6DO, 64 KB	<b>6ES7313-5BG04-0AB0</b> CPU313C, 24DI/16DO/5AI/2AO, 128 KB	<b>6ES7313-6BG04-0AB0</b> CPU313C-2 PTP, 16DI/16DO, 128 KB	<b>6ES7313-6CG04-0AB0</b> CPU313C-2 DP, 16DI/16DO, 128 KB
<b>Integrated Functions</b>				
Number of counters	2; See "Technological Functions" manual	3; See "Technological Functions" manual	3; See "Technological Functions" manual	3; See "Technological Functions" manual
Counting frequency (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
<b>Ambient conditions</b>				
<b>Ambient temperature during operation</b>				
• min.	0 °C	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C	60 °C
<b>Configuration</b>				
<b>Programming</b>				
<b>Programming language</b>				
- 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
<b>Know-how protection</b>				
• 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
<b>Dimensions</b>				
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
<b>Weights</b>				
Weight, approx.	410 g	660 g	500 g	500 g

## SIMATIC S7-300 Advanced Controllers

### Central processing units

#### Compact CPUs

#### Technical specifications (continued)

Article number	<b>6ES7314-6BH04-0AB0</b> CPU314C-2PTP, 24DI/16DO/5AI/2AO, 192 KB	<b>6ES7314-6CH04-0AB0</b> CPU314C-2DP, 24DI/16DO/5AI/2AO, 192 KB	<b>6ES7314-6EH04-0AB0</b> CPU314C-2PN/DP, 24DI/16DO/4AI/2AO, 192KB
<b>General information</b>			
<b>Engineering with</b>			
• Programming package	STEP 7 as of V5.5 + SP1 or STEP 7 V5.3 + SP2 or higher with HSP 204	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203	STEP 7 V5.5 or higher with HSP 191
<b>Supply voltage</b>			
Rated value (DC)			
• 24 V DC	Yes	Yes	Yes
<b>Power loss</b>			
Power loss, typ.	13 W	13 W	14 W
<b>Memory</b>			
<b>Work memory</b>			
• integrated	192 kbyte	192 kbyte	192 kbyte
• expandable	No	No	No
• Size of retentive memory for retentive data blocks	64 kbyte	64 kbyte	64 kbyte
<b>Load memory</b>			
• Plug-in (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte
<b>CPU processing times</b>			
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
<b>Counters, timers and their retentivity</b>			
<b>S7 counter</b>			
• Number	256	256	256
<b>IEC counter</b>			
• present	Yes	Yes	Yes
<b>S7 times</b>			
• Number	256	256	256
<b>IEC timer</b>			
• present	Yes	Yes	Yes
<b>Data areas and their retentivity</b>			
<b>Flag</b>			
• Number, max.	256 byte	256 byte	256 byte
<b>Address area</b>			
<b>I/O address area</b>			
• Inputs	1 024 byte	2 048 byte	2 048 byte
• Outputs	1 024 byte	2 048 byte	2 048 byte
<b>Process image</b>			
• Inputs, adjustable	1 024 byte	2 048 byte	2 048 byte
• Outputs, adjustable	1 024 byte	2 048 byte	2 048 byte
<b>Time of day</b>			
<b>Clock</b>			
• Hardware clock (real-time)	Yes	Yes	Yes
<b>Operating hours counter</b>			
• Number	1	1	1
<b>Digital inputs</b>			
integrated channels (DI)	24	24	24
<b>Digital outputs</b>			
integrated channels (DO)	16	16	16

### Technical specifications (continued)

Article number	<b>6ES7314-6BH04-0AB0</b> CPU314C-2PTP, 24DI/16DO/5AI/2AO, 192 KB	<b>6ES7314-6CH04-0AB0</b> CPU314C-2DP, 24DI/16DO/5AI/2AO, 192 KB	<b>6ES7314-6EH04-0AB0</b> CPU314C-2PN/DP, 24DI/16DO/4AI/2AO, 192KB
<b>Analog inputs</b>			
integrated channels (AI)	5; 4x current/voltage, 1x resistance	5; 4x current/voltage, 1x resistance	5; 4x current/voltage, 1x resistance
<b>Input ranges</b>			
• Voltage	Yes; $\pm 10\text{ V} / 100\text{ k}\Omega$ ; 0 V to 10 V / 100 k $\Omega$	Yes; $\pm 10\text{ V} / 100\text{ k}\Omega$ ; 0 V to 10 V / 100 k $\Omega$	Yes; $\pm 10\text{ V} / 100\text{ k}\Omega$ ; 0 V to 10 V / 100 k $\Omega$
• Current	Yes; $\pm 20\text{ mA} / 100\ \Omega$ ; 0 mA to 20 mA / 100 $\Omega$ ; 4 mA to 20 mA / 100 $\Omega$	Yes; $\pm 20\text{ mA} / 100\ \Omega$ ; 0 mA to 20 mA / 100 $\Omega$ ; 4 mA to 20 mA / 100 $\Omega$	Yes; $\pm 20\text{ mA} / 100\ \Omega$ ; 0 mA to 20 mA / 100 $\Omega$ ; 4 mA to 20 mA / 100 $\Omega$
• Resistance thermometer	Yes; Pt 100 / 10 M $\Omega$	Yes; Pt 100 / 10 M $\Omega$	Yes; Pt 100 / 10 M $\Omega$
• Resistance	Yes; 0 $\Omega$ to 600 $\Omega$ / 10 M $\Omega$	Yes; 0 $\Omega$ to 600 $\Omega$ / 10 M $\Omega$	Yes; 0 $\Omega$ to 600 $\Omega$ / 10 M $\Omega$
<b>Analog outputs</b>			
integrated channels (AO)	2	2	2
<b>Output ranges, voltage</b>			
• 0 to 10 V	Yes	Yes	Yes
• -10 V to +10 V	Yes	Yes	Yes
<b>Output ranges, current</b>			
• 0 to 20 mA	Yes	Yes	Yes
• -20 mA to +20 mA	Yes	Yes	Yes
• 4 mA to 20 mA	Yes	Yes	Yes
<b>1. Interface</b>			
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485
<b>Protocols</b>			
• MPI	Yes	Yes	Yes
• PROFIBUS DP master	No	No	Yes
• PROFIBUS DP slave	No	No	Yes
• Point-to-point connection	No	No	No
<b>PROFIBUS DP master</b>			
• Number of DP slaves, max.			124
<b>2. Interface</b>			
Interface type	Integrated RS 422/ 485 interface	Integrated RS 485 interface	PROFINET
Physics	RS 422 / 485 (X.27)	RS 485	Ethernet RJ45
<b>Interface types</b>			
• Number of ports			2
<b>Protocols</b>			
• MPI	No	No	No
• PROFINET IO Controller	No	No	Yes; Also simultaneously with IO-Device functionality
• PROFINET IO Device	No	No	Yes; Also simultaneously with IO Controller functionality
• PROFINET CBA	No	No	Yes
• PROFIBUS DP master	No	Yes	No
• PROFIBUS DP slave	No	Yes	No
<b>PROFIBUS DP master</b>			
• Number of DP slaves, max.		124	
<b>PROFINET IO Controller</b>			
<b>Services</b>			
- Number of connectable IO Devices, max.			128
- Of which IO devices with IRT, max.			64
- Number of IO Devices with IRT and the option "high flexibility"			128
- Number of connectable IO Devices for RT, max..			128

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### Compact CPUs

#### Technical specifications (continued)

Article number	<b>6ES7314-6BH04-0AB0</b> CPU314C-2PTP, 24DI/16DO/5AI/2AO, 192 KB	<b>6ES7314-6CH04-0AB0</b> CPU314C-2DP, 24DI/16DO/5AI/2AO, 192 KB	<b>6ES7314-6EH04-0AB0</b> CPU314C-2PN/DP, 24DI/16DO/4AI/2AO, 192KB
<b>Protocols</b>			
<b>Open IE communication</b>			
• TCP/IP			Yes; via integrated PROFINET interface and loadable FBs 8
- Number of connections, max.			8
• ISO-on-TCP (RFC1006)			Yes; via integrated PROFINET interface and loadable FBs 8
- Number of connections, max.			8
• UDP			Yes; via integrated PROFINET interface and loadable FBs 8
- Number of connections, max.			8
<b>Web server</b>			
• supported			Yes
<b>Isochronous mode</b>			
Isochronous operation (application synchronized up to terminal)			Yes; For PROFINET only
<b>Communication functions</b>			
PG/OP communication	Yes	Yes	Yes
Data record routing	No	Yes	Yes
<b>Global data communication</b>			
• supported	Yes	Yes	Yes
<b>S7 basic communication</b>			
• supported	Yes	Yes	Yes
<b>S7 communication</b>			
• supported	Yes	Yes	Yes
<b>S5 compatible communication</b>			
• supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
<b>Number of connections</b>			
• overall	12	12	12
<b>Integrated Functions</b>			
Number of counters	4; See "Technological Functions" manual	4; See "Technological Functions" manual	4; See "Technological Functions" manual
Counting 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
<b>Ambient conditions</b>			
<b>Ambient temperature during operation</b>			
• min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C
<b>Configuration</b>			
<b>Programming</b>			
<b>Programming language</b>			
- 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

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### Compact CPUs

#### Technical specifications (continued)

Article number	<b>6ES7314-6BH04-0AB0</b> CPU314C-2PTP, 24DI/16DO/5AI/2AO, 192 KB	<b>6ES7314-6CH04-0AB0</b> CPU314C-2DP, 24DI/16DO/5AI/2AO, 192 KB	<b>6ES7314-6EH04-0AB0</b> CPU314C-2PN/DP, 24DI/16DO/4AI/2AO, 192KB
<b>Know-how protection</b>			
• 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
<b>Dimensions</b>			
Width	120 mm	120 mm	120 mm
Height	125 mm	125 mm	125 mm
Depth	130 mm	130 mm	130 mm
<b>Weights</b>			
Weight, approx.	680 g	680 g	730 g

#### Ordering data

Article No.	Article No.
<b>CPU 312C</b> Compact CPU, work memory 64 KB, supply voltage 24 V DC, 10 DI/6 DQ integrated, integrated functions, MPI; including slot number labels; MMC required	<b>6ES7312-5BF04-0AB0</b>
<b>CPU 313C</b> Compact CPU, work memory 128 KB, supply voltage 24 V DC, 24 DI/16 DQ, 4 AI/2 AQ integrated, integrated functions, MPI; MMC required	<b>6ES7313-5BG04-0AB0</b>
<b>CPU 313C-2 PtP</b> Compact CPU, work memory 128 KB, supply voltage 24 V DC, 16 DI/16 DQ integrated, integrated functions, MPI, RS 422/485 interface; MMC required	<b>6ES7313-6BG04-0AB0</b>
<b>CPU 313C-2 DP</b> Compact CPU, work memory 128 KB, 24 V DC power supply, 16 DI/16 DQ integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required	<b>6ES7313-6CG04-0AB0</b>
<b>CPU 314C-2 PtP</b> Compact CPU, work memory 192 KB, supply voltage 24 V DC, 24 DI/16 DQ/4 AI/2 AQ integrated, integrated functions, MPI, RS 422/ 485 interface; MMC required	<b>6ES7314-6BH04-0AB0</b>
<b>CPU 314C-2 DP</b> Compact CPU, work memory 192 KB, supply voltage 24 V DC, 24 DI/16 DQ/4 AI/2 AQ integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required	<b>6ES7314-6CH04-0AB0</b>
<b>CPU 314C-2 PN/DP</b> Compact CPU, work memory 192 KB, supply voltage 24 V DC, 24 DI/16 DO/4 AI/2 AO integrated, integrated functions, MPI; PROFIBUS DP master/slave interface; PROFINET IO controller/ I-device interface, MMC required	<b>6ES7314-6EH04-0AB0</b>
<b>SIMATIC Micro Memory Card</b> 64 KB 128 KB 512 KB 2 MB 4 MB 8 MB	<b>6ES7953-8LF31-0AA0</b> <b>6ES7953-8LG31-0AA0</b> <b>6ES7953-8LJ31-0AA0</b> <b>6ES7953-8LL31-0AA0</b> <b>6ES7953-8LM31-0AA0</b> <b>6ES7953-8LP31-0AA0</b>
<b>MPI cable</b> for connection of SIMATIC S7 and PG via MPI; 5 m in length	<b>6ES7901-0BF00-0AA0</b>
<b>Point-to-point link cable</b> For connection to CPU 31xC-2 PtP 5 m 10 m 50 m	<b>6ES7902-3AB00-0AA0</b> <b>6ES7902-3AC00-0AA0</b> <b>6ES7902-3AG00-0AA0</b>
<b>Front connector (1 unit)</b> For compact CPUs 40-pin, with screw contacts • 1 unit • 100 units 40-pin, with spring-loaded contacts • 1 unit • 100 units	<b>6ES7392-1AM00-0AA0</b> <b>6ES7392-1AM00-1AB0</b> <b>6ES7392-1BM01-0AA0</b> <b>6ES7392-1BM01-1AB0</b>
<b>SIMATIC TOP connect</b>	See page 5/251; for information about which components can be used for the respective module, see Industry Mall
<b>Front door, elevated design</b> For compact CPUs; for connecting 1.3 mm <sup>2</sup> /16 AWG wires; wiring diagram and labels in petrol	<b>6ES7328-7AA20-0AA0</b>
<b>Slot number plates</b>	<b>6ES7912-0AA00-0AA0</b>

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### Compact CPUs

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Ordering data	Article No.	Ordering data	Article No.
<b>SIMATIC Manual Collection</b> Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0	<b>PROFINET bus components</b> <b>IE FC TP Standard Cable GP 2x2</b> 4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; Sold by the meter: Max. delivery unit 1000 m Minimum order quantity 20 m	6XV1840-2AH10
<b>SIMATIC Manual Collection update service for 1 year</b> Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2	<b>FO Standard Cable GP (50/125)</b> Standard cable, splittable, UL approval, sold by the meter Max. delivery unit 1000 m Minimum order quantity 20 m	6XV1873-2A
<b>Power supply connector</b> 10 units, spare part	6ES7391-1AA00-0AA0	<b>SCALANCE X204-2 Industrial Ethernet Switch</b> 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 Mbps RJ45 ports and two FO ports	6GK5204-2BB10-2AA3
<b>Labeling strips</b> 10 units, spare part	6ES7392-2XX00-0AA0	<b>Compact Switch Module CSM 377</b> Unmanaged switch for connecting SIMATIC S7-300, ET 200M and up to three other stations to Industrial Ethernet with 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module incl. electronic manual on CD-ROM	6GK7377-1AA00-0AA0
<b>Label cover</b> 10 units, spare part	6ES7392-2XY00-0AA0	<b>IE FC RJ45 plugs</b> RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
<b>Labeling sheets for machine inscription</b> for modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units  Petrol Light beige Yellow Red	6ES7392-2AX10-0AA0 6ES7392-2BX10-0AA0 6ES7392-2CX10-0AA0 6ES7392-2DX10-0AA0	<b>IE FC RJ45 plug 180</b> 180° cable outlet 1 unit 10 units 50 units	6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0
<b>USB A2 PC adapter</b> For connecting a PG/PC or notebook to PROFIBUS or MPI; USB cable included in scope of supply	6GK1571-0BA00-0AA0	<b>PROFIBUS/PROFINET bus components</b> For establishing MPI/PROFIBUS/PROFINET communication	See Catalogs IK PI, CA 01
<b>PROFIBUS DP bus connector RS 485</b> <ul style="list-style-type: none"> <li>With 90° cable outlet, max. transfer rate 12 Mbps               <ul style="list-style-type: none"> <li>without PG interface</li> <li>with PG interface</li> </ul> </li> <li>with 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbps               <ul style="list-style-type: none"> <li>without PG interface, 1 unit</li> <li>without PG interface, 100 units</li> <li>with PG interface, 1 unit</li> <li>with PG interface, 100 units</li> </ul> </li> <li>with axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS</li> </ul>	6ES7972-0BA12-0XA0 6ES7972-0BB12-0XA0  6ES7972-0BA52-0XA0 6ES7972-0BA52-0XB0 6ES7972-0BB52-0XA0 6ES7972-0BB52-0XB0 6GK1500-0EA02		
<b>PROFIBUS Fast Connect bus cable</b> Standard type with special design for quick mounting, 2-wire, shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m	6XV1830-0EH10		
<b>RS 485 repeater for PROFIBUS</b> Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure	6ES7972-0AA02-0XA0		

## SIMATIC S7-300 Advanced Controllers

### Central processing units

#### SIPLUS S7-300 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 SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

##### Overview SIPLUS CPU 313C-2 DP



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

Micro Memory Card required for operation of CPU.

Note:

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

##### Overview SIPLUS CPU 313C



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

Micro Memory Card required to operate the CPU.

Note:

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

##### Overview SIPLUS CPU 314C-2 PtP



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

SIMATIC Micro Memory Card required for operation of CPU.

Note:

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

## SIMATIC S7-300 Advanced Controllers

Central processing units

### SIPLUS S7-300 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 SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

#### Overview SIPLUS 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 non-Siemens 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.

#### Note:

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



#### Technical specifications

Article number	6AG1312-5BF04-2AY0	6AG1312-5BF04-7AB0	6AG1313-5BG04-2AY0	6AG1313-5BG04-7AB0
Based on	6ES7312-5BF04-0AB0 SIPLUS S7-300 CPU312C EN50155	6ES7312-5BF04-0AB0 SIPLUS S7-300 CPU312C	6ES7313-5BG04-0AB0 SIPLUS S7-300 CPU313C EN50155	6ES7313-5BG04-0AB0 SIPLUS S7-300 CPU313C
<b>Ambient conditions</b>				
<b>Ambient temperature during operation</b>				
• min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
<b>Altitude during operation relating to sea level</b>				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>				
<b>Use in stationary industrial systems</b>				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>				
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *		Yes; Class 5S3 incl. sand, dust; *	
<b>Use on ships/at sea</b>				
- to biologically active substances according to EN 60721-3-6		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6		Yes; Class 6S3 incl. sand, dust; *		Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### SIPLUS S7-300 compact CPUs

#### Technical specifications (continued)

Article number	<b>6AG1313-6CG04-2AY0</b>	<b>6AG1313-6CG04-7AB0</b>	<b>6AG1314-6BH04-7AB0</b>
Based on	<b>6ES7313-6CG04-0AB0</b> SIPLUS S7-300 CPU313C-2DP EN50155	<b>6ES7313-6CG04-0AB0</b> SIPLUS S7-300 CPU313C-2DP	<b>6ES7314-6BH04-0AB0</b> SIPLUS S7-300 CPU314C-2 PtP
<b>Ambient conditions</b>			
<b>Ambient temperature during operation</b>			
• min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
<b>Altitude during operation relating to sea level</b>			
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>			
<b>Use in stationary industrial systems</b>			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>			
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request		
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *		
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *		
<b>Use on ships/at sea</b>			
- to biologically active substances according to EN 60721-3-6		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6		Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>			
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### SIPLUS S7-300 compact CPUs

#### Technical specifications (continued)

Article number	<b>6AG1314-6CH04-2AY0</b>	<b>6AG1314-6CH04-7AB0</b>	<b>6AG1314-6EH04-7AB0</b>
Based on	<b>6ES7314-6CH04-0AB0</b> SIPLUS S7-300 CPU314C-2DP EN50155	<b>6ES7314-6CH04-0AB0</b> SIPLUS S7-300 CPU314C-2DP	<b>6ES7314-6EH04-0AB0</b> SIPLUS S7-300 CPU314C-2PN/DP
<b>Ambient conditions</b>			
<b>Ambient temperature during operation</b>			
• min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; @ 60°C for UL/ATEX/FM use
<b>Altitude during operation relating to sea level</b>			
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>			
<b>Use in stationary industrial systems</b>			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>			
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request		
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *		
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *		
<b>Use on ships/at sea</b>			
- to biologically active substances according to EN 60721-3-6		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6		Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>			
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### SIPLUS S7-300 compact CPUs

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Ordering data	Article No.	Article No.
<p><b>SIPLUS S7-300 CPU 312C</b></p> <p><i>For industrial applications with extended ambient conditions</i></p> <p>Compact CPU, work memory 64 KB, supply voltage 24 V DC, 10 DI/6 DQ integrated, integrated functions, MPI; including slot number labels; MMC required</p> <p>Extended temperature range and exposure to media</p> <p><i>For rolling stock railway applications</i></p> <p>Compact CPU, work memory 64 KB, supply voltage 24 V DC, 10 DI/6 DQ integrated, integrated functions, MPI; including slot number labels; MMC required</p> <p>Conforms to EN 50155</p>	<b>6AG1312-5BF04-7AB0</b>	<p><b>SIPLUS S7-300 CPU 314C-2 PtP</b></p> <p><i>For industrial applications with extended ambient conditions</i></p> <p>Compact CPU, work memory 192 KB, supply voltage 24 V DC, 24 DI/16 DQ, 4 AI/2 AQ integrated, integrated functions, MPI, RS 422/485 interface; MMC required</p> <p>Extended temperature range and exposure to media</p> <p><b>6AG1314-6BH04-7AB0</b></p>
<p><b>SIPLUS S7-300 CPU 313C</b></p> <p><i>For industrial applications with extended ambient conditions</i></p> <p>Compact CPU, work memory 128 KB, supply voltage 24 V DC, 24 DI/16 DQ, 4 AI/2 AQ integrated, integrated functions, MPI; MMC required</p> <p>Extended temperature range and exposure to media</p> <p><i>For rolling stock railway applications</i></p> <p>Compact CPU, work memory 128 KB, supply voltage 24 V DC, 24 DI/16 DQ, 4 AI/2 AQ integrated, integrated functions, MPI; MMC required</p> <p>Conforms to EN 50155</p>	<b>6AG1313-5BG04-7AB0</b>	<p><b>SIPLUS S7-300 CPU 314C-2 DP</b></p> <p><i>For industrial applications with extended ambient conditions</i></p> <p>Compact CPU, work memory 192 KB, supply voltage 24 V DC, 24 DI/16 DQ, 4 AI/2 AQ integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required</p> <p>Extended temperature range and exposure to media</p> <p><i>For rolling stock railway applications</i></p> <p>Compact CPU, work memory 192 KB, supply voltage 24 V DC, 24 DI/16 DQ, 4 AI/2 AQ integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required</p> <p>Conforms to EN 50155</p> <p><b>6AG1314-6CH04-7AB0</b></p> <p><b>6AG1314-6CH04-2AY0</b></p>
<p><b>SIPLUS S7-300 CPU 313C-2 DP</b></p> <p><i>For industrial applications with extended ambient conditions</i></p> <p>Compact CPU, work memory 128 KB, supply voltage 24 V DC, 16 DI/16 DQ integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required</p> <p>Extended temperature range and exposure to media</p> <p><i>For rolling stock railway applications</i></p> <p>Compact CPU, work memory 128 KB, supply voltage 24 V DC, 16 DI/16 DQ integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required</p> <p>Conforms to EN 50155</p>	<b>6AG1313-6CG04-7AB0</b>	<p><b>SIPLUS S7-300 CPU 314C-2 PN/DP</b></p> <p><i>For industrial applications with particularly demanding environmental conditions</i></p> <p>Compact CPU, work memory 192 KB, supply voltage 24 V DC, 24 DI/16 DQ, 4 AI/2 AQ integrated, integrated functions, MPI; PROFIBUS DP master/slave interface; PROFINET IO controller/I-Device interface, MMC required</p> <p>Extended temperature range and exposure to media</p> <p><b>6AG1314-6EH04-7AB0</b></p>
		<p><b>Accessories</b></p> <p><i>Mandatory</i></p> <p><b>SIMATIC Micro Memory Card</b></p> <p>64 KB <b>6ES7953-8LF31-0AA0</b></p> <p>128 KB <b>6ES7953-8LG31-0AA0</b></p> <p>512 KB <b>6ES7953-8LJ31-0AA0</b></p> <p>2 MB <b>6ES7953-8LL31-0AA0</b></p> <p>4 MB <b>6ES7953-8LM31-0AA0</b></p> <p>8 MB <b>6ES7953-8LP31-0AA0</b></p>
		<p><b>Front connector (1 unit)</b></p> <p>For compact CPUs</p> <p>40-pin, with spring-loaded contacts</p> <ul style="list-style-type: none"> <li>• 1 unit <b>6ES7392-1BM01-0AA0</b></li> <li>• 100 units <b>6ES7392-1BM01-1AB0</b></li> </ul>

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### SIPLUS S7-300 compact CPUs

Ordering data	Article No.	Ordering data	Article No.
<p><i>For communication within the application</i></p> <p><b>PROFIBUS DP bus connector RS 485</b></p> <p>(Extended temperature range and exposure to media)</p> <p>With 90° cable outlet, max. transfer rate 12 Mbps</p> <ul style="list-style-type: none"> <li>• without PG interface</li> <li>• with PG interface</li> </ul> <p>With angled cable outlet, max. transfer rate 12 Mbps</p> <ul style="list-style-type: none"> <li>• without PG interface</li> <li>• with PG interface</li> </ul> <p>(Extended temperature range)</p> <p>With axial cable outlet for SIMATIC CP, for connecting to PPI, MPI, PROFIBUS</p>	<p><b>6AG1972-0BA12-2XA0</b></p> <p><b>6AG1972-0BB12-2XA0</b></p> <p><b>6AG1972-0BA42-7XA0</b></p> <p><b>6AG1972-0BB42-7XA0</b></p> <p><b>6AG1500-0EA02-2AA0</b></p>	<p><b>RS 485 repeater for PROFIBUS</b></p> <p>(Extended temperature range and exposure to media)</p> <p>Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure</p> <p><b>Point-to-point link cable</b></p> <p>For connection to CPU 31xC-2 PiP</p> <p>5 m</p> <p>10 m</p> <p>50 m</p> <p><i>For commissioning</i></p> <p><b>MPI cable</b></p> <p>For connection of SIMATIC S7 and PG via MPI; length 5 m</p> <p><b>USB A2 PC adapter</b></p> <p>For connecting a PG/PC or notebook to PROFIBUS or MPI; USB cable included in scope of supply</p> <p><i>Consumables</i></p> <p><b>Front door, elevated design</b></p> <p>For compact CPUs; for connecting 1.3 mm<sup>2</sup>/16 AWG wires; wiring diagram and labels in petrol</p> <p><b>Power supply connector</b></p> <p>10 units, spare part</p> <p><b>Slot number plates</b></p> <p><b>Labeling strips</b></p> <p>10 units, spare part</p> <p><b>Label cover</b></p> <p>10 units, spare part</p> <p><b>Labeling sheets for machine inscription</b></p> <p>For modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units</p> <p>Petrol</p> <p>Light beige</p> <p>Yellow</p> <p>Red</p> <p><i>Documentation</i></p> <p><b>SIMATIC Manual Collection</b></p> <p>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</p> <p><b>SIMATIC Manual Collection update service for 1 year</b></p> <p>Current "Manual Collection" DVD and the three subsequent updates</p>	<p><b>6AG1972-0AA02-7XA0</b></p> <p><b>6ES7902-3AB00-0AA0</b></p> <p><b>6ES7902-3AC00-0AA0</b></p> <p><b>6ES7902-3AG00-0AA0</b></p> <p><b>6ES7901-0BF00-0AA0</b></p> <p><b>6GK1571-0BA00-0AA0</b></p> <p><b>6ES7328-7AA20-0AA0</b></p> <p><b>6ES7391-1AA00-0AA0</b></p> <p><b>6ES7912-0AA00-0AA0</b></p> <p><b>6ES7392-2XX00-0AA0</b></p> <p><b>6ES7392-2XY00-0AA0</b></p> <p><b>6ES7392-2AX10-0AA0</b></p> <p><b>6ES7392-2BX10-0AA0</b></p> <p><b>6ES7392-2CX10-0AA0</b></p> <p><b>6ES7392-2DX10-0AA0</b></p> <p><b>6ES7998-8XC01-8YE0</b></p> <p><b>6ES7998-8XC01-8YE2</b></p>
<p><b>IE FC RJ45 plug 180</b></p> <p>(Extended temperature range and exposure to media)</p> <p>180° cable outlet</p> <ul style="list-style-type: none"> <li>• 1 unit</li> </ul>	<p><b>6AG1901-1BB10-7AA0</b></p>		
<p><b>SIPLUS SCALANCE X-200 Industrial Ethernet Switches</b></p> <p>Industrial Ethernet switches with integral SNMP access, online diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager (exception: SCALANCE X208PRO); incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM</p> <ul style="list-style-type: none"> <li>• With electrical and optical ports for glass multimode FOC up to 3 km</li> <li>• Extended temperature range and exposure to media</li> <li>• <b>SIPLUS SCALANCE X204-2</b> With four 10/100 Mbps RJ45 ports and two fiber-optic ports</li> </ul>	<p><b>6AG1204-2BB10-4AA3</b></p>		
<p><b>PROFIBUS FastConnect bus cable</b></p> <p>Standard type with special design for quick mounting, 2-wire, shielded, sold by the meter; max. delivery unit 1 000 m, minimum order quantity 20 m</p>	<p><b>6XV1830-0EH10</b></p>		
<p><b>IE FC TP Standard Cable GP 2x2</b></p> <p>4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval</p> <p>Sold by the meter; max. delivery unit 1 000 m minimum order quantity 20 m</p>	<p><b>6XV1840-2AH10</b></p>		
<p><b>FO Standard Cable GP (50/125)</b></p> <p>Standard cable, splittable, UL approval, sold by the meter; max. delivery unit 1 000 m minimum order quantity 20 m</p>	<p><b>6XV1873-2A</b></p>		

## SIMATIC S7-300 Advanced Controllers

Central processing units

### Fail-safe CPUs

#### Overview CPU 315F-2 DP



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

SIMATIC Micro Memory Card required for operation of CPU.

#### Overview CPU 315F-2 PN/DP



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

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

SIMATIC Micro Memory Card required for operation of CPU.

#### Overview CPU 317F-2 DP



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

SIMATIC Micro Memory Card required for operation of CPU.

## Overview CPU 317F-2 PN/DP



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

SIMATIC Micro Memory Card required for operation of CPU.

## Overview CPU 319F-3 PN/DP



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

SIMATIC Micro Memory Card required for operation of CPU.

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### Fail-safe CPUs

#### Technical specifications

Article number	6ES7315-6FF04-0AB0 CPU315F, 384KB	6ES7315-2FJ14-0AB0 CPU315F-2 PN/DP, 512 KB	6ES7317-6FF04-0AB0 CPU317F-2DP, 1.5 MB	6ES7317-2FK14-0AB0 CPU317F-2 PN/DP, 1.5 MB	6ES7318-3FL01-0AB0 CPU319F-3 PN/DP, 2.5 MB
<b>General information</b>					
<b>Engineering with</b>					
• Programming package	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.2 + SP1 or higher with HSP 218 + Distributed Safety	STEP 7 V5.5 or higher, Distributed Safety V5.4 SP4	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.2 + SP1 or higher with HSP 202 + Distributed Safety	STEP 7 V5.5 or higher, Distributed Safety V5.4 SP4	STEP 7 V5.5 or higher, Distributed Safety V5.4 SP4
<b>Supply voltage</b>					
Rated value (DC)					
• 24 V DC	Yes	Yes	Yes	Yes	Yes
<b>Power loss</b>					
Power loss, typ.	4.5 W	4.65 W	4.5 W	4.65 W	14 W
<b>Memory</b>					
<b>Work memory</b>					
• integrated	384 kbyte	512 kbyte	1 536 kbyte	1 536 kbyte	2 560 kbyte
• expandable	No	No	No	No	No
• Size of retentive memory for retentive data blocks	128 kbyte	128 kbyte	256 kbyte	256 kbyte	700 kbyte
<b>Load memory</b>					
• Plug-in (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte	8 Mbyte	8 Mbyte
<b>CPU processing times</b>					
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
<b>Counters, timers and their retentivity</b>					
<b>S7 counter</b>					
• Number	256	256	512	512	2 048
<b>IEC counter</b>					
• present	Yes	Yes	Yes	Yes	Yes
<b>S7 times</b>					
• Number	256	256	512	512	2 048
<b>IEC timer</b>					
• present	Yes	Yes	Yes	Yes	Yes
<b>Data areas and their retentivity</b>					
<b>Flag</b>					
• Number, max.	2 048 byte	2 048 byte	4 096 byte	4 096 byte	8 192 byte
<b>Address area</b>					
<b>I/O address area</b>					
• 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
<b>Process image</b>					
• 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
<b>Time of day</b>					
<b>Clock</b>					
• Hardware clock (real-time)	Yes	Yes	Yes	Yes	Yes
<b>Operating hours counter</b>					
• Number	1	1	4	4	4



# SIMATIC S7-300 Advanced Controllers

## Central processing units

### Fail-safe CPUs

#### Technical specifications (continued)

Article number	<b>6ES7315-6FF04-0AB0</b> CPU315F, 384KB	<b>6ES7315-2FJ14-0AB0</b> CPU315F-2 PN/DP, 512 KB	<b>6ES7317-6FF04-0AB0</b> CPU317F-2DP, 1.5 MB	<b>6ES7317-2FK14-0AB0</b> CPU317F-2 PN/DP, 1.5 MB	<b>6ES7318-3FL01-0AB0</b> CPU319F-3 PN/DP, 2.5 MB
<b>1. Interface</b>					
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485	RS 485	RS 485
<b>Protocols</b>					
• MPI	Yes	Yes	Yes	Yes	Yes
• PROFIBUS DP master	No	Yes	Yes	Yes	Yes
• PROFIBUS DP slave	No	Yes	Yes; A DP slave at both interfaces simultaneously is not possible	Yes	Yes; A DP slave at both interfaces simultaneously is not possible
• Point-to-point connection	No	No	No	No	No
<b>PROFIBUS DP master</b>					
• Number of DP slaves, max.		124	124	124	124
<b>2. Interface</b>					
Interface type	Integrated RS 485 interface	PROFINET	Integrated RS 485 interface	PROFINET	Integrated RS 485 interface
Physics	RS 485	Ethernet RJ45	RS 485	Ethernet RJ45	RS 485
<b>Interface types</b>					
• Number of ports		2		2	
<b>Protocols</b>					
• MPI	No	No	No	No	No
• PROFINET IO Controller		Yes; Also simultaneously with IO-Device functionality		Yes; Also simultaneously with IO-Device functionality	No
• PROFINET IO Device		Yes; Also simultaneously with IO Controller functionality		Yes; Also simultaneously with IO Controller functionality	No
• PROFINET CBA		Yes		Yes	No
• PROFIBUS DP master	Yes	No	Yes	No	Yes
• PROFIBUS DP slave	Yes	No	Yes; A DP slave at both interfaces simultaneously is not possible	No	Yes; A DP slave at both interfaces simultaneously is not possible
<b>PROFIBUS DP master</b>					
• Number of DP slaves, max.	124; Per station		124		124
<b>PROFINET IO Controller</b>					
<b>Services</b>					
- Number of connectable IO Devices, max.		128		128	
- Of which IO devices with IRT, max.		64		64	
- Number of IO Devices with IRT and the option "high flexibility"		128		128	
- Number of connectable IO Devices for RT, max..		128		128	

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### Fail-safe CPUs

#### Technical specifications (continued)

Article number	6ES7315-6FF04-0AB0 CPU315F, 384KB	6ES7315-2FJ14-0AB0 CPU315F-2 PN/DP, 512 KB	6ES7317-6FF04-0AB0 CPU317F-2DP, 1.5 MB	6ES7317-2FK14-0AB0 CPU317F-2 PN/DP, 1.5 MB	6ES7318-3FL01-0AB0 CPU319F-3 PN/DP, 2.5 MB
<b>3. Interface</b>					
Interface type					PROFINET
Physics					Ethernet RJ45
<b>Interface types</b>					
• Number of ports					2
<b>Protocols</b>					
• MPI					No
• PROFINET IO Controller					Yes; Also simultaneously with I-Device functionality
• PROFINET IO Device					Yes; Also simultaneously with IO Controller functionality
• PROFINET CBA					Yes
• PROFIBUS DP master					No
• PROFIBUS DP slave					No
<b>PROFINET IO Controller</b>					
<b>Services</b>					
- Number of connectable IO Devices, max.					256
- Of which IO devices with IRT, max.					64
- Number of IO Devices with IRT and the option "high flexibility"					256
- Number of connectable IO Devices for RT, max..					256
<b>Protocols</b>					
<b>Open IE communication</b>					
• 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
<b>Web server</b>					
• supported		Yes; only read function		Yes	Yes
<b>Isochronous mode</b>					
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
<b>Communication functions</b>					
PG/OP communication	Yes	Yes	Yes	Yes	Yes
Data record routing	Yes	Yes	Yes	Yes	Yes
<b>Global data communication</b>					
• supported	Yes	Yes	Yes	Yes	Yes
<b>S7 basic communication</b>					
• supported	Yes	Yes	Yes	Yes	Yes
<b>S7 communication</b>					
• supported	Yes	Yes	Yes	Yes	Yes
<b>S5 compatible communication</b>					
• 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
<b>Number of connections</b>					
• overall	16	16	32	32	32

## SIMATIC S7-300 Advanced Controllers

### Central processing units

#### Fail-safe CPUs

#### Technical specifications (continued)

Article number	<b>6ES7315-6FF04-0AB0</b> CPU315F, 384KB	<b>6ES7315-2FJ14-0AB0</b> CPU315F-2 PN/DP, 512 KB	<b>6ES7317-6FF04-0AB0</b> CPU317F-2DP, 1.5 MB	<b>6ES7317-2FK14-0AB0</b> CPU317F-2 PN/DP, 1.5 MB	<b>6ES7318-3FL01-0AB0</b> CPU319F-3 PN/DP, 2.5 MB
<b>Ambient conditions</b>					
<b>Ambient temperature during operation</b>					
• min.	0 °C	0 °C	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C	60 °C	60 °C
<b>Configuration</b>					
<b>Programming</b>					
<b>Programming language</b>					
- 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
<b>Know-how protection</b>					
• 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
<b>Dimensions</b>					
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
<b>Weights</b>					
Weight, approx.	290 g	340 g	360 g	340 g	1 250 g

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### Fail-safe CPUs

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Ordering data	Article No.	Ordering data	Article No.
<b>CPU 315F-2 DP</b> CPU for SIMATIC S7-300F; work memory 384 KB, supply voltage 24 V DC, MPI, PROFIBUS DP master/slave interface, incl. slot number labels; MMC required	6ES7315-6FF04-0AB0	<b>STEP 7 Safety Advanced V15.1</b>  <b>Task:</b> Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco I/O <b>Requirement:</b> STEP 7 Professional V15.1  Floating license for 1 user; software and documentation on DVD; license key on USB flash drive	
<b>CPU 315F-2 PN/DP</b> CPU for SIMATIC S7-300F; work memory, 512 KB supply voltage 24 V DC; MPI/PROFIBUS DP master/slave interface; Industrial Ethernet/ PROFINET interface; incl. slot number labels; MMC required	6ES7315-2FJ14-0AB0	Floating license for 1 user; software, documentation and license key for download <sup>1)</sup> ; email address required for delivery	6ES7833-1FA15-0YA5
<b>CPU 317F-2 DP</b> Work memory 1.5 MB, supply voltage 24 V DC, MPI, PROFIBUS DP master/slave interface, MMC required	6ES7317-6FF04-0AB0	<b>SIMATIC Micro Memory Card</b>  64 KB 128 KB 512 KB 2 MB 4 MB 8 MB	6ES7833-1FA15-0YH5
<b>CPU 317F-2 PN/DP</b> Work memory 1.5 MB, supply voltage 24 V DC, MPI/PROFIBUS DP master/slave interface, Industrial Ethernet/ PROFINET interface; MMC required	6ES7317-2FK14-0AB0	<b>MPI cable</b>  for connection of SIMATIC S7 and PG via MPI; 5 m in length	6ES7953-8LF31-0AA0
<b>CPU 319F-3 PN/DP</b> Work memory 2.5 MB, supply voltage 24 V DC, combined MPI/PROFIBUS DP master/slave interface, PROFIBUS DP master/ slave interface, Ethernet/PROFINET interface; MMC required	6ES7318-3FL01-0AB0	<b>Slot number plates</b>  <b>SIMATIC Manual Collection</b>  Electronic manuals on DVD, multi-language: 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	6ES7953-8LG31-0AA0
<b>S7 Distributed Safety V5.4 SP5 Update 2 programming tool</b>  <b>Task:</b> Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco <b>Requirement:</b> Windows 7 SP1 (64-bit) Windows 10 Professional/Enterprise (64-bit) Windows Server 2008 R2 SP1 (64-bit) Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit) STEP 7 from V5.5 SP1; please also consider the operating systems that have been released for the STEP 7 version used		<b>SIMATIC Manual Collection update service for 1 year</b>  Current "Manual Collection" DVD and the three subsequent updates	6ES7953-8LL31-0AA0
Floating license for 1 user; software and documentation on DVD; license key on USB flash drive	6ES7833-1FC02-0YA5	<b>Power supply connector</b>  10 units, spare part	6ES7953-8LM31-0AA0
Floating license for 1 user; software, documentation and license key for download <sup>1)</sup> ; email address required for delivery	6ES7833-1FC02-0YH5	<b>USB A2 PC adapter</b>  For connecting a PG/PC or notebook to PROFIBUS or MPI; USB cable included in scope of supply	6ES7953-8LP31-0AA0
<b>S7 Distributed Safety upgrade</b>  From V5.x to V5.4; floating license for 1 user; software and documentation on DVD; license key on USB flash drive	6ES7833-1FC02-0YE5		6ES7901-0BF00-0AA0

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

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### Fail-safe CPUs

Ordering data	Article No.	Ordering data	Article No.
<b>PROFIBUS bus components</b>		<b>SCALANCE X204-2 Industrial Ethernet Switch</b>	<b>6GK5204-2BB10-2AA3</b>
<b>PROFIBUS DP bus connector RS 485</b>		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 Mbps RJ45 ports and two FO ports	
<ul style="list-style-type: none"> <li>With 90° cable outlet, max. transfer rate 12 Mbps               <ul style="list-style-type: none"> <li>- without PG interface</li> <li>- with PG interface</li> </ul> </li> <li>with 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbps               <ul style="list-style-type: none"> <li>- without PG interface, 1 unit</li> <li>- without PG interface, 100 units</li> <li>- with PG interface, 1 unit</li> <li>- with PG interface, 100 units</li> </ul> </li> <li>with axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS</li> </ul>	<b>6ES7972-0BA12-0XA0</b> <b>6ES7972-0BB12-0XA0</b>	<b>Compact Switch Module CSM 377</b>	<b>6GK7377-1AA00-0AA0</b>
<b>PROFIBUS Fast Connect bus cable</b>	<b>6XV1830-0EH10</b>	Unmanaged switch for connecting SIMATIC S7-300, ET 200M and up to three other stations to Industrial Ethernet with 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module incl. electronic manual on CD-ROM	
Standard type with special design for quick mounting, 2-wire, shielded, sold by the meter, max. delivery unit 1 000 m, minimum order quantity 20 m		<b>IE FC RJ45 plugs</b>	
<b>RS 485 repeater for PROFIBUS</b>	<b>6ES7972-0AA02-0XA0</b>	RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure		<b>IE FC RJ45 plug 145</b>	
<b>PROFINET bus components</b>		145° cable outlet	
<b>IE FC TP Standard Cable GP 2x2</b>	<b>6XV1840-2AH10</b>	1 unit	<b>6GK1901-1BB30-0AA0</b>
4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; Sold by the meter		10 units	<b>6GK1901-1BB30-0AB0</b>
<b>FO Standard Cable GP (50/125)</b>	<b>6XV1873-2A</b>	50 units	<b>6GK1901-1BB30-0AE0</b>
Standard cable, splittable, UL approval, sold by the meter		<b>IE FC RJ45 plug 180</b>	
		180° cable outlet	
		1 unit	<b>6GK1901-1BB10-2AA0</b>
		10 units	<b>6GK1901-1BB10-2AB0</b>
		50 units	<b>6GK1901-1BB10-2AE0</b>
		<b>PROFIBUS/PROFINET bus components</b>	See Catalogs IK PI, CA 01
		For establishing MPI/PROFIBUS/PROFINET communication	

## SIMATIC S7-300 Advanced Controllers

Central processing units

### SIPLUS S7-300 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)
- Fail-safe ET 200M I/O modules are also centrally connectable
- The standard modules for non-safety applications can be operated both centrally and locally

Micro Memory Card required for operation of CPU.

#### Note:

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

#### 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 Cat. 4 of EN 954-1
- The fail-safe I/O modules can be locally connected to the integrated PROFINET interface (PROFIsafe) and/or to the integrated PROFIBUS DP interface (PROFIsafe)
- Fail-safe ET 200M I/O modules are also centrally connectable
- The standard modules for non-safety applications can be operated both centrally and locally
- Component Based Automation (CBA) on PROFINET
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET interface with 2-port switch
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)

Micro Memory Card required for operation of CPU.

#### Note:

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

## SIMATIC S7-300 Advanced Controllers

### Central processing units

#### SIPLUS S7-300 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)
- Fail-safe ET 200M I/O modules are also centrally connectable
- The standard modules for non-safety applications can be operated both centrally and locally

Micro Memory Card required for operation of CPU.

**Note:**

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

##### 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)
- Fail-safe ET 200M I/O modules are also centrally connectable
- The standard modules for non-safety applications can be operated both centrally and locally
- Component Based Automation (CBA) on PROFINET
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET interface with 2-port switch
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)

SIMATIC Micro Memory Card required for operation of CPU.

**Note:**

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

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### SIPLUS S7-300 fail-safe CPUs

#### Technical specifications

Article number	6AG1315-6FF04-2AB0	6AG1315-6FF04-2AY0	6AG1315-2FJ14-2AB0	6AG1315-2FJ14-2AY0
Based on	6ES7315-6FF04-0AB0 SIPLUS S7-300 CPU 315F-2DP	6ES7315-6FF04-0AB0 SIPLUS S7-300 CPU 315F-2DP EN50155	6ES7315-2FJ14-0AB0 SIPLUS S7-300 CPU315F-2PN/DP	6ES7315-2FJ14-0AB0 SIPLUS S7-300 CPU315F-2PN/DP EN50155
<b>Ambient conditions</b>				
<b>Ambient temperature during operation</b>				
• min.	-25 °C	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	60 °C; = Tmax	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155
<b>Altitude during operation relating to sea level</b>				
• Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
<b>Relative humidity</b>				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>				
<b>Use in stationary industrial systems</b>				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>				
- to biologically active substances according to EN 60721-3-5		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5		Yes; Class 5S3 incl. sand, dust; *		Yes; Class 5S3 incl. sand, dust; *
<b>Use on ships/at sea</b>				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *		Yes; Class 6S3 incl. sand, dust; *	
<b>Remark</b>				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!



# SIMATIC S7-300 Advanced Controllers

## Central processing units

### SIPLUS S7-300 fail-safe CPUs

#### Technical specifications (continued)

Article number	6AG1317-6FF04-2AB0	6AG1317-2FK14-2AB0	6AG1317-2FK14-2AY0
Based on	6ES7317-6FF04-0AB0	6ES7317-2FK14-0AB0	6ES7317-2FK14-0AB0
	SIPLUS S7-300 CPU317F-2DP	SIPLUS S7-300 CPU317F-2PN/DP	SIPLUS S7-300 CPU317F-2PN/DP EN50155
<b>Ambient conditions</b>			
<b>Ambient temperature during operation</b>			
• min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax	60 °C; = Tmax	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155
<b>Altitude during operation relating to sea level</b>			
• Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
<b>Relative humidity</b>			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>			
<b>Use in stationary industrial systems</b>			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>			
- to biologically active substances according to EN 60721-3-5			Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5			Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5			Yes; Class 5S3 incl. sand, dust; *
<b>Use on ships/at sea</b>			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	
<b>Remark</b>			
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### SIPLUS S7-300 fail-safe CPUs

#### Ordering data

#### Article No.

#### Article No.

#### SIPLUS S7-300 CPU 315F-2 DP

*For industrial applications with extended ambient conditions*

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

Extended temperature range and exposure to media

**6AG1315-6FF04-2AB0**

*For rolling stock railway applications*

Conforms to EN 50155

**6AG1315-6FF04-2AY0**

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

*For industrial applications with extended ambient conditions*

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

Extended temperature range and exposure to media

**6AG1315-2FJ14-2AB0**

*For rolling stock railway applications*

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

Conforms to EN 50155

**6AG1315-2FJ14-2AY0**

#### SIPLUS S7-300 CPU 317F-2 DP

*For industrial applications with extended ambient conditions*

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

Extended temperature range and exposure to media

**6AG1317-6FF04-2AB0**

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

*For industrial applications with extended ambient conditions*

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

Extended temperature range and exposure to media

**6AG1317-2FK14-2AB0**

*For rolling stock railway applications*

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

Conforms to EN 50155

**6AG1317-2FK14-2AY0**

#### Accessories

*Mandatory*

#### SIMATIC Micro Memory Card

64 KB

**6ES7953-8LF31-0AA0**

128 KB

**6ES7953-8LG31-0AA0**

512 KB

**6ES7953-8LJ31-0AA0**

2 MB

**6ES7953-8LL31-0AA0**

4 MB

**6ES7953-8LM31-0AA0**

8 MB

**6ES7953-8LP31-0AA0**

*For communication within the application*

#### PROFIBUS DP bus connector RS 485

(Extended temperature range and exposure to media)

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

- Without PG interface
- With PG interface

**6AG1972-0BA12-2XA0**

**6AG1972-0BB12-2XA0**

With angled cable outlet, max. transfer rate 12 Mbps

- Without PG interface
- With PG interface

**6AG1972-0BA42-7XA0**

**6AG1972-0BB42-7XA0**

(Extended temperature range)

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

**6AG1500-0EA02-2AA0**

#### RS 485 repeater for PROFIBUS

**6AG1972-0AA02-7XA0**

(Extended temperature range and exposure to media)

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

#### IE FC RJ45 plug 180

(Extended temperature range and exposure to media)

180° cable outlet

- 1 unit

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

Ordering data	Article No.	Article No.
<b>SIPLUS SCALANCE X-200 Industrial Ethernet Switches</b> Industrial Ethernet switches with integral SNMP access, web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager (exception: SCALANCE X208PRO); incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM <ul style="list-style-type: none"> <li>• With electrical and optical ports for glass multimode FOC up to 3 km</li> <li>• Extended temperature range and exposure to media</li> <li>• SIPLUS SCALANCE X204-2 with four 10/100 Mbps RJ45 ports and two FO ports</li> </ul>	<b>6AG1204-2BB10-4AA3</b>	
<b>PROFIBUS FastConnect bus cable</b> Standard type with special design for quick mounting, 2-wire, shielded, sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	<b>6XV1830-0EH10</b>	
<b>IE FC TP Standard Cable GP 2x2</b> 4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval Sold by the meter	<b>6XV1840-2AH10</b>	
<b>FO Standard Cable GP (50/125)</b> <i>For commissioning</i>	<b>6XV1873-2A</b>	
<b>MPI cable</b> For connection of SIMATIC S7 and programming devices via MPI; length 5 m	<b>6ES7901-0BF00-0AA0</b>	
<b>USB A2 PC adapter</b> For connecting a programming device/PC or notebook to PROFIBUS or MPI; USB cable included in scope of supply	<b>6GK1571-0BA00-0AA0</b>	
<b>S7 Distributed Safety V5.4 SP5 Update 2 programming tool</b> Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: Windows 7 SP1 (64-bit) Windows 10 Professional/Enterprise (64-bit) Windows Server 2008 R2 SP1 (64-bit) Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit) STEP 7 from V5.5 SP1; please also consider the operating systems that have been released for the STEP 7 version used  Floating license for 1 user; software and documentation on DVD; license key on USB flash drive  Floating license for 1 user, software, documentation and license key for download <sup>1)</sup> ; email address required for delivery	<b>6ES7833-1FC02-0YA5</b>  <b>6ES7833-1FC02-0YH5</b>	<b>S7 Distributed Safety upgrade</b> From V5.x to V5.4; floating license for 1 user; software and documentation on DVD; license key on USB flash drive  <b>STEP 7 Safety Advanced V15.1</b> Task: Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco I/O Requirement: STEP 7 Professional V15.1  Floating license for 1 user, software and documentation on DVD; license key on USB flash drive  Floating license for 1 user, software, documentation and license key for download <sup>1)</sup> ; email address required for delivery  <i>Consumables</i>  <b>Power supply connector</b> 10 units, spare part  <b>Slot number plates</b>  <i>Documentation</i>  <b>SIMATIC Manual Collection</b> 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  <b>SIMATIC Manual Collection update service for 1 year</b> Current "Manual Collection" DVD and the three subsequent updates

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

## SIMATIC S7-300 Advanced Controllers

Central processing units

### Technology CPUs

#### Overview CPU 315T-3 PN/DP



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

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

#### Overview CPU 317T-3 PN/DP



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

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

### Overview CPU 317TF-3 PN/DP



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

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

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

### Technical specifications

Article number	6ES7315-7TJ10-0AB0 CPU315T-3 PN/DP, 384KB	6ES7317-7TK10-0AB0 CPU317T-3 PN/DP, 1024KB	6ES7317-7UL10-0AB0 CPU317TF-3 PN/DP, 1,5 MB
<b>General information</b>			
<b>Engineering with</b>			
• Programming package	STEP 7 V5.5 SP2 or higher and S7-Technology option package V4.2 SP3	STEP 7 V5.5 SP2 or higher and S7-Technology option package V4.2 SP3	STEP 7 V5.5 SP2 or higher; S7-Technology option package V4.2 SP3 or higher, Distributed Safety V5.4 SP5 or higher, S7-F Configuration Pack V5.5 SP10 or higher
<b>Supply voltage</b>			
Rated value (DC)			
• 24 V DC	Yes	Yes	Yes
<b>Power loss</b>			
Power loss, typ.	7.5 W	7.5 W	8.5 W
<b>Memory</b>			
<b>Work memory</b>			
• integrated	384 kbyte	1 024 kbyte	1 536 kbyte
• expandable	No	No	No
• Size of retentive memory for retentive data blocks	128 kbyte	256 kbyte	256 kbyte
<b>Load memory</b>			
• Plug-in (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte
<b>CPU processing times</b>			
for bit operations, typ.	0.05 µs	0.025 µs	0.025 µs
for word operations, typ.	0.09 µs	0.03 µs	0.03 µs
for fixed point arithmetic, typ.	0.12 µs	0.04 µs	0.04 µs
for floating point arithmetic, typ.	0.45 µs	0.16 µs	0.16 µs

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### Technology CPUs

#### Technical specifications (continued)

Article number	<b>6ES7315-7TJ10-0AB0</b> CPU315T-3 PN/DP, 384KB	<b>6ES7317-7TK10-0AB0</b> CPU317T-3 PN/DP, 1024KB	<b>6ES7317-7UL10-0AB0</b> CPU317TF-3 PN/DP, 1,5 MB
<b>Counters, timers and their retentivity</b>			
<b>S7 counter</b>			
• Number	256	512	512
<b>IEC counter</b>			
• present	Yes	Yes	Yes
<b>S7 times</b>			
• Number	256	512	512
<b>IEC timer</b>			
• present	Yes	Yes	Yes
<b>Data areas and their retentivity</b>			
<b>Flag</b>			
• Number, max.	2 048 byte	4 096 byte	4 096 byte
<b>Address area</b>			
<b>I/O address area</b>			
• Inputs	2 048 byte	8 192 byte	8 192 byte
• Outputs	2 048 byte	8 192 byte	8 192 byte
<b>Process image</b>			
• Inputs, adjustable	2 048 byte	8 192 byte	8 192 byte
• Outputs, adjustable	2 048 byte	8 192 byte	8 192 byte
<b>Time of day</b>			
<b>Clock</b>			
• Hardware clock (real-time)	Yes	Yes	Yes
<b>Operating hours counter</b>			
• Number	1	4	4
<b>Digital outputs</b>			
<b>Integrated high-speed cams</b>			
• Switching accuracy (+/-)	70 µs	70 µs	70 µs
<b>1. Interface</b>			
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485
<b>Protocols</b>			
• MPI	Yes	Yes	Yes
• PROFIBUS DP master	Yes	Yes	Yes
• PROFIBUS DP slave	Yes	Yes	Yes
• Point-to-point connection	No	No	No
<b>PROFIBUS DP master</b>			
• Number of DP slaves, max.	124	124	124
<b>2. Interface</b>			
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485
<b>Protocols</b>			
• MPI	No	No	No
• PROFIBUS DP master	Yes; DP(DRIVE)-Master	Yes; DP(DRIVE)-Master	Yes; DP(DRIVE)-Master
• PROFIBUS DP slave	No	No	No
<b>PROFIBUS DP master</b>			
• Number of DP slaves, max.	64	64	64
<b>3. Interface</b>			
Interface type	PROFINET	PROFINET	PROFINET
Physics	Ethernet RJ45	Ethernet RJ45	Ethernet RJ45
<b>Interface types</b>			
• Number of ports	2	2	2
<b>Protocols</b>			
• MPI	No	No	No
• PROFINET IO Controller	Yes; Also simultaneously with IO-Device functionality	Yes; Also simultaneously with IO-Device functionality	Yes; Also simultaneously with IO-Device functionality
• PROFINET IO Device	Yes; Also simultaneously with IO Controller functionality	Yes; Also simultaneously with IO Controller functionality	Yes; Also simultaneously with IO Controller functionality
• PROFIBUS DP master	No	No	No
• PROFIBUS DP slave	No	No	No

### Technical specifications (continued)

Article number	<b>6ES7315-7TJ10-0AB0</b> CPU315T-3 PN/DP, 384KB	<b>6ES7317-7TK10-0AB0</b> CPU317T-3 PN/DP, 1024KB	<b>6ES7317-7UL10-0AB0</b> CPU317TF-3 PN/DP, 1,5 MB
<b>PROFINET IO Controller</b>			
<b>Services</b>			
- Number of connectable IO Devices, max.	128	128	128
- Of which IO devices with IRT, max.	64	64	64
- Number of connectable IO Devices for RT, max..	128	128	128
<b>Protocols</b>			
<b>Open IE communication</b>			
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	8	16	16
• ISO-on-TCP (RFC1006)	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	8	16	16
• UDP	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	8	16	16
<b>Web server</b>			
• supported	Yes	Yes	Yes
<b>Isochronous mode</b>			
Isochronous operation (application synchronized up to terminal)	Yes; Via PROFIBUS DP or PROFINET interface	Yes; Via PROFIBUS DP or PROFINET interface	Yes; Via PROFIBUS DP or PROFINET interface
<b>Communication functions</b>			
PG/OP communication	Yes	Yes	Yes
Data record routing	Yes	Yes	Yes
<b>Global data communication</b>			
• supported	Yes	Yes	Yes
<b>S7 basic communication</b>			
• supported	Yes	Yes	Yes
<b>S7 communication</b>			
• supported	Yes	Yes	Yes
<b>S5 compatible communication</b>			
• supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
<b>Number of connections</b>			
• overall	16	32	32
<b>Ambient conditions</b>			
<b>Ambient temperature during operation</b>			
• min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C
<b>Configuration</b>			
<b>Programming</b>			
<b>Programming language</b>			
- 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
<b>Know-how protection</b>			
• 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
<b>Dimensions</b>			
Width	120 mm	120 mm	120 mm
Height	125 mm	125 mm	125 mm
Depth	130 mm	130 mm	130 mm
<b>Weights</b>			
Weight, approx.	640 g	640 g	640 g

# SIMATIC S7-300 Advanced Controllers

## Central processing units

### Technology CPUs

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Ordering data	Article No.	Article No.
<b>CPU 315T-3 PN/DP</b> Work memory 384 KB, supply voltage 24 V DC, MPI, PROFIBUS DP master/slave interface, PROFIBUS DP(DRIVE) interface, Ethernet/PROFINET interface with 2-port switch; with technology/motion control functions; MMC required	6ES7315-7TJ10-0AB0	
<b>CPU 317T-3 PN/DP</b> Work memory 1024 KB, supply voltage 24 V DC, MPI, PROFIBUS DP master/slave interface, PROFIBUS DP(DRIVE) interface, Ethernet/PROFINET interface with 2-port switch; with technology/motion control functions; MMC required	6ES7317-7TK10-0AB0	
<b>CPU 317TF-3 PN/DP</b> Work memory 1.5 MB, supply voltage 24 V DC, MPI, PROFIBUS DP master/slave interface, PROFIBUS DP(DRIVE) interface, Ethernet/PROFINET interface with 2-port switch; with technology/motion control functions; MMC required	6ES7317-7UL10-0AB0	
<b>S7-Technology V4.2</b> V4.2 SP3 and higher can be used for CPU 317TF-3 PN/DP Task: Option package for configuring and programming technology tasks with SIMATIC S7 CPU 31xT and SIMATIC S7 CPU 317TF Requirement: STEP 7 V5.6 and higher Type of delivery: on DVD; incl. documentation for CPU 31xT, CPU 317TF (included on DVD) Floating license Floating license for 1 user; license key download without software or documentation <sup>1)</sup> ; email address required for delivery	6ES7864-1CC42-0YA5 6ES7864-1CC42-0XH5	
<b>S7 Distributed Safety V5.4 SP5 Update 2 programming tool</b> Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP Requirement: Windows 7 SP1 (64-bit), Windows 10 Professional/Enterprise (64-bit), Windows Server 2008 R2 SP1 (64-bit), Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit); STEP 7 from V5.5 SP1; Please also note the operating systems that have been released for the STEP 7 version used Floating license for 1 user; software and documentation on DVD; license key on USB flash drive Floating license for 1 user; software, documentation and license key for download <sup>1)</sup> ; email address required for delivery		6ES7833-1FC02-0YA5 6ES7833-1FC02-0YH5
<b>S7 Distributed Safety upgrade</b> From V5.x to V5.4; floating license for 1 user; software and documentation on DVD; license key on USB flash drive		6ES7833-1FC02-0YE5
<b>SIMATIC Micro Memory Card</b> 8 MB		6ES7953-8LP31-0AA0
<b>MPI cable</b> for connection of SIMATIC S7 and PG via MPI; 5 m in length		6ES7901-0BF00-0AA0
<b>Front connectors</b> 40-pin, with screw contacts <ul style="list-style-type: none"> <li>• 1 unit</li> <li>• 100 units</li> </ul> 40-pin, with spring-loaded contacts <ul style="list-style-type: none"> <li>• 1 unit</li> <li>• 100 units</li> </ul>		6ES7392-1AM00-0AA0 6ES7392-1AM00-1AB0 6ES7392-1BM01-0AA0 6ES7392-1BM01-1AB0
<b>Slot number plates</b>		6ES7912-0AA00-0AA0
<b>SIMATIC Manual Collection</b> Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC		6ES7998-8XC01-8YE0
<b>SIMATIC Manual Collection update service for 1 year</b> Current "Manual Collection" DVD and the three subsequent updates		6ES7998-8XC01-8YE2

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



# SIMATIC S7-300 Advanced Controllers

## Central processing units

### Technology CPUs

Ordering data	Article No.	Ordering data	Article No.
<b>Power supply connector</b> 10 units, spare part	6ES7391-1AA00-0AA0	<b>PROFINET bus components</b>	
<b>Labeling strips</b> 10 units, spare part	6ES7392-2XX00-0AA0	<b>IE FC TP Standard Cable GP 2x2</b> 4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter	6XV1840-2AH10
<b>Label cover</b> 10 units, spare part	6ES7392-2XY00-0AA0	<b>FO Standard Cable GP (50/125)</b> Standard cable, splittable, UL approval, sold by the meter	6XV1873-2A
<b>Labeling sheets for machine inscription</b> for modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units		<b>SCALANCE X204-2 Industrial Ethernet Switch</b> 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 Mbps RJ45 ports and two FO ports	6GK5204-2BB10-2AA3
Petrol	6ES7392-2AX10-0AA0	<b>Compact Switch Module CSM 377</b> Unmanaged switch for connecting SIMATIC S7-300, ET 200M and up to three other stations to Industrial Ethernet with 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module incl. electronic manual on CD-ROM	6GK7377-1AA00-0AA0
Light beige	6ES7392-2BX10-0AA0	<b>IE FC RJ45 plugs</b> RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
Yellow	6ES7392-2CX10-0AA0	<b>IE FC RJ45 plug 180</b> 180° cable outlet	
Red	6ES7392-2DX10-0AA0	1 unit	6GK1901-1BB10-2AA0
<b>USB A2 PC adapter</b> For connecting a PG/PC or notebook to PROFIBUS or MPI; USB cable included in scope of supply	6GK1571-0BA00-0AA0	10 units	6GK1901-1BB10-2AB0
<b>PROFIBUS bus components</b>		50 units	6GK1901-1BB10-2AE0
<b>PROFIBUS DP bus connector RS 485</b>		<b>PROFIBUS/PROFINET bus components</b> For establishing MPI/PROFIBUS/PROFINET communication	See Catalogs IK PI, CA 01
• With 90° cable outlet, max. transfer rate 12 Mbps - without PG interface - with PG interface	6ES7972-0BA12-0XA0 6ES7972-0BB12-0XA0		
• with 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbps - without PG interface, 1 unit - without PG interface, 100 units - with PG interface, 1 unit - with PG interface, 100 units	6ES7972-0BA52-0XA0 6ES7972-0BA52-0XB0 6ES7972-0BB52-0XA0 6ES7972-0BB52-0XB0		
• with axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS	6GK1500-0EA02		
<b>PROFIBUS Fast Connect bus cable</b> Standard type with special design for quick mounting, 2-wire, shielded, sold by the meter, max. delivery unit 1 000 m, minimum order quantity 20 m	6XV1830-0EH10		
<b>RS 485 repeater for PROFIBUS</b> Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure	6ES7972-0AA02-0XA0		

## SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

### SM 321 digital input modules

#### Overview



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

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#### Technical specifications

Article number	6ES7321-1BH02-0AA0	6ES7321-1BH50-0AA0	6ES7321-1BL00-0AA0	6ES7321-1BP00-0AA0	6ES7321-1BH10-0AA0
	SM321, 16DI, 24 V DC	SM321, 16DI, 24 V DC, sourcing input	SM321, 32DI, 24 V DC	SM321, 64 DI, DC 24 V DC, 3MS, P/M reading	SM321, 16DI, 24 V DC, 0.05ms Input Delay
<b>Supply voltage</b>					
<b>Load voltage L+</b>					
• Rated value (DC)	24 V	24 V	24 V	24 V	24 V
<b>Input current</b>					
from backplane bus 5 V DC, max.	10 mA	10 mA	15 mA	100 mA	110 mA
<b>Power loss</b>					
Power loss, typ.	3.5 W	3.5 W	6.5 W	7 W	3.8 W
<b>Digital inputs</b>					
Number of digital inputs	16	16	32	64	16
Input characteristic curve in accordance with IEC 61131, type 1	Yes	Yes	Yes	Yes	Yes
<b>Number of simultaneously controllable inputs</b>					
<b>horizontal installation</b>					
- up to 40 °C, max.	16	16	32	64	16
- up to 60 °C, max.	16	16	16	32	16
<b>vertical installation</b>					
- up to 40 °C, max.	16	16	32	32	16
<b>Input voltage</b>					
• Type of input voltage	DC	DC	DC	DC	DC
• Rated value (DC)	24 V	24 V	24 V	24 V	24 V
• for signal "0"	-30 to +5V	-5 to +30V	-30 to +5V	-30 to +5V	-30 to +5V
• for signal "1"	13 to 30V	-13 to -30V	13 to 30V	13 to 30V	13 to 30V
<b>Input current</b>					
• for signal "1", typ.	7 mA	7 mA	7 mA	4.2 mA	7 mA
<b>Input delay (for rated value of input voltage)</b>					
<b>for standard inputs</b>					
- 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
<b>Cable length</b>					
• shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	600 m	600 m	600 m

## Technical specifications (continued)

Article number	6ES7321-1BH02-0AA0 SM321, 16DI, 24 V DC	6ES7321-1BH50-0AA0 SM321, 16DI, 24 V DC, sourcing input	6ES7321-1BL00-0AA0 SM321, 32DI, 24 V DC	6ES7321-1BP00-0AA0 SM321, 64 DI, DC 24 V DC, 3MS, P/M reading	6ES7321-1BH10-0AA0 SM321, 16DI, 24 V DC, 0.05ms Input Delay
<b>Encoder</b>					
<b>Connectable encoders</b>					
• 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
<b>Isochronous mode</b>					
Isochronous operation (application synchronized up to terminal)	No	No	No	No	Yes
<b>Interrupts/diagnostics/status information</b>					
Diagnostics function	No	No	No	No	No
<b>Alarms</b>					
• Diagnostic alarm	No	No	No	No	No
• Hardware interrupt	No	No	No	No	No
<b>Potential separation</b>					
<b>Potential separation digital inputs</b>					
• between the channels	No	No	No	No	No
• between the channels, in groups of	16	16	16	16	16
• between the channels and backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
<b>Connection method</b>					
required front connector	20-pin	20-pin	40-pin	Cable: 6ES7392-4Bxx0-0AA0 terminal blocks: 6ES7392-1xN00-0AA0	20-pin
<b>Dimensions</b>					
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
<b>Weights</b>					
Weight, approx.	200 g	200 g	260 g	230 g	200 g
Article number	6ES7321-7BH01-0AB0 SM321, 16DI, 24V DC	6ES7321-1CH00-0AA0 SM321, 16 DI, AC/DC 24-48V, 1ch/common	6ES7321-1CH20-0AA0 SM321, 16DI, DC48-125V	6ES7321-1FH00-0AA0 SM321, 16 DI, 120/230V AC	
<b>Supply voltage</b>					
<b>Load voltage L+</b>					
• Rated value (DC)	24 V	24 V	48 V		
<b>Load voltage L1</b>					
• Rated value (AC)		24 V		230 V; 120/230 V AC; all load voltages must have the same phase.	
<b>Input current</b>					
from load voltage L+ (without load), max.	90 mA				
from backplane bus 5 V DC, max.	130 mA	100 mA	40 mA	29 mA	
<b>Power loss</b>					
Power loss, typ.	4 W	1.5 W; at 24 V; 2,8 W at 48 V	4.3 W	4.9 W	
<b>Digital inputs</b>					
Number of digital inputs	16	16	16	16	
Input characteristic curve in accordance with IEC 61131, type 1		Yes	Yes	Yes	
Input characteristic curve in accordance with IEC 61131, type 2	Yes				

# SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

## SM 321 digital input modules

### Technical specifications (continued)

Article number	6ES7321-7BH01-0AB0	6ES7321-1CH00-0AA0	6ES7321-1CH20-0AA0	6ES7321-1FH00-0AA0
	SM321, 16DI, 24V DC	SM321, 16 DI, AC/DC 24-48V, 1ch/common	SM321, 16DI, DC48-125V	SM321, 16 DI, 120/230V AC
<b>Number of simultaneously controllable inputs</b>				
<b>horizontal installation</b>				
- up to 40 °C, max.	16	16	8	16
- up to 60 °C, max.	16	16	8; 6 to Ue 146 V	16
<b>vertical installation</b>				
- up to 40 °C, max.	16	16	8	16
<b>Input voltage</b>				
• Type of input voltage	DC	AC/DC	DC	AC
• Rated value (DC)	24 V	24 V; DC 24 or 48 V	48 V; 48 V DC to 125 V DC	
• Rated value (AC)		24 V; 24 V AC or 48 V AC (0 ... 63 Hz)		230 V; 120/230 V AC (47 ... 63 Hz)
• for signal "0"	-30 to +5V	-5V AC to +5V AC	-146 V DC to +15 V DC	0 to 40V
• for signal "1"	13 to 30V	14V AC to 60V AC	30 V DC to 146 V DC	79 to 264V
<b>Input current</b>				
• for signal "1", typ.	7 mA	2.7 mA	3.5 mA	6.5 mA; (120V, 60Hz), 16mA (230V, 50Hz)
<b>Input delay (for rated value of input voltage) for standard inputs</b>				
- 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
<b>Cable length</b>				
• shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	600 m	600 m
<b>Encoder</b>				
<b>Connectable encoders</b>				
• 2-wire sensor	Yes	Yes	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	2 mA	1 mA	1 mA	2 mA
<b>Isochronous mode</b>				
Isochronous operation (application synchronized up to terminal)	Yes	No	No	No
<b>Interrupts/diagnostics/status information</b>				
Diagnostics function	Yes; Parameterizable	No	No	No
<b>Alarms</b>				
• Diagnostic alarm	Yes; Parameterizable	No	No	No
• Hardware interrupt	Yes; Parameterizable	No	No	No
<b>Potential separation</b>				
<b>Potential separation digital inputs</b>				
• between the channels	No	Yes	No	No
• between the channels, in groups of	16	1	8	4
• between the channels and backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
<b>Connection method</b>				
required front connector	20-pin	40-pin	20-pin	20-pin
<b>Dimensions</b>				
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
<b>Weights</b>				
Weight, approx.	200 g	260 g	200 g	240 g

## Technical specifications (continued)

Article number	6ES7321-1EL00-0AA0 SM321, 32DI, AC120V	6ES7321-1FF01-0AA0 SM321, 8DI, AC120/230V	6ES7321-1FF10-0AA0 SM321, 8 DI, AC 120/230V, 1ch/common
<b>Load voltage L1</b>			
• 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.
<b>Input current</b>			
from backplane bus 5 V DC, max.	16 mA	29 mA	100 mA
<b>Power loss</b>			
Power loss, typ.	4 W	4.9 W	4.9 W
<b>Digital inputs</b>			
Number of digital inputs	32	8	8
Input characteristic curve in accordance with IEC 61131, type 1		Yes	Yes
Input characteristic curve in accordance with IEC 61131, type 2	Yes		
<b>Number of simultaneously controllable inputs</b>			
<b>horizontal installation</b>			
- up to 40 °C, max.	32		
- up to 60 °C, max.	24	8	8
<b>vertical installation</b>			
- up to 40 °C, max.	32	8	8
<b>Input voltage</b>			
• Type of input voltage	AC	AC	AC
• Rated value (AC)	120 V; 47 ... 63 Hz	230 V; 120/230 V AC (47 ... 63 Hz)	120 V; 120/230 V AC (47 ... 63 Hz)
• for signal "0"	0 to 20V	0 to 40V	0 to 40V
• for signal "1"	74 to 132V	79 to 264V	79 to 264V
<b>Input current</b>			
• 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)
<b>Input delay (for rated value of input voltage) for standard inputs</b>			
- parameterizable	No	No	No
- at "0" to "1", max.	15 ms	25 ms	25 ms
<b>Cable length</b>			
• shielded, max.	1 000 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	600 m
<b>Encoder</b>			
<b>Connectable encoders</b>			
• 2-wire sensor	Yes	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	4 mA	2 mA	2 mA
<b>Isochronous mode</b>			
Isochronous operation (application synchronized up to terminal)	No	No	No

# SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

## SM 321 digital input modules

### Technical specifications (continued)

Article number	6ES7321-1EL00-0AA0	6ES7321-1FF01-0AA0	6ES7321-1FF10-0AA0
	SM321, 32DI, AC120V	SM321, 8DI, AC120/230V	SM321, 8 DI, AC 120/230V, 1ch/common
<b>Interrupts/diagnostics/ status information</b>			
Diagnostics function	No	No	No
<b>Alarms</b>			
• Diagnostic alarm	No	No	No
• Hardware interrupt	No	No	No
<b>Potential separation</b>			
<b>Potential separation digital inputs</b>			
• between the channels	No	No	Yes
• between the channels, in groups of	8	2	1
• between the channels and backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
<b>Connection method</b>			
required front connector	40-pin	20-pin	40-pin
<b>Dimensions</b>			
Width	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm
<b>Weights</b>			
Weight, approx.	300 g	240 g	240 g

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### Ordering data

#### SM 321 digital input modules

Incl. labeling strips, bus connector

16 inputs, 24 V DC

6ES7321-1BH02-0AA0

16 inputs, 24 V DC, active low

6ES7321-1BH50-0AA0

32 inputs, 24 V DC

6ES7321-1BL00-0AA0

64 inputs, 24 V DC, active high/low

6ES7321-1BP00-0AA0

Note:

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

16 inputs, 24 to 48 V DC

6ES7321-1CH00-0AA0

16 inputs, 48 to 125 V DC

6ES7321-1CH20-0AA0

16 inputs, 24 V DC, for isochronous  
mode

6ES7321-1BH10-0AA0

32 inputs, 120 V AC

6ES7321-1EL00-0AA0

8 inputs, 120/230 V AC

6ES7321-1FF01-0AA0

8 inputs, 120/230 V AC, single root

6ES7321-1FF10-0AA0

16 inputs, 120/230 V AC

6ES7321-1FH00-0AA0

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

6ES7321-7BH01-0AB0

#### Article No.

#### Front connector

20-pin, with screw contacts

- 1 unit
- 100 units

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

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

40-pin, with screw contacts

- 1 unit
- 100 units

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

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

#### S7-300 connecting cable

For 64-channel modules; 2 units

1 m

6ES7392-4BB00-0AA0

2.5 m

6ES7392-4BC50-0AA0

5 m

6ES7392-4BF00-0AA0

#### Terminal block

For 64-channel modules; 2 units

With screw contacts

6ES7392-1AN00-0AA0

With spring-loaded contacts

6ES7392-1BN00-0AA0

Ordering data	Article No.		Article No.
<b>Front door, elevated design</b> e.g. for 32-channel modules; for connecting 1.3 mm <sup>2</sup> /16 AWG conductors; circuit diagram and nameplates in petrol	<b>6ES7328-0AA00-7AA0</b>	<b>SIMATIC Manual Collection</b> 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	<b>6ES7998-8XC01-8YE0</b>
<b>SIMATIC TOP connect</b>	see page 5/251	<b>SIMATIC Manual Collection update service for 1 year</b> Current "Manual Collection" DVD and the three subsequent updates	<b>6ES7998-8XC01-8YE2</b>
<b>Bus connectors</b> 1 unit (spare part)	<b>6ES7390-0AA00-0AA0</b>		
<b>Labeling strips</b> 10 units (spare part) for modules with 20-pin front connector	<b>6ES7392-2XX00-0AA0</b>		
for modules with 40-pin front connector	<b>6ES7392-2XX10-0AA0</b>		
<b>Label cover</b> 10 units (spare part) for modules with 20-pin front connector	<b>6ES7392-2XY00-0AA0</b>		
for modules with 40-pin front connector	<b>6ES7392-2XY10-0AA0</b>		
<b>Labeling sheets for machine inscription</b> For modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units Petrol Light beige Yellow Red	<b>6ES7392-2AX00-0AA0</b> <b>6ES7392-2BX00-0AA0</b> <b>6ES7392-2CX00-0AA0</b> <b>6ES7392-2DX00-0AA0</b>		
For modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units Petrol Light beige Yellow Red	<b>6ES7392-2AX10-0AA0</b> <b>6ES7392-2BX10-0AA0</b> <b>6ES7392-2CX10-0AA0</b> <b>6ES7392-2DX10-0AA0</b>		

# SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

## SM 322 digital output modules

### Overview



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

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### Technical specifications

Article number	6ES7322-1BH01-0AA0	6ES7322-1BH10-0AA0	6ES7322-1BL00-0AA0	6ES7322-1BP00-0AA0	6ES7322-1BP50-0AA0	6ES7322-8BF00-0AB0
	SM322, 16DQ 24V DC, 0.5A	SM322 High Speed, 16DQ 24V DC, 0.5A	SM322, 32DQ 24V DC, 0.5A	SM322 64DQ, DC24V, 0,3A P-write	SM322 64DQ, DC24V, 0,3A M-write	SM322, 8DQ, 24V DC, 0.5A
<b>General information</b>						
Product type designation	SM 322, DQ 16x24 V DC/0.5 A	SM 322, DQ 16x24 V DC/0.5 A HS	SM 322, DQ 32x24 V DC/0.5 A	SM 322, DQ 64x24 V DC/0.3 A sourcing	SM 322, DQ 64x24 V DC/0.3 A sinking	SM 322, DQ 8x24 V DC/0.5 A
<b>Supply voltage</b>						
<b>Load voltage L+</b>						
• Rated value (DC)	24 V	24 V	24 V	24 V	24 V	24 V
<b>Input current</b>						
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
<b>Power loss</b>						
Power loss, typ.	4.9 W	5 W	6.6 W	6 W	6 W	5 W
<b>Digital outputs</b>						
Number of digital outputs	16	16	32	64	64	8
Limitation of inductive shutdown voltage to	L+ (-53 V)	L+ (-53 V)	L+ (-53 V)	L+ (-53 V)	M+ (45 V)	L+ (-45 V)
<b>Switching capacity of the outputs</b>						
• on lamp load, max.	5 W	5 W	5 W	5 W	5 W	5 W
<b>Load resistance range</b>						
• 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
<b>Output voltage</b>						
• 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)
<b>Output current</b>						
• for signal "1" rated value	0.5 A	0.5 A	0.5 A	0.3 A	0.3 A	0.5 A
• for signal "1" permissible range, min.				2.4 mA	2.4 mA	
• for signal "1" permissible range, max.				0.36 A	0.36 A	
• for signal "1" permissible range for 0 to 40 °C, min.	5 mA	5 mA	5 mA			10 mA
• for signal "1" permissible range for 0 to 40 °C, max.	0.6 A	0.6 A	0.6 A			0.6 A
• for signal "1" permissible range for 40 to 60 °C, min.	5 mA	5 mA	5 mA			10 mA
• for signal "1" permissible range for 40 to 60 °C, max.	0.6 A	0.6 A	0.6 A			0.6 A
• for signal "1" minimum load current	5 mA	5 mA	5 mA			10 mA
• for signal "0" residual current, max.	0.5 mA	0.5 mA	0.5 mA	0.1 mA		0.5 mA



## Technical specifications (continued)

Article number	6ES7322-1BH01-0AA0	6ES7322-1BH10-0AA0	6ES7322-1BL00-0AA0	6ES7322-1BP00-0AA0	6ES7322-1BP50-0AA0	6ES7322-8BF00-0AB0
	SM322, 16DQ 24V DC, 0.5A	SM322 High Speed, 16DQ 24V DC, 0.5A	SM322, 32DQ 24V DC, 0.5A	SM322 64DQ, DC24V, 0.3A P-write	SM322 64DQ, DC24V, 0.3A M-write	SM322, 8DQ, 24V DC, 0.5A
<b>Switching frequency</b>						
• 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
<b>Total current of the outputs (per group)</b>						
<b>horizontal installation</b>						
- 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
<b>vertical installation</b>						
- up to 40 °C, max.	2 A	2 A	2 A	1.6 A	1.6 A	4 A
<b>Total current of the outputs (per module)</b>						
<b>horizontal installation</b>						
- up to 60 °C, max.				4.8 A	4.8 A	
<b>all other mounting positions</b>						
- up to 40 °C, max.				6.4 A	6.4 A	
<b>Cable length</b>						
• shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	600 m	600 m	600 m	600 m
<b>Interrupts/diagnostics/status information</b>						
Diagnostics function	No	No	No	No	No	Yes; Parameterizable
<b>Alarms</b>						
• Diagnostic alarm	No	No	No	No	No	Yes; Parameterizable
<b>Potential separation</b>						
<b>Potential separation digital outputs</b>						
• between the channels	Yes	Yes	Yes	No	No	8
• between the channels, in groups of	8	8	8	16	16	8
• between the channels and backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
<b>Connection method</b>						
required front connector	20-pin	20-pin	40-pin	Cable: 6ES7392-4Bxx0-0AA0 terminal blocks: 6ES7392-1xN00-0AA0	Cable: 6ES7392-4Bxx0-0AA0 terminal blocks: 6ES7392-1xN00-0AA0	20-pin
<b>Dimensions</b>						
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
<b>Weights</b>						
Weight, approx.	190 g	200 g	260 g	230 g	230 g	210 g

# SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

## SM 322 digital output modules

### Technical specifications (continued)

Article number	6ES7322-5GH00-0AB0	6ES7322-1CF00-0AA0	6ES7322-1BF01-0AA0	6ES7322-1FF01-0AA0	6ES7322-5FF00-0AB0	6ES7322-1FH00-0AA0
	SM322, 16DQ, AC/DC24-48V, 0.5A	SM322, 8DQ, 48-125V DC, 1,5A	SM322, 8DQ, 24V DC, 2A	SM322, 8DQ, 120/230V AC, 1A	SM322, 8DQ, AC120/230V, 2A	SM322, 16DQ, 120/230V AC, 1A
<b>General information</b>						
Product type designation	SM 322, DQ 16x24/48 V UC/ 0.5 A	SM 322, DQ 8x48 ... 125 V DC/ 1.5 A	SM 322, DQ 8x24 V DC/2 A	SM 322, DQ 8x120/230 V AC/ 2 A	SM 322, DQ 8x120/230 V AC/ 2 A ISOL	SM 322, DQ 16x120/230 V AC/ 1 A
<b>Supply voltage</b>						
<b>Load voltage L+</b>						
• Rated value (DC)	24 V; 24 / 48	48 V; 48 V DC to 125 V DC	24 V			
<b>Load voltage L1</b>						
• Rated value (AC)				230 V; 120/230 V AC	230 V; 120/230 V AC	230 V; 120/230 V AC
<b>Input current</b>						
from supply voltage L+, max.	200 mA					
from load voltage L+ (without load), max.		2 mA	60 mA			
from load voltage L1 (without load), max.				2 mA	2 mA	2 mA
from backplane bus 5 V DC, max.	100 mA	100 mA	40 mA	100 mA	100 mA	200 mA
<b>Power loss</b>						
Power loss, typ.	2.8 W	7.2 W	6.8 W	8.6 W	8.6 W	8.6 W
<b>Digital outputs</b>						
Number of digital outputs	16	8	8	8	8	16
Limitation of inductive shutdown voltage to		M (-1 V)	L+ (-48 V)			
<b>Switching capacity of the outputs</b>						
• on lamp load, max.	2.5 W	15 W; 15 W (48 V) or 40 W (125 V)	10 W	50 W	50 W	50 W
<b>Load resistance range</b>						
• lower limit			12 Ω			
• upper limit			4 kΩ			
<b>Output voltage</b>						
• for signal "1", min.	L+ (-0.25 V)	L+ (-1.2 V)	L+ (-0.8 V)	L1 (-1.5 V)	L1 (-8.5 V)	
<b>Output current</b>						
• 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
<b>Switching frequency</b>						
• with resistive load, max.	10 Hz	25 Hz	100 Hz	10 Hz	10 Hz	10 Hz
• with inductive load, max.	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz
• on lamp load, max.	0.5 Hz	10 Hz	10 Hz	1 Hz	1 Hz	1 Hz

## Technical specifications (continued)

Article number	6ES7322-5GH00-0AB0	6ES7322-1CF00-0AA0	6ES7322-1BF01-0AA0	6ES7322-1FF01-0AA0	6ES7322-5FF00-0AB0	6ES7322-1FH00-0AA0
	SM322, 16DQ, AC/DC24-48V, 0.5A	SM322, 8DQ, 48-125V DC, 1,5A	SM322, 8DQ, 24V DC, 2A	SM322, 8DQ, 120/230V AC, 1A	SM322, 8DQ, AC120/230V, 2A	SM322, 16DQ, 120/230V AC, 1A
<b>Total current of the outputs (per group)</b>						
<b>horizontal installation</b>						
- up to 40 °C, max.	0.5 A; 8 A per module	6 A	4 A	4 A	8 A	4 A
- up to 60 °C, max.	0.5 A; 8 A per module	3 A	4 A	2 A	4 A	2 A
<b>vertical installation</b>						
- up to 40 °C, max.	0.5 A; 8 A per module	4 A	4 A	2 A	4 A	2 A
<b>Cable length</b>						
• shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	600 m	600 m	600 m	600 m
<b>Interrupts/diagnostics/status information</b>						
Diagnostics function	Yes; Parameterizable	No	No	Yes; Fuse blown or load voltage missing	Yes; Parameterizable	Yes; Fuse blown or load voltage missing
<b>Alarms</b>						
• Diagnostic alarm	Yes; Parameterizable	No	No	No	Yes; Parameterizable	No
<b>Potential separation</b>						
<b>Potential separation digital outputs</b>						
• between the channels	Yes	Yes	Yes	Yes	Yes	
• between the channels, in groups of	1	4	4	4	1	8
• between the channels and backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
<b>Connection method</b>						
required front connector	40-pin	20-pin	20-pin	20-pin	40-pin	20-pin
<b>Dimensions</b>						
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
<b>Weights</b>						
Weight, approx.	260 g	250 g	190 g	275 g	275 g	275 g
Article number	6ES7322-1FL00-0AA0	6ES7322-1HF01-0AA0	6ES7322-1HF10-0AA0	6ES7322-5HF00-0AB0	6ES7322-1HH01-0AA0	
	SM322, 32DQ, 120/230V AC, 1A	SM322, 8DQ, 24V DC/2A or 230V AC/2A	SM322, 8DQ, 24V DC/5A OR 230V AC/5A	SM322, 8DQ Relay, 24VDC, 120-230V AC, 5A	SM322, 16DQ Relay	
<b>General information</b>						
Product type designation	SM 322, DQ 32x120/230 V AC/1 A	SM 322, DQ 8x relay 24 V DC/ 230 V AC/2 A	SM 322, DQ 8x relay 24 V DC/ 230 V AC/5 A	SM 322, DQ 8x relay 24 V DC/ 230 V AC/5 A	SM 322, DQ 16xrelay 24 V DC/ 120/230 V AC/8 A	
<b>Supply voltage</b>						
<b>Load voltage L+</b>						
• Rated value (DC)		24 V	120 V	24 V	120 V	
<b>Load voltage L1</b>						
• Rated value (AC)	120 V; 120/230 V AC		230 V	230 V	230 V	
<b>Input current</b>						
from supply voltage L+, max.		160 mA	125 mA	160 mA	250 mA	
from load voltage L1 (without load), max.	10 mA					
from backplane bus 5 V DC, max.	190 mA	40 mA	40 mA	100 mA	100 mA	
<b>Power loss</b>						
Power loss, typ.	25 W	3.2 W	3.2 W	3.5 W	4.5 W	

# SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

## SM 322 digital output modules

### Technical specifications (continued)

Article number	6ES7322-1FL00-0AA0	6ES7322-1HF01-0AA0	6ES7322-1HF10-0AA0	6ES7322-5HF00-0AB0	6ES7322-1HH01-0AA0
	SM322, 32DQ, 120/230V AC, 1A	SM322, 8DQ, 24V DC/2A or 230V AC/2A	SM322, 8DQ, 24V DC/5A OR 230V AC/5A	SM322, 8DQ Relay, 24VDC, 120-230V AC, 5A	SM322, 16DQ Relay
<b>Digital outputs</b>					
Number of digital outputs	32	8; Relays	8; Relays	8; Relays	16; Relays
<b>Switching capacity of the outputs</b>					
• on lamp load, max.	50 W	50 W	1 500 W; 230 V AC	1 500 W; 230 V AC	50 W; 230 V AC
<b>Output voltage</b>					
• for signal "1", min.	L1 (-0.8 V)				
<b>Output current</b>					
• 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				
<b>Switching frequency</b>					
• 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
<b>Total current of the outputs (per group)</b>					
<b>horizontal installation</b>					
- up to 40 °C, max.	4 A				
- up to 60 °C, max.	3 A		5 A	5 A	8 A
<b>vertical installation</b>					
- up to 40 °C, max.	4 A		5 A	5 A	8 A
<b>Relay outputs</b>					
• Rated supply voltage of relay coil L+ (DC)		24 V; 110 mA	24 V		24 V
• Number of operating cycles, max.		300 000; 230 V AC: 100 000; 120 V AC: 200 000; 24 V DC: 300 000 (at 2 A)	300 000; 300 000 (24 V DC, at 2 A); 200 000 (120 V AC, at 3 A); 100 000 (230 V AC, at 3 A)	100 000; 100 000 (24 V DC, at 5 A); 100 000 (230 V AC, at 5 A)	100 000; 50 000 (24 V DC, at 2 A); 700 000 (120 V AC, at 2 A); 100 000 (230 V AC, at 2 A)
<b>Switching capacity of contacts</b>					
- with inductive load, max.		2 A; 2 A (230 V AC), 2 A (24 V DC)	3 A; 3 A (230 V DC), 2 A (24 V AC)	5 A; 5 A (230 V DC), 5 A (24 V AC)	2 A; 2 A (230 V AC), 2 A (24 V DC)
- with resistive load, max.		2 A	8 A; 8 A (230 V DC), 5 A (24 V AC)	5 A; 5 A (230 V DC), 5 A (24 V AC)	2 A; 2 A (230 V AC), 2 A (24 V DC)
<b>Cable length</b>					
• shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	600 m	600 m	600 m
<b>Interrupts/diagnostics/status information</b>					
Diagnostics function	Yes; Fuse blown or load voltage missing	No	No	Yes; Parameterizable	No
<b>Alarms</b>					
• Diagnostic alarm	No	No	No	Yes; Parameterizable	No

## Technical specifications (continued)

Article number	6ES7322-1FL00-0AA0	6ES7322-1HF01-0AA0	6ES7322-1HF10-0AA0	6ES7322-5HF00-0AB0	6ES7322-1HH01-0AA0
	SM322, 32DQ, 120/230V AC, 1A	SM322, 8DQ, 24V DC/2A or 230V AC/2A	SM322, 8DQ, 24V DC/5A OR 230V AC/5A	SM322, 8DQ Relay, 24VDC, 120-230V AC, 5A	SM322, 16DQ Relay
<b>Potential separation</b>					
<b>Potential separation digital outputs</b>					
• between the channels	Yes	Yes	Yes	Yes	Yes
• between the channels, in groups of	8	2	1	1	8
• between the channels and backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
<b>Connection method</b>					
required front connector	20-pin	20-pin	40-pin	40-pin	20-pin
<b>Dimensions</b>					
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
<b>Weights</b>					
Weight, approx.	500 g	190 g	320 g	320 g	250 g

## Ordering data

## Article No.

## Article No.

**SM 322 digital output modules**

incl. labeling strips, bus connector

8 outputs, 24 V DC, 2 A

**6ES7322-1BF01-0AA0**

16 outputs, 24 V DC, 0.5 A

**6ES7322-1BH01-0AA0**

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

**6ES7322-1BH10-0AA0**

32 outputs, 24 V DC, 0.5 A

**6ES7322-1BL00-0AA0**

64 outputs, 24 V DC, 0.3 A

**6ES7322-1BP00-0AA0**

Note:  
6ES7392-4...0-0AA0 connection cable and 6ES7392-1.N00-0AA0 terminal blocks necessary.

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

**6ES7322-1BP50-0AA0**

Note:  
6ES7392-4...0-0AA0 connection cable and 6ES7392-1.N00-0AA0 terminal blocks necessary.

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

**6ES7322-8BF00-0AB0**

16 outputs, 24/48 V DC, 0.5 A

**6ES7322-5GH00-0AB0**

8 outputs, 48 to 125 V DC, 1.5 A

**6ES7322-1CF00-0AA0**

8 outputs, 120/230 V AC, 1 A

**6ES7322-1FF01-0AA0**

8 outputs, 120/230 V AC, 2 A

**6ES7322-5FF00-0AB0**

16 outputs, 120/230 V AC, 1 A

**6ES7322-1FH00-0AA0**

32 outputs, 120 V AC, 1 A

**6ES7322-1FL00-0AA0**

8 outputs, relay contacts, 2 A

**6ES7322-1HF01-0AA0**

8 outputs, relay contacts, 5 A

**6ES7322-1HF10-0AA0**

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

**6ES7322-5HF00-0AB0**

16 outputs, relay contacts, 8 A

**6ES7322-1HH01-0AA0****Front connector**

20-pin, with screw contacts

- 1 unit
- 100 units

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

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

40-pin, with screw contacts

- 1 unit
- 100 units

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

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

**6ES7392-1BM01-0AA0**  
**6ES7392-1BM01-1AB0****S7-300 connecting cable**

For 64-channel modules; 2 units

1 m

**6ES7392-4BB00-0AA0**

2.5 m

**6ES7392-4BC50-0AA0**

5 m

**6ES7392-4BF00-0AA0****Terminal block**

For 64-channel modules; 2 units

With screw contacts

**6ES7392-1AN00-0AA0**

With spring-loaded contacts

**6ES7392-1BN00-0AA0****Front door, elevated design**e.g. for 32-channel modules; for connecting 1.3 mm<sup>2</sup>/16 AWG conductors**6ES7328-0AA00-7AA0**

**SIMATIC S7-300 Advanced Controllers**

I/O modules

Digital modules

**SM 322 digital output modules**

5

Ordering data	Article No.		Article No.
<b>SIMATIC TOP connect</b>	see page 5/251	<b>Labeling sheets for machine inscription</b>	
<b>Bus connectors</b>	<b>6ES7390-0AA00-0AA0</b>	for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
1 unit (spare part)		Petrol	<b>6ES7392-2AX00-0AA0</b>
<b>Set of fuses for SM 322</b>		Light beige	<b>6ES7392-2BX00-0AA0</b>
10 fuses 8 A quick-response, 2 fuse holders; for 6ES7 322-1FF01-0AA0, 6ES7 322-1FH00-0AA0	<b>6ES7973-1HD00-0AA0</b>	Yellow	<b>6ES7392-2CX00-0AA0</b>
10 fuses 6.3 A; for 6ES7 322-1CF00-0AA0	<b>6ES7973-1GC00-0AA0</b>	Red	<b>6ES7392-2DX00-0AA0</b>
<b>Labeling strips</b>		for modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units	
10 units (spare part)		Petrol	<b>6ES7392-2AX10-0AA0</b>
for modules with 20-pin front connector	<b>6ES7392-2XX00-0AA0</b>	Light beige	<b>6ES7392-2BX10-0AA0</b>
for modules with 40-pin front connector	<b>6ES7392-2XX10-0AA0</b>	Yellow	<b>6ES7392-2CX10-0AA0</b>
<b>Label cover</b>		Red	<b>6ES7392-2DX10-0AA0</b>
10 units (spare part)		<b>SIMATIC Manual Collection</b>	<b>6ES7998-8XC01-8YE0</b>
for modules with 20-pin front connector	<b>6ES7392-2XY00-0AA0</b>	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	
for modules with 40-pin front connector	<b>6ES7392-2XY10-0AA0</b>	<b>SIMATIC Manual Collection update service for 1 year</b>	<b>6ES7998-8XC01-8YE2</b>
		Current "Manual Collection" DVD and the three subsequent updates	

## Overview



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

## Technical specifications

Article number	6ES7323-1BH01-0AA0 SM323, 8DI/8DQ, DC24V, 0.5A	6ES7323-1BL00-0AA0 SM323, 16DI/DQ, DC24V, 0.5A	6ES7327-1BH00-0AB0 SM327, 8DI/8DX, DC24V, 0.5A
<b>Supply voltage</b>			
<b>Load voltage L+</b>			
• Rated value (DC)	24 V	24 V	24 V
<b>Input current</b>			
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
<b>Power loss</b>			
Power loss, typ.	3.5 W	6.5 W	3 W
<b>Digital inputs</b>			
Number of digital inputs	8	16	8; 8 hard-wired, 8 others individually parameterizable
Input characteristic curve in accordance with IEC 61131, type 1	Yes	Yes	Yes
<b>Number of simultaneously controllable inputs</b>			
<b>horizontal installation</b>			
- up to 60 °C, max.	8	8	16
<b>vertical installation</b>			
- up to 40 °C, max.	8	16	16
<b>Input voltage</b>			
• Type of input voltage	DC	DC	DC
• Rated value (DC)	24 V	24 V	24 V
• for signal "0"	-30 to +5V	-30 to +5V	-30 to +5V
• for signal "1"	13 to 30V	13 to 30V	+15 to +30V
<b>Input current</b>			
• for signal "1", typ.	7 mA	7 mA	6 mA
<b>Input delay (for rated value of input voltage) for standard inputs</b>			
- 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
<b>Cable length</b>			
• shielded, max.	1 000 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	600 m

**SIMATIC S7-300 Advanced Controllers**

I/O modules

Digital modules

**SM 323/SM 327 digital input/output modules****Technical specifications (continued)**

Article number	<b>6ES7323-1BH01-0AA0</b> SM323, 8DI/8DQ, DC24V, 0.5A	<b>6ES7323-1BL00-0AA0</b> SM323, 16DI/DQ, DC24V, 0.5A	<b>6ES7327-1BH00-0AB0</b> SM327, 8DI/8DX, DC24V, 0.5A
<b>Digital outputs</b>			
Number of digital outputs	8	16	8; can also be parameterized individually as DI
Short-circuit protection	Yes	Yes	Yes
• Response threshold, typ.	1 A	1 A	1 A
Limitation of inductive shutdown voltage to	L+ (-53 V)	L+ (-48 V)	L+ (-54 V)
Controlling a digital input	Yes	Yes	Yes
<b>Switching capacity of the outputs</b>			
• on lamp load, max.	5 W	5 W	5 W
<b>Load resistance range</b>			
• lower limit	48 Ω	48 Ω	48 Ω
• upper limit	4 kΩ	4 kΩ	4 kΩ
<b>Output voltage</b>			
• for signal "1", min.	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-1.5 V)
<b>Output current</b>			
• for signal "1" rated value	0.5 A	0.5 A	0.5 A
• for signal "1" permissible range, min.	5 mA	5 mA	5 mA
• for signal "1" permissible range, 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
<b>Output delay with resistive load</b>			
• "0" to "1", max.	100 μs	100 μs	350 μs
• "1" to "0", max.	500 μs	500 μs	500 μs
<b>Parallel switching of two outputs</b>			
• for uprating	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
<b>Switching frequency</b>			
• 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
<b>Total current of the outputs (per group)</b>			
<b>horizontal installation</b>			
- up to 40 °C, max.	4 A	4 A	4 A
- up to 60 °C, max.	4 A	3 A	3 A
<b>vertical installation</b>			
- up to 40 °C, max.	4 A	2 A	2 A
<b>Cable length</b>			
• shielded, max.	1 000 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	600 m
<b>Encoder</b>			
<b>Connectable encoders</b>			
• 2-wire sensor	Yes	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	2 mA	1.5 mA	1.5 mA



## Technical specifications (continued)

Article number	6ES7323-1BH01-0AA0 SM323, 8DI/8DQ, DC24V, 0.5A	6ES7323-1BL00-0AA0 SM323, 16DI/DQ, DC24V, 0.5A	6ES7327-1BH00-0AB0 SM327, 8DI/8DX, DC24V, 0.5A
<b>Isochronous mode</b>			
Isochronous operation (application synchronized up to terminal)	No	No	No
<b>Interrupts/diagnostics/status information</b>			
Alarms	No	No	No
Diagnostics function	No	No	No
<b>Diagnostics indication LED</b>			
• Status indicator digital input (green)	Yes	Yes	Yes
• Status indicator digital output (green)	Yes	Yes	Yes
<b>Potential separation</b>			
<b>Potential separation digital inputs</b>			
• between the channels	Yes	Yes	No
• between the channels, in groups of	8	16	
• between the channels and backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
<b>Potential separation digital outputs</b>			
• between the channels	Yes	Yes	No
• between the channels, in groups of	8	8	
• between the channels and backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
<b>Connection method</b>			
required front connector	20-pin	40-pin	20-pin
<b>Dimensions</b>			
Width	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm
<b>Weights</b>			
Weight, approx.	220 g	260 g	200 g

# SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

## SM 323/SM 327 digital input/output modules

### Ordering data

### Article No.

### Article No.

#### SM 323 digital input/output modules

incl. labeling strips, bus connector

8 inputs, 8 outputs

6ES7323-1BH01-0AA0

16 inputs, 16 outputs

6ES7323-1BL00-0AA0

#### SM 327 digital input/output modules

incl. labeling strips, bus connector

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

6ES7327-1BH00-0AB0

#### Front connector

20-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AJ00-0AA0

6ES7392-1AJ00-1AB0

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BJ00-0AA0

6ES7392-1BJ00-1AB0

40-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AM00-0AA0

6ES7392-1AM00-1AB0

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0

6ES7392-1BM01-1AB0

#### Front door, elevated design

e.g. for 32 channel modules;  
enables connection of  
1.3 mm<sup>2</sup>/16 AWG wires

6ES7328-0AA00-7AA0

#### SIMATIC TOP connect

see page 5/251

#### Bus connectors

1 unit (spare part)

6ES7390-0AA00-0AA0

#### Labeling strips

10 units (spare part)

for modules with 20-pin front  
connector

6ES7392-2XX00-0AA0

for modules with 40-pin front  
connector

6ES7392-2XX10-0AA0

#### Label cover

10 units (spare part)

for modules with 20-pin front  
connector

6ES7392-2XY00-0AA0

for modules with 40-pin front  
connector

6ES7392-2XY10-0AA0

#### Labeling sheets for machine inscription

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

Petrol

6ES7392-2AX00-0AA0

Light beige

6ES7392-2BX00-0AA0

Yellow

6ES7392-2CX00-0AA0

Red

6ES7392-2DX00-0AA0

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

Petrol

6ES7392-2AX10-0AA0

Light beige

6ES7392-2BX10-0AA0

Yellow

6ES7392-2CX10-0AA0

Red

6ES7392-2DX10-0AA0

#### SIMATIC Manual Collection

Electronic manuals on DVD,  
multilingual:  
LOGO!, SIMADYN, SIMATIC bus  
components, SIMATIC C7,  
SIMATIC Distributed I/O,  
SIMATIC HMI, SIMATIC Sensors,  
SIMATIC NET, SIMATIC PC-based  
Automation, SIMATIC PCS 7,  
SIMATIC PG/PC, SIMATIC S7,  
SIMATIC Software, SIMATIC TDC

6ES7998-8XC01-8YE0

#### SIMATIC Manual Collection update service for 1 year

Current "Manual Collection" DVD  
and the three subsequent updates

6ES7998-8XC01-8YE2

## Overview



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

### Note:

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

## Technical specifications

Article number	6AG1321-1BH02-2AA0	6AG1321-1BL00-2AA0	6AG1321-1CH20-2AA0	6AG1321-1FF01-2AA0	6AG1321-1FF10-7AA0
Based on	6ES7321-1BH02-0AA0	6ES7321-1BL00-0AA0	6ES7321-1CH20-0AA0	6ES7321-1FF01-0AA0	6ES7321-1FF10-0AA0
	SIPLUS SM321 16DI/24VDC	SIPLUS SM321 32DI/24VDC	SIPLUS SM 321 16DI/ DC 48-125 V	SIPLUS S7-300 SM321 8DI/120/230VAC	SIPLUS S7-300 SM321 8 DI
<b>Ambient conditions</b>					
<b>Ambient temperature during operation</b>					
• min.	-40 °C; = Tmin	-40 °C; = Tmin	-25 °C	-40 °C; = Tmin	-25 °C
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ ATEX/FM use applies	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ ATEX/FM use applies	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ ATEX/FM use applies	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
<b>Ambient temperature during storage/transportation</b>					
• min.	-40 °C	-40 °C	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C	70 °C	70 °C
<b>Altitude during operation relating to sea level</b>					
• Installation altitude above sea level, max.	5 000 m	5 000 m	2 000 m	2 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>					
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

# SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 digital modules

## SIPLUS S7-300 SM 321

### Technical specifications (continued)

Article number	6AG1321-1BH02-2AA0	6AG1321-1BL00-2AA0	6AG1321-1CH20-2AA0	6AG1321-1FF01-2AA0	6AG1321-1FF10-7AA0
Based on	6ES7321-1BH02-0AA0	6ES7321-1BL00-0AA0	6ES7321-1CH20-0AA0	6ES7321-1FF01-0AA0	6ES7321-1FF10-0AA0
	SIPLUS SM321 16DI/24VDC	SIPLUS SM321 32DI/24VDC	SIPLUS SM 321 16DI/ DC 48-125 V	SIPLUS S7-300 SM321 8DI/120/230VAC	SIPLUS S7-300 SM321 8 DI
<b>Resistance</b>					
<b>Use in stationary industrial systems</b>					
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>					
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *
<b>Use on ships/at sea</b>					
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>					
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

## Technical specifications (continued)

Article number	6AG1321-1FH00-7AA0 6ES7321-1FH00-0AA0 SIPLUS S7-300 SM321 16DI	6AG1321-7BH01-2AB0 6ES7321-7BH01-0AB0 SIPLUS SM321 16DI/24VDC	6AG1321-7TH00-4AB0 6ES7321-7TH00-0AB0 SIPLUS PCS 7 SM321 16DI
<b>Ambient conditions</b>			
<b>Ambient temperature during operation</b>			
• min.	-40 °C; = Tmin	-25 °C	0 °C
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	60 °C
• At cold restart, min.			0 °C
<b>Ambient temperature during storage/transportation</b>			
• min.	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C
<b>Altitude during operation relating to sea level</b>			
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>			
<b>Use in stationary industrial systems</b>			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>			
- to biologically active substances according to EN 60721-3-5		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	
- to chemically active substances according to EN 60721-3-5		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	
- to mechanically active substances according to EN 60721-3-5		Yes; Class 5S3 incl. sand, dust; *	
<b>Use on ships/at sea</b>			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>			
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

**SIMATIC S7-300 Advanced Controllers**

I/O modules

SIPLUS S7-300 digital modules

**SIPLUS S7-300 SM 321****Ordering data****Article No.****Article No.****SIPLUS S7-300 SM 321 digital input modules***For industrial applications with extended ambient conditions*Extended temperature range and exposure to media

16 inputs, 24 V DC

**6AG1321-1BH02-2AA0**

32 inputs, 24 V DC

**6AG1321-1BL00-2AA0**

16 inputs, 48 to 120 V DC

**6AG1321-1CH20-2AA0**

8 inputs, 120/230 V AC

**6AG1321-1FF01-2AA0**

8 inputs, 120/230 V AC, single root

**6AG1321-1FF10-7AA0**

16 inputs, 120/230 V AC

**6AG1321-1FH00-7AA0**

16 inputs, 24 V DC, diagnostics-capable

**6AG1321-7BH01-2AB0**Exposure to media

16 inputs, NAMUR, redundant design possible

**6AG1321-7TH00-4AB0***For rolling stock railway applications*Conforms to EN 50155

16 inputs, 24 V DC

**6AG1321-1BH02-2AA0**

32 inputs, 24 V DC

**6AG1321-1BL00-2AA0**

16 inputs, 48 to 120 V DC

**6AG1321-1CH20-2AA0**

8 inputs, 120/230 V AC

**6AG1321-1FF01-2AA0**

16 inputs, 24 V DC, diagnostics-capable

**6AG1321-7BH01-2AB0****Accessories***Mandatory***Front connector**

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

**6ES7392-1BM01-0AA0****6ES7392-1BM01-1AB0***Consumables***Front door, elevated design****6ES7328-0AA00-7AA0**E.g. for 32-channel modules; for connecting 1.3 mm<sup>2</sup>/16 AWG conductors; circuit diagram and nameplates in petrol**Bus connectors****6ES7390-0AA00-0AA0**

1 unit (spare part)

**Labeling strips**

10 units; spare part

For modules with 20-pin front connector

**6ES7392-2XX00-0AA0**

For modules with 40-pin front connector

**6ES7392-2XX10-0AA0****Label cover**

10 units; spare part

For modules with 20-pin front connector

**6ES7392-2XY00-0AA0**

For modules with 40-pin front connector

**6ES7392-2XY10-0AA0***Documentation***SIMATIC Manual Collection****6ES7998-8XC01-8YE0**

Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC

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

Current "Manual Collection" DVD and the three subsequent updates

## Overview



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

### Note:

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

## Technical specifications

Article number	6AG1322-1BF01-2XB0	6AG1322-8BF00-2AB0	6AG1322-1BH01-2AA0	6AG1322-1BL00-2AA0
Based on	6ES7322-1BF01-0XB0 SIPLUS S7-300 SM322 8DQ/24VDC 2A	6ES7322-8BF00-0AB0 SIPLUS SM322 8DQ/24VDC	6ES7322-1BH01-0AA0 SIPLUS S7-300 SM322 16DQ/24VDC 0.5A	6ES7322-1BL00-0AA0 SIPLUS S7-300 SM322 32DQ/24VDC 0.5A
<b>Ambient conditions</b>				
<b>Ambient temperature during operation</b>				
• min.	-25 °C	-25 °C; = Tmin	-25 °C	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL use	70 °C; = Tmax; 60 °C @ UL/cUL use	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies
<b>Ambient temperature during storage/transportation</b>				
• min.	-40 °C		-40 °C	-40 °C
• max.	70 °C		70 °C	70 °C
<b>Altitude during operation relating to sea level</b>				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

## SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 digital modules

## SIPLUS S7-300 SM 322

## Technical specifications (continued)

Article number	6AG1322-1BF01-2XB0	6AG1322-8BF00-2AB0	6AG1322-1BH01-2AA0	6AG1322-1BL00-2AA0
Based on	6ES7322-1BF01-0XB0 SIPLUS S7-300 SM322 8DQ/24VDC 2A	6ES7322-8BF00-0AB0 SIPLUS SM322 8DQ/24VDC	6ES7322-1BH01-0AA0 SIPLUS S7-300 SM322 16DQ/24VDC 0.5A	6ES7322-1BL00-0AA0 SIPLUS S7-300 SM322 32DQ/24VDC 0.5A
<b>Resistance</b>				
<b>Use in stationary industrial systems</b>				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>				
- to biologically active substances according to EN 60721-3-5		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5		Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *
<b>Use on ships/at sea</b>				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Article number	6AG1322-1CF00-7AA0	6AG1322-1HF10-2AA0	6AG1322-5HF00-4AB0	6AG1322-1FF01-7AA0
Based on	6ES7322-1CF00-0AA0 SIPLUS SM322 8DQ/48-125VDC	6ES7322-1HF10-0AA0 SIPLUS SM322 8DQ - Relay	6ES7322-5HF00-0AB0 SIPLUS_SM322_8RO	6ES7322-1FF01-0AA0 SIPLUS S7-300 SM322 8DQ/120/230VAC
<b>Ambient conditions</b>				
<b>Ambient temperature during operation</b>				
• min.	-25 °C	-25 °C	0 °C; = Tmin	-40 °C
• max.	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/EM use applies	60 °C	60 °C; = Tmax	70 °C; = Tmax; for use on railway vehicles according to EN 50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/UL hazardous use applies
<b>Ambient temperature during storage/transportation</b>				
• min.	-40 °C	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C	70 °C
<b>Altitude during operation relating to sea level</b>				
• Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
<b>Relative humidity</b>				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)



#### Technical specifications (continued)

Article number	<b>6AG1322-1CF00-7AA0</b>	<b>6AG1322-1HF10-2AA0</b>	<b>6AG1322-5HF00-4AB0</b>	<b>6AG1322-1FF01-7AA0</b>
Based on	<b>6ES7322-1CF00-0AA0</b> SIPLUS SM322 8DQ/48-125VDC	<b>6ES7322-1HF10-0AA0</b> SIPLUS SM322 8DQ - Relay	<b>6ES7322-5HF00-0AB0</b> SIPLUS_SM322_8RO	<b>6ES7322-1FF01-0AA0</b> SIPLUS S7-300 SM322 8DQ/120/230VAC
<b>Resistance</b>				
<b>Use in stationary industrial systems</b>				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>				
- to biologically active substances according to EN 60721-3-5		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request		
- to chemically active substances according to EN 60721-3-5		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *		
- to mechanically active substances according to EN 60721-3-5		Yes; Class 5S3 incl. sand, dust; *		
<b>Use on ships/at sea</b>				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Article number	<b>6AG1322-5FF00-4AB0</b>	<b>6AG1322-1FH00-7AA0</b>	<b>6AG1322-1HH01-2AA0</b>	
Based on	<b>6ES7322-5FF00-0AB0</b> SIPLUS S7-300 SM322 8DQ	<b>6ES7322-1FH00-0AA0</b> SIPLUS S7-300 SM322 16DQ	<b>6ES7322-1HH01-0AA0</b> SIPLUS SM322	
<b>Ambient conditions</b>				
<b>Ambient temperature during operation</b>				
• min.	0 °C; = Tmin	-40 °C; = Tmin	-40 °C	
• max.	60 °C; = Tmax	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	
<b>Ambient temperature during storage/transportation</b>				
• min.	-40 °C	-40 °C	-40 °C	
• max.	70 °C	70 °C	70 °C	
<b>Altitude during operation relating to sea level</b>				
• Installation altitude above sea level, max.	5 000 m	5 000 m	2 000 m	
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	

**SIMATIC S7-300 Advanced Controllers**

I/O modules

SIPLUS S7-300 digital modules

**SIPLUS S7-300 SM 322****Technical specifications** (continued)

Article number	<b>6AG1322-5FF00-4AB0</b>	<b>6AG1322-1FH00-7AA0</b>	<b>6AG1322-1HH01-2AA0</b>
Based on	<b>6ES7322-5FF00-0AB0</b> SIPLUS S7-300 SM322 8DQ	<b>6ES7322-1FH00-0AA0</b> SIPLUS S7-300 SM322 16DQ	<b>6ES7322-1HH01-0AA0</b> SIPLUS SM322
<b>Relative humidity</b>			
<ul style="list-style-type: none"> <li>With condensation, tested in accordance with IEC 60068-2-38, max.</li> </ul>	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>			
<b>Use in stationary industrial systems</b>			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>			
- to biologically active substances according to EN 60721-3-5			Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5			Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5			Yes; Class 5S3 incl. sand, dust; *
<b>Use on ships/at sea</b>			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>			
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data	Article No.	Article No.
<b>SIPLUS S7-300 SM 322 digital output modules</b> <i>For industrial applications with extended ambient conditions</i> <u>Extended temperature range and exposure to media</u> 8 outputs, 24 V DC, 2 A 16 outputs, 24 V DC, 0.5 A 32 outputs, 24 V DC, 0.5 A 8 outputs, 48 to 125 V DC, 1.5 A 8 outputs, 120/230 V AC, 1 A 16 outputs, 120/230 V AC, 1 A 8 outputs, relay contacts, 5 A 16 outputs, relay contacts, 8 A 8 outputs, 24 V DC, 0.5 A, diagnostics-capable <u>Exposure to media</u> 8 outputs, 120/230 V AC, 2 A 8 outputs, relay contacts, 5 A, with RC filter, overvoltage protection <i>For rolling stock railway applications</i> <u>Conforms to EN 50155</u> 16 outputs, 24 V DC, 0.5 A, high speed 32 outputs, 24 V DC, 0.5 A 8 outputs, relay contacts, 5 A 16 outputs, relay contacts, 8 A 8 outputs, 24 V DC, 0.5 A, diagnostics-capable	<b>6AG1322-1BF01-2XB0</b> <b>6AG1322-1BH01-2AA0</b> <b>6AG1322-1BL00-2AA0</b> <b>6AG1322-1CF00-7AA0</b> <b>6AG1322-1FF01-7AA0</b> <b>6AG1322-1FH00-7AA0</b> <b>6AG1322-1HF10-2AA0</b> <b>6AG1322-1HH01-2AA0</b> <b>6AG1322-8BF00-2AB0</b>  <b>6AG1322-5FF00-4AB0</b> <b>6AG1322-5HF00-4AB0</b>  <b>6AG1322-1BH01-2AA0</b> <b>6AG1322-1BL00-2AA0</b> <b>6AG1322-1HF10-2AA0</b> <b>6AG1322-1HH01-2AA0</b> <b>6AG1322-8BF00-2AB0</b>	<i>Consumables</i> <b>Front door, elevated design</b> E.g. for 32-channel modules; for connecting 1.3 mm <sup>2</sup> /16 AWG conductors; circuit diagram and nameplates in petrol <b>6ES7328-0AA00-7AA0</b> <b>Bus connectors</b> 1 unit (spare part) <b>6ES7390-0AA00-0AA0</b> <b>Labeling strips</b> 10 units; spare part For modules with 20-pin front connector <b>6ES7392-2XX00-0AA0</b> For modules with 40-pin front connector <b>6ES7392-2XX10-0AA0</b> <b>Label cover</b> 10 units; spare part For modules with 20-pin front connector <b>6ES7392-2XY00-0AA0</b> For modules with 40-pin front connector <b>6ES7392-2XY10-0AA0</b> <i>Documentation</i> <b>SIMATIC Manual Collection</b> Electronic manuals on DVD, multi-language: 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 <b>6ES7998-8XC01-8YE0</b> <b>SIMATIC Manual Collection update service for 1 year</b> Current "Manual Collection" DVD and the three subsequent updates <b>6ES7998-8XC01-8YE2</b>
<b>Accessories</b> <i>Mandatory</i> <b>Front connector</b> 20-pin, with spring-loaded contacts <ul style="list-style-type: none"> <li>• 1 unit</li> <li>• 100 units</li> </ul> 40-pin, with spring-loaded contacts <ul style="list-style-type: none"> <li>• 1 unit</li> <li>• 100 units</li> </ul>	<b>6ES7392-1BJ00-0AA0</b> <b>6ES7392-1BJ00-1AB0</b>  <b>6ES7392-1BM01-0AA0</b> <b>6ES7392-1BM01-1AB0</b>	

**SIMATIC S7-300 Advanced Controllers**

I/O modules

SIPLUS S7-300 digital modules

**SIPLUS S7-300 SM 323****Overview**

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

Note:

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

**Technical specifications**

Article number	<b>6AG1323-1BH01-2AA0</b>
Based on	<b>6ES7323-1BH01-0AA0</b> SIPLUS SM323 8DI/8DQ
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• min.	-40 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
<b>Altitude during operation relating to sea level</b>	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>	
<b>Use in stationary industrial systems</b>	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
<b>Use on ships/at sea</b>	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data	Article No.	Ordering data	Article No.
<b>SIPLUS S7-300 SM 323 digital input/output module</b> <i>For industrial applications with extended ambient conditions</i> <u>Extended temperature range and exposure to media</u> 8 inputs, 8 outputs <i>For rolling stock railway applications</i> <u>Conforms to EN 50155</u> 8 inputs, 8 outputs	<b>6AG1323-1BH01-2AA0</b>  <b>6AG1323-1BH01-2AA0</b>	<b>Labeling strips</b> 10 units; spare part For modules with 20-pin front connector For modules with 40-pin front connector	<b>6ES7392-2XX00-0AA0</b>  <b>6ES7392-2XX10-0AA0</b>
<b>Accessories</b> <i>Mandatory</i> <b>Front connector</b> 20-pin, with spring-loaded contacts <ul style="list-style-type: none"> <li>• 1 unit</li> <li>• 100 units</li> </ul> 40-pin, with spring-loaded contacts <ul style="list-style-type: none"> <li>• 1 unit</li> <li>• 100 units</li> </ul>	<b>6ES7392-1BJ00-0AA0</b> <b>6ES7392-1BJ00-1AB0</b>  <b>6ES7392-1BM01-0AA0</b> <b>6ES7392-1BM01-1AB0</b>	<b>Label cover</b> 10 units; spare part For modules with 20-pin front connector For modules with 40-pin front connector	<b>6ES7392-2XY00-0AA0</b>  <b>6ES7392-2XY10-0AA0</b>
<i>Consumables</i> <b>Front door, elevated design</b> E.g. for 32-channel modules; for connecting 1.3 mm <sup>2</sup> /16 AWG conductors; circuit diagram and nameplates in petrol	<b>6ES7328-0AA00-7AA0</b>	<i>Documentation</i> <b>SIMATIC Manual Collection</b> Electronic manuals on DVD, multi-language: 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	<b>6ES7998-8XC01-8YE0</b>
<b>Bus connectors</b> 1 unit (spare part)	<b>6ES7390-0AA00-0AA0</b>	<b>SIMATIC Manual Collection update service for 1 year</b> Current "Manual Collection" DVD and the three subsequent updates	<b>6ES7998-8XC01-8YE2</b>

## SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

### SM 331 analog input modules

#### Overview



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

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#### Technical specifications

Article number	6ES7331-7KF02-0AB0 SM331, 8AI, 9/12/14Bit	6ES7331-7HF01-0AB0 SM331, 8AI, 14BIT, 0,052MS/channel	6ES7331-1KF02-0AB0 SM331, 8AI, 13bit	6ES7331-7KB02-0AB0 SM331, 2AI, 9/12/14Bit
<b>Supply voltage</b>				
<b>Load voltage L+</b>				
• Rated value (DC)	24 V	24 V		24 V
<b>Input current</b>				
from load voltage L+ (without load), max.	30 mA	50 mA		30 mA
from backplane bus 5 V DC, max.	50 mA	100 mA	90 mA	50 mA
<b>Power loss</b>				
Power loss, typ.	1 W	1.5 W	0.4 W	1 W
<b>Analog inputs</b>				
Number of analog inputs	8	8	8	2
• For resistance measurement	4		8	1
permissible input voltage for voltage input (destruction limit), max.	20 V; continuous; 75 V for max. 1 s (mark to space ratio 1:20)	20 V; 20 V DC permanent, 75 V DC for max. 1 s (duty factor 1:20)	30 V; 12 V continuous, 30 V for max. 1 s	20 V; continuous; 75 V for max. 1 s (mark to space ratio 1:20)
permissible input current for current input (destruction limit), max.	40 mA	40 mA	40 mA	40 mA
<b>Input ranges (rated values), voltages</b>				
• 0 to +10 V	No	No	Yes	No
• 1 V to 5 V	Yes	Yes	Yes	Yes
• 1 V to 10 V	No		No	No
• -1 V to +1 V	Yes	Yes	Yes	Yes
• -10 V to +10 V	Yes	Yes	Yes	Yes
• -2.5 V to +2.5 V	Yes		No	Yes
• -250 mV to +250 mV	Yes		No	Yes
• -5 V to +5 V	Yes	Yes	Yes	Yes
• -50 mV to +50 mV	No		Yes	No
• -500 mV to +500 mV	Yes	Yes	Yes	Yes
• -80 mV to +80 mV	Yes	Yes	No	Yes
<b>Input ranges (rated values), currents</b>				
• 0 to 20 mA	Yes	Yes	Yes	Yes
• -10 mA to +10 mA	Yes		No	Yes
• -20 mA to +20 mA	Yes	Yes	Yes	Yes
• -3.2 mA to +3.2 mA	Yes		No	Yes
• 4 mA to 20 mA	Yes	Yes	Yes	Yes

## Technical specifications (continued)

Article number	6ES7331-7KF02-0AB0 SM331, 8AI, 9/12/14Bit	6ES7331-7HF01-0AB0 SM331, 8AI, 14BIT, 0,052MS/channel	6ES7331-1KF02-0AB0 SM331, 8AI, 13bit	6ES7331-7KB02-0AB0 SM331, 2AI, 9/12/14Bit
<b>Input ranges (rated values), thermocouples</b>				
• Type B	No		No	No
• Type C	No		No	
• Type E	Yes		No	Yes
• Type J	Yes		No	Yes
• Type K	Yes		No	Yes
• Type L	Yes		No	No
• Type N	Yes		No	Yes
• Type R	No		No	No
• Type S	No		No	No
• Type T	No		No	No
• Type U	No		No	No
• Type TXK/TXK(L) to GOST	No		No	No
<b>Input ranges (rated values), resistance thermometer</b>				
• 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
<b>Input ranges (rated values), resistors</b>				
• 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
<b>Thermocouple (TC)</b>				
<b>Temperature compensation</b>				
- parameterizable	Yes		No	Yes
- internal temperature compensation	Yes		No	Yes
- external temperature compensation with compensations socket	Yes		No	Yes
- for definable comparison point temperature	Yes			Yes
<b>Characteristic linearization</b>				
• parameterizable	Yes		Yes	Yes
- for thermocouples	Type E, J, K, L, N		No	Type E, J, K, L, N
- for resistance thermometer	Pt100 (standard, climatic range), Ni100 (standard, climatic range)		yes; Pt100 standard/air con.; Ni100 standard/air con.; Ni1000 standard/air con.; LG-Ni1000 standard/air con.	Pt100 (standard, climatic range), Ni100 (standard, climatic range)
<b>Cable length</b>				
• 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

## SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

## SM 331 analog input modules

## Technical specifications (continued)

Article number	6ES7331-7KF02-0AB0 SM331, 8AI, 9/12/14Bit	6ES7331-7HF01-0AB0 SM331, 8AI, 14BIT, 0,052MS/channel	6ES7331-1KF02-0AB0 SM331, 8AI, 13bit	6ES7331-7KB02-0AB0 SM331, 2AI, 9/12/14Bit
<b>Analog value generation for the inputs</b>				
Measurement principle	integrating	Actual value encryption	integrating	integrating
<b>Integration and conversion time/resolution per channel</b>				
<ul style="list-style-type: none"> <li>Resolution with overrange (bit including sign), max.</li> </ul>	15 bit; Unipolar: 9/12/12/14 bit; bipolar: 9 bit + sign/ 12 bit + sign/12 bit + sign/ 14 bit + sign	14 bit; Unipolar: 14 bit; bipolar: 13 bit + sign	13 bit	15 bit; Unipolar: 9/12/12/14 bit; bipolar: 9 bit + sign/ 12 bit + sign/12 bit + sign/ 14 bit + sign
<ul style="list-style-type: none"> <li>Integration time, parameterizable</li> </ul>	Yes; 2,5 / 16,67 / 20 / 100 ms	Yes	Yes; 60 / 50 ms	Yes; 2,5 / 16,67 / 20 / 100 ms
<ul style="list-style-type: none"> <li>Basic conversion time (ms)</li> </ul>	3 / 17 / 22 / 102 ms	52 µs per channel	66 / 55 ms	3 / 17 / 22 / 102 ms
<ul style="list-style-type: none"> <li>Interference voltage suppression for interference frequency f1 in Hz</li> </ul>	400 / 60 / 50 / 10 Hz	none / 400 / 60 / 50 Hz	50 / 60 Hz	400 / 60 / 50 / 10 Hz
<b>Encoder</b>				
<b>Connection of signal encoders</b>				
<ul style="list-style-type: none"> <li>for current measurement as 2-wire transducer</li> </ul>	Yes	Yes	Yes; with external supply	Yes
<ul style="list-style-type: none"> <li>for current measurement as 4-wire transducer</li> </ul>	Yes	Yes	Yes	Yes
<ul style="list-style-type: none"> <li>for resistance measurement with two-wire connection</li> </ul>	Yes		Yes	Yes
<ul style="list-style-type: none"> <li>for resistance measurement with three-wire connection</li> </ul>	Yes		Yes	Yes
<ul style="list-style-type: none"> <li>for resistance measurement with four-wire connection</li> </ul>	Yes		Yes	Yes
<b>Errors/accuracies</b>				
<b>Operational error limit in overall temperature range</b>				
<ul style="list-style-type: none"> <li>Voltage, relative to input range, (+/-)</li> </ul>	1 %; ±1% (80 mV); ±0.6% (250 mV to 1 000 mV); ±0.8% (2.5 V to 10 V)	0.4 %	0.6 %; ±0.6 % (±5 V, 10 V, 1 to 5 V, 0 to 10 V); ±0.5 % (±50 mV, 500 mV, 1 V)	1 %; ±1% (80 mV); ±0.6% (250 mV to 1 000 mV); ±0.8% (2.5 V to 10 V)
<ul style="list-style-type: none"> <li>Current, relative to input range, (+/-)</li> </ul>	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
<ul style="list-style-type: none"> <li>Resistance, relative to input range, (+/-)</li> </ul>	0.7 %; 150, 300, 600 Ohm		0.5 %; 0 to 6 kohms, 0 to 600 kohms	0.7 %; 150, 300, 600 Ohm
<ul style="list-style-type: none"> <li>Resistance thermometer, relative to input range, (+/-)</li> </ul>	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)
<b>Basic error limit (operational limit at 25 °C)</b>				
<ul style="list-style-type: none"> <li>Voltage, relative to input range, (+/-)</li> </ul>	0.6 %; ±0.4 % (250 mV to 1 000 mV); ±0.6 % (2.5 mV to 10 mV); ±0.7 % (80 mV)	0.25 %	0.4 %; 0.4% (±5 V, 10 V, 1 to 5 V, 0 to 10 V); 0.3% (±50 mV, 500 mV, 1 V)	0.6 %; ±0.6% (80 mV, 2.5 V to 10 V); ±0.4% (250 mV to 1 000 mV)
<ul style="list-style-type: none"> <li>Current, relative to input range, (+/-)</li> </ul>	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
<ul style="list-style-type: none"> <li>Resistance, relative to input range, (+/-)</li> </ul>	0.5 %; 150, 300, 600 Ohm		0.3 %; 0 to 6 kohms, 0 to 600 kohms	0.5 %; 150, 300, 600 Ohm
<ul style="list-style-type: none"> <li>Resistance thermometer, relative to input range, (+/-)</li> </ul>	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)
<b>Interrupts/diagnostics/status information</b>				
Diagnostics function	Yes; Parameterizable	Yes	No	Yes; Parameterizable
<b>Alarms</b>				
<ul style="list-style-type: none"> <li>Diagnostic alarm</li> </ul>	Yes; Parameterizable, channels 0 and 2	Yes; Parameterizable	No	Yes
<ul style="list-style-type: none"> <li>Limit value alarm</li> </ul>	Yes; Parameterizable	Yes; Parameterizable, channels 0 and 2	No	Yes; Parameterizable, channel 0
<b>Diagnostic messages</b>				
<ul style="list-style-type: none"> <li>Diagnostic information readable</li> </ul>	Yes	Yes	No	Yes



## Technical specifications (continued)

Article number	6ES7331-7KF02-0AB0 SM331, 8AI, 9/12/14Bit	6ES7331-7HF01-0AB0 SM331, 8AI, 14BIT, 0,052MS/channel	6ES7331-1KF02-0AB0 SM331, 8AI, 13bit	6ES7331-7KB02-0AB0 SM331, 2AI, 9/12/14Bit	
<b>Potential separation</b>					
<b>Potential separation analog inputs</b>					
• between the channels and backplane bus	Yes	Yes	Yes	Yes	
<b>Connection method</b>					
required front connector	20-pin	20-pin	40-pin	20-pin	
<b>Dimensions</b>					
Width	40 mm	40 mm	40 mm	40 mm	
Height	125 mm	125 mm	125 mm	125 mm	
Depth	117 mm	117 mm	117 mm	120 mm	
<b>Weights</b>					
Weight, approx.	250 g	230 g	250 g	250 g	
Article number	6ES7331-7PF01-0AB0 SM331, 8AI, resistor, PT100/200/1000, .	6ES7331-7PF11-0AB0 SM331, 8AI, 16BIT, Thermocouples	6ES7331-7PE10-0AB0 SM331, 6AI, 16bit, Thermocouples	6ES7331-7NF00-0AB0 SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA	6ES7331-7NF10-0AB0 SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA
<b>Supply voltage</b>					
<b>Load voltage L+</b>					
• Rated value (DC)	24 V	24 V	24 V	24 V	
<b>Input current</b>					
from load voltage L+ (without load), max.	240 mA	240 mA	150 mA	200 mA	
from backplane bus 5 V DC, max.	100 mA	100 mA	100 mA	130 mA	100 mA
<b>Power loss</b>					
Power loss, typ.	4.6 W	3 W	2.2 W	0.6 W	3 W
<b>Analog inputs</b>					
Number of analog inputs	8	8	6	8	8
• For resistance measurement	8				
permissible input voltage for voltage input (destruction limit), max.	75 V; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20)	75 V; 20 V DC permanent, 75 V DC for max. 1 s (duty factor 1:20)	35 V; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20)	50 V; Permanent	75 V; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20)
permissible input current for current input (destruction limit), max.				32 mA	40 mA
<b>Input ranges (rated values), voltages</b>					
• 0 to +10 V	No	No	No	No	No
• 1 V to 5 V	No	No	No	Yes	Yes
• 1 V to 10 V	No	No	No	No	No
• -1 V to +1 V	No	No	Yes	No	No
• -10 V to +10 V	No	No	No	Yes	Yes
• -2.5 V to +2.5 V	No	No	No	No	No
• -250 mV to +250 mV	No	No	Yes	No	No
• -5 V to +5 V	No	No	No	Yes	Yes
• -50 mV to +50 mV	No	No	Yes	No	No
• -500 mV to +500 mV	No	No	Yes	No	No
• -80 mV to +80 mV	No	No	Yes	No	No
<b>Input ranges (rated values), currents</b>					
• 0 to 20 mA	No	No	No	Yes	Yes
• -10 mA to +10 mA	No	No	No	No	No
• -20 mA to +20 mA	No	No	No	Yes	Yes
• -3.2 mA to +3.2 mA	No	No	No	No	No
• 4 mA to 20 mA	No	No	No	Yes	Yes

## SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

## SM 331 analog input modules

## Technical specifications (continued)

Article number	6ES7331-7PF01-0AB0 SM331, 8AI, resistor, PT100/200/1000, .	6ES7331-7PF11-0AB0 SM331, 8AI, 16BIT, Thermocouples	6ES7331-7PE10-0AB0 SM331, 6AI, 16bit, Thermocouples	6ES7331-7NF00-0AB0 SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA	6ES7331-7NF10-0AB0 SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA
<b>Input ranges (rated values), thermocouples</b>					
• Type B	No	Yes	Yes	No	No
• Type C	No	Yes	Yes	No	No
• Type E	No	Yes	Yes	No	No
• Type J	No	Yes	Yes	No	No
• Type K	No	Yes	Yes	No	No
• Type L	No	Yes	Yes	No	No
• Type N	No	Yes	Yes	No	No
• Type R	No	Yes	Yes	No	No
• Type S	No	Yes	Yes	No	No
• Type T	No	Yes	Yes	No	No
• Type U	No	Yes	Yes	No	No
• Type TXK/TXK(L) to GOST	No	Yes	Yes	No	No
<b>Input ranges (rated values), resistance thermometer</b>					
• 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
<b>Input ranges (rated values), resistors</b>					
• 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
<b>Thermocouple (TC)</b>					
<b>Temperature compensation</b>					
- parameterizable		Yes	Yes		
- internal temperature compensation		Yes	Yes		
- external temperature compensation with Pt100		Yes	Yes		
- external temperature compensation with compensations socket		Yes	Yes		
- for definable comparison point temperature		Yes	Yes		
<b>Characteristic linearization</b>					
• parameterizable	Yes	Yes	Yes		
- for thermocouples		Type B, E, J, K, L, N, R, S, T, U, C	Type B, E, J, K, L, N, R, S, T, U, C, TXK, XK(L)		
- for resistance thermometer	Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10; (standard/climate)		No		
<b>Cable length</b>					
• shielded, max.	200 m	100 m	200 m	200 m	200 m

## Technical specifications (continued)

Article number	6ES7331-7PF01-0AB0	6ES7331-7PF11-0AB0	6ES7331-7PE10-0AB0	6ES7331-7NF00-0AB0	6ES7331-7NF10-0AB0
	SM331, 8AI, resistor, PT100/200/1000, .	SM331, 8AI, 16BIT, Thermocouples	SM331, 6AI, 16bit, Thermocouples	SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA	SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA
<b>Analog value generation for the inputs</b>					
Measurement principle	integrating	integrating	integrating	integrating	integrating
<b>Integration and conversion time/ resolution per channel</b>					
• Resolution with overrange (bit including sign), max.	16 bit; Two's complement	16 bit; Two's complement	16 bit; Two's complement	16 bit; Unipolar: 15/15/15/15 bit; bipolar: 15 bit + sign/ 15 bit + sign/ 15 bit + sign/ 15 bit + sign	16 bit; Unipolar: 15/15/15/15 bit; bipolar: 15 bit + sign/ 15 bit + sign/ 15 bit + sign/ 15 bit + sign
• Integration time, parameterizable	Yes	Yes	Yes	Yes; 10/ 16.67/ 20/ 100 ms	Yes; 23 / 72 / 83 / 95 ms
• Basic conversion time (ms)	up to 4 channels: 10 ms per module, over 5 channels: 190 ms per module, 8 channels: 80 ms	Up to 4 channels: 10 ms per module, 5 channels upwards: 190 ms per module	30 / 50 / 60 / 300 ms		10 ms (4-channel mode); 95/83/72/23 ms (8-channel mode)
• Integration time (ms)			10/ 16.67/ 20/ 100 ms		
• Interference voltage suppression for interference frequency f1 in Hz	400 / 60 / 50 Hz	400 / 60 / 50 Hz	10 / 50 / 60 / 400 Hz	400 / 60 / 50 / 10 Hz	400 / 60 / 50 Hz, combinations of 400, 60, 50 Hz
<b>Encoder</b>					
<b>Connection of signal encoders</b>					
• for current measurement as 2-wire transducer				Yes; with external transmitter; possible with separate supply for transmitter	Yes; with external transmitter, current supply; possible with separate supply for transmitter
• for current measurement as 4-wire transducer				Yes	Yes
• for resistance measurement with two-wire connection	Yes; without resistance correction				
• for resistance measurement with three-wire connection	Yes				
• for resistance measurement with four-wire connection	Yes				
<b>Errors/accuracies</b>					
<b>Operational error limit in overall temperature range</b>					
• Voltage, relative to input range, (+/-)		±1 K	Operating error at 0 ... 60 °C: ±0.12% @ ±25 mV, ±0.08% @ ±50 mV, ±0.6% @ ±80 mV, ±0.05% @ ±250 mV, ±0.05% @ 500 mV, ±0.05% @ ±1 V	0.1 %; At $U_{cm} = 0$ V or ±0.7 % at $U_{cm} = 50$ V	0.1 %
• Current, relative to input range, (+/-)				0.3 %; At $U_{cm} = 0$ V or ±0.9 % at $U_{cm} = 50$ V	0.1 %
• Resistance, relative to input range, (+/-)	0.1 %				
• Resistance thermometer, relative to input range, (+/-)	±1 K				
<b>Basic error limit (operational limit at 25 °C)</b>					
• Voltage, relative to input range, (+/-)			See manual for details	0.05 %	0.05 %
• Current, relative to input range, (+/-)				0.05 %	0.05 %
• Resistance, relative to input range, (+/-)	0.05 %				
• Resistance thermometer, relative to input range, (+/-)	±0.5 K				

**SIMATIC S7-300 Advanced Controllers**

I/O modules

Analog modules

**SM 331 analog input modules****Technical specifications (continued)**

Article number	<b>6ES7331-7PF01-0AB0</b> SM331, 8AI, resistor, PT100/200/1000, .	<b>6ES7331-7PF11-0AB0</b> SM331, 8AI, 16BIT, Thermocouples	<b>6ES7331-7PE10-0AB0</b> SM331, 6AI, 16bit, Thermocouples	<b>6ES7331-7NF00-0AB0</b> SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA	<b>6ES7331-7NF10-0AB0</b> SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA
<b>Interrupts/diagnostics/status information</b>					
Diagnostics function	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable
<b>Alarms</b>					
• Diagnostic alarm	Yes; Parameterizable per group	Yes; Parameterizable per group	Yes; channel by channel	Yes; Parameterizable	Yes; Parameterizable
• Limit value alarm	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable, channels 0 and 2	Yes; Parameterizable all channels (end of cycle interrupt is also supported across modules)
• Hardware interrupt	Yes; Parameterizable, channels 0 to 7	Yes; Parameterizable, channels 0 to 7	Yes; Parameterizable		Yes; Parameterizable, channels 0 to 7 (on exceeding limit value), at end of cycle
<b>Diagnostic messages</b>					
• Diagnostic information readable	Yes	Yes	Yes	Yes	Yes
<b>Potential separation</b>					
<b>Potential separation analog inputs</b>					
• between the channels and backplane bus	Yes	Yes	Yes	Yes	Yes
<b>Connection method</b>					
required front connector	40-pin	40-pin	40-pin	40-pin	40-pin
<b>Dimensions</b>					
Width	40 mm	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm	117 mm	117 mm
<b>Weights</b>					
Weight, approx.	272 g	272 g	272 g	272 g	272 g

Ordering data	Article No.	Article No.
<b>SM 331 analog input modules</b>		
Including labeling strips, bus connector, measuring range modules		
8 inputs, 13-bit resolution	6ES7331-1KF02-0AB0	
8 inputs, resolution 9/12/14 bits	6ES7331-7KF02-0AB0	
2 inputs, resolution 9/12/14 bits	6ES7331-7KB02-0AB0	
8 inputs, enhanced resolution 16 bits	6ES7331-7NF00-0AB0	
8 inputs, enhanced resolution 16 bits, 4-channel mode	6ES7331-7NF10-0AB0	
8 inputs, resolution 14 bits, for isochronous mode	6ES7331-7HF01-0AB0	
6 inputs, for thermal elements, resolution 16 bits	6ES7331-7PE10-0AB0	
8 inputs, for thermal resistors	6ES7331-7PF01-0AB0	
8 inputs, for thermoelements	6ES7331-7PF11-0AB0	
<b>Measuring range module for analog inputs</b>	6ES7974-0AA00-0AA0	
1 module for 2 analog inputs; 2 units (spare part)		
<b>Front connector</b>		
20-pin, with screw contacts		
• 1 unit	6ES7392-1AJ00-0AA0	
• 100 units	6ES7392-1AJ00-1AB0	
20-pin, with spring-loaded contacts		
• 1 unit	6ES7392-1BJ00-0AA0	
• 100 units	6ES7392-1BJ00-1AB0	
40-pin, with screw contacts		
• 1 unit	6ES7392-1AM00-0AA0	
• 100 units	6ES7392-1AM00-1AB0	
40-pin, with spring-loaded contacts		
• 1 unit	6ES7392-1BM01-0AA0	
• 100 units	6ES7392-1BM01-1AB0	
<b>Front door, elevated design</b>	6ES7328-0AA00-7AA0	
e.g. for 32-channel modules; for connecting 1.3 mm <sup>2</sup> /16 AWG wires		
<b>SIMATIC TOP connect</b>	see page 5/251	
<b>Bus connectors</b>	6ES7390-0AA00-0AA0	
1 unit (spare part)		
<b>Shield connection element</b>	6ES7390-5AA00-0AA0	
80 mm wide, with 2 rows for 4 shield connection clamps each		
		<b>Shield connection clamps</b>
		2 units
		For 2 cables with 2 mm to 6 mm diameter
		6ES7390-5AB00-0AA0
		For 1 cable with 3 mm to 8 mm diameter
		6ES7390-5BA00-0AA0
		For 1 cable with 4 mm to 13 mm diameter
		6ES7390-5CA00-0AA0
		<b>Label cover</b>
		10 units (spare part), for modules with 20-pin front connector
		6ES7392-2XY00-0AA0
		<b>Labeling strips</b>
		10 units (spare part), for modules with 20-pin front connector
		6ES7392-2XX00-0AA0
		<b>Labeling sheets for machine labeling</b>
		For modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units
		Petrol
		6ES7392-2AX00-0AA0
		Light beige
		6ES7392-2BX00-0AA0
		Yellow
		6ES7392-2CX00-0AA0
		Red
		6ES7392-2DX00-0AA0
		For modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units
		Petrol
		6ES7392-2AX10-0AA0
		Light beige
		6ES7392-2BX10-0AA0
		Yellow
		6ES7392-2CX10-0AA0
		Red
		6ES7392-2DX10-0AA0
		<b>SIMATIC Manual Collection</b>
		6ES7998-8XC01-8YE0
		Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC
		<b>SIMATIC Manual Collection update service for 1 year</b>
		6ES7998-8XC01-8YE2
		Current "Manual Collection" DVD and the three subsequent updates

## SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

### SM 332 analog output modules

#### Overview



- Analog outputs
- For the connection of analog actuators

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#### Technical specifications

Article number	6ES7332-5HB01-0AB0 SM332, 2AQ, U/I, 11/12Bit	6ES7332-5HD01-0AB0 SM332, 4AQ, U/I, 11/12Bit	6ES7332-5HF00-0AB0 SM332, 8AQ, U/I, 11/12Bit	6ES7332-7ND02-0AB0 SM332, 4AQ, 0-10V, 0-5V,+/-10V,+/-20mA
<b>Supply voltage</b>				
<b>Load voltage L+</b>				
• Rated value (DC)	24 V	24 V	24 V	24 V
<b>Input current</b>				
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
<b>Power loss</b>				
Power loss, typ.	3 W	3 W	6 W	3 W
<b>Analog outputs</b>				
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
<b>Output ranges, voltage</b>				
• 0 to 10 V	Yes	Yes	Yes	Yes
• 1 V to 5 V	Yes	Yes	Yes	Yes
• -10 V to +10 V	Yes	Yes	Yes	Yes
<b>Output ranges, current</b>				
• 0 to 20 mA	Yes	Yes	Yes	Yes
• -20 mA to +20 mA	Yes	Yes	Yes	Yes
• 4 mA to 20 mA	Yes	Yes	Yes	Yes
<b>Load impedance (in rated range of output)</b>				
• with voltage outputs, min.	1 k $\Omega$	1 k $\Omega$	1 k $\Omega$	1 k $\Omega$
• with voltage outputs, capacitive load, max.	1 $\mu$ F	1 $\mu$ F	1 $\mu$ F	1 $\mu$ F
• with current outputs, max.	500 $\Omega$	500 $\Omega$	500 $\Omega$	500 $\Omega$
• with current outputs, inductive load, max.	10 mH	10 mH	10 mH	1 mH
<b>Cable length</b>				
• shielded, max.	200 m	200 m	200 m	200 m

## Technical specifications (continued)

Article number	6ES7332-5HB01-0AB0 SM332, 2AQ, U/I, 11/12Bit	6ES7332-5HD01-0AB0 SM332, 4AQ, U/I, 11/12Bit	6ES7332-5HF00-0AB0 SM332, 8AQ, U/I, 11/12Bit	6ES7332-7ND02-0AB0 SM332, 4AQ, 0-10V, 0-5V,+/-10V,+/-20mA
<b>Analog value generation for the outputs</b>				
<b>Integration and conversion time/ resolution per channel</b>				
• Resolution with overrange (bit including sign), max.	12 bit; $\pm 10$ V, $\pm 20$ mA, 4 mA to 20 mA, 1 V to 5 V: 11 bit + sign; 0 V to 10 V, 0 mA to 20 mA: 12 bit	12 bit; $\pm 10$ V, $\pm 20$ mA, 4 mA to 20 mA, 1 V to 5 V: 11 bit + sign; 0 V to 10 V, 0 mA to 20 mA: 12 bit	12 bit; $\pm 10$ V, $\pm 20$ mA, 4 mA to 20 mA, 1 V to 5 V: 11 bit + sign; 0 V to 10 V, 0 mA to 20 mA: 12 bit	16 bit
• Conversion time (per channel)	0.8 ms	0.8 ms	0.8 ms	200 $\mu$ s; in isochronous mode 640 $\mu$ s
<b>Settling time</b>				
• 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
<b>Errors/accuracies</b>				
<b>Operational error limit in overall temperature range</b>				
• Voltage, relative to output range, (+/-)	0.5 %	0.5 %	0.5 %	0.12 %
• Current, relative to output range, (+/-)	0.6 %	0.6 %	0.6 %	0.18 %
<b>Basic error limit (operational limit at 25 °C)</b>				
• Voltage, relative to output range, (+/-)	0.4 %	0.4 %	0.4 %	0.02 %
• Current, relative to output range, (+/-)	0.5 %	0.5 %	0.5 %	0.02 %
<b>Interrupts/diagnostics/ status information</b>				
Diagnostics function	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable
Substitute values connectable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable
<b>Alarms</b>				
• Diagnostic alarm	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable
<b>Diagnostic messages</b>				
• Diagnostic information readable	Yes	Yes	Yes	Yes
<b>Potential separation</b>				
<b>Potential separation analog outputs</b>				
• between the channels and backplane bus	Yes	Yes	Yes	Yes
<b>Connection method</b>				
required front connector	20-pin	20-pin	40-pin	20-pin
<b>Dimensions</b>				
Width	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm
Depth	117 mm	117 mm	117 mm	117 mm
<b>Weights</b>				
Weight, approx.	220 g	220 g	272 g	220 g

# SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

## SM 332 analog output modules

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Ordering data	Article No.	Ordering data	Article No.
<b>SM 332 analog output modules</b>		<b>Label cover</b>	<b>6ES7392-2XY00-0AA0</b>
Incl. labeling strips, bus connector		10 units (spare part), for modules with 20-pin front connector	
4 outputs, 11/12 bit	<b>6ES7332-5HD01-0AB0</b>	<b>Labeling strips</b>	<b>6ES7392-2XX00-0AA0</b>
4 outputs, 16 bit	<b>6ES7332-7ND02-0AB0</b>	10 units (spare part), for modules with 20-pin front connector	
2 outputs, 11/12 bit	<b>6ES7332-5HB01-0AB0</b>	<b>Labeling sheets for machine labeling</b>	
8 outputs, 11/12 bit	<b>6ES7332-5HF00-0AB0</b>	For modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
<b>Front connector</b>		Petrol	<b>6ES7392-2AX00-0AA0</b>
20-pin, with screw contacts		Light beige	<b>6ES7392-2BX00-0AA0</b>
• 1 unit	<b>6ES7392-1AJ00-0AA0</b>	Yellow	<b>6ES7392-2CX00-0AA0</b>
• 100 units	<b>6ES7392-1AJ00-1AB0</b>	Red	<b>6ES7392-2DX00-0AA0</b>
20-pin, with spring-loaded contacts		For modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units	
• 1 unit	<b>6ES7392-1BJ00-0AA0</b>	Petrol	<b>6ES7392-2AX10-0AA0</b>
• 100 units	<b>6ES7392-1BJ00-1AB0</b>	Light beige	<b>6ES7392-2BX10-0AA0</b>
40-pin, with screw contacts		Yellow	<b>6ES7392-2CX10-0AA0</b>
• 1 unit	<b>6ES7392-1AM00-0AA0</b>	Red	<b>6ES7392-2DX10-0AA0</b>
• 100 units	<b>6ES7392-1AM00-1AB0</b>	<b>SIMATIC Manual Collection</b>	<b>6ES7998-8XC01-8YE0</b>
40-pin, with spring-loaded contacts		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	
• 1 unit	<b>6ES7392-1BM01-0AA0</b>	<b>SIMATIC Manual Collection update service for 1 year</b>	<b>6ES7998-8XC01-8YE2</b>
• 100 units	<b>6ES7392-1BM01-1AB0</b>	Current "Manual Collection" DVD and the three subsequent updates	
<b>Front door, elevated design</b>	<b>6ES7328-0AA00-7AA0</b>		
e.g. for 32-channel modules; for connecting 1.3 mm <sup>2</sup> /16 AWG wires			
<b>SIMATIC TOP connect</b>	See page 5/251		
<b>Bus connectors</b>			
1 unit (spare part)	<b>6ES7390-0AA00-0AA0</b>		
<b>Shield connection element</b>	<b>6ES7390-5AA00-0AA0</b>		
80 mm wide, with 2 rows for 4 shield connection clamps each			
<b>Shield connection clamps</b>			
2 units			
For 2 cables with 2 mm to 6 mm diameter	<b>6ES7390-5AB00-0AA0</b>		
For 1 cable with 3 mm to 8 mm diameter	<b>6ES7390-5BA00-0AA0</b>		
For 1 cable with 4 mm to 13 mm diameter	<b>6ES7390-5CA00-0AA0</b>		



## Overview



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

## Technical specifications

Article number	6ES7334-0CE01-0AA0	6ES7334-0KE00-0AB0
	SM334, 4AI, 2AQ, non isolated	SM334, 4AI/2AQ, 0-10V f.PT100
<b>Supply voltage</b>		
<b>Load voltage L+</b>		
• Rated value (DC)	24 V	24 V
<b>Input current</b>		
from supply and load voltage L+ (without load), max.	110 mA	80 mA
from backplane bus 5 V DC, max.	55 mA	60 mA
<b>Power loss</b>		
Power loss, typ.	3 W	2 W
<b>Analog inputs</b>		
Number of analog inputs	4	4
• For voltage measurement	4	2
• For resistance measurement		4
permissible input voltage for voltage input (destruction limit), max.	20 V	20 V; continuous; 75 V for max. 1 s (mark to space ratio 1:20)
permissible input current for current input (destruction limit), max.	40 mA	
Cycle time (all channels) max.	5 ms	85 ms
<b>Input ranges (rated values), voltages</b>		
• 0 to +10 V	Yes	Yes
<b>Input ranges (rated values), currents</b>		
• 0 to 20 mA	Yes	
<b>Input ranges (rated values), resistance thermometer</b>		
• Pt 100		Yes; only climatic range
<b>Input ranges (rated values), resistors</b>		
• 0 to 10000 ohms		Yes
<b>Characteristic linearization</b>		
• parameterizable		Yes
- for resistance thermometer		Pt100 (climate)
<b>Cable length</b>		
• shielded, max.	200 m	100 m

**SIMATIC S7-300 Advanced Controllers**

I/O modules

Analog modules

**SM 334 analog input/output modules****Technical specifications (continued)**

Article number	<b>6ES7334-0CE01-0AA0</b>	<b>6ES7334-0KE00-0AB0</b>
	SM334, 4AI, 2AQ, non isolated	SM334, 4AI/2AQ, 0-10V f.PT100
<b>Analog outputs</b>		
Number of analog outputs	2	2
Voltage output, short-circuit protection	Yes	Yes
Voltage output, short-circuit current, max.	11 mA	30 mA
Current output, no-load voltage, max.	15 V	
<b>Output ranges, voltage</b>		
• 0 to 10 V	Yes	Yes
<b>Output ranges, current</b>		
• 0 to 20 mA	Yes	
<b>Load impedance (in rated range of output)</b>		
• 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	
<b>Cable length</b>		
• shielded, max.	200 m	100 m
<b>Analog value generation for the inputs</b>		
<b>Integration and conversion time/resolution per channel</b>		
• Resolution with overrange (bit including sign), max.	8 bit	12 bit
• Integration time (ms)		16,67 / 20 ms
<b>Analog value generation for the outputs</b>		
<b>Integration and conversion time/resolution per channel</b>		
• Resolution with overrange (bit including sign), max.	8 bit	12 bit
<b>Settling time</b>		
• for resistive load	0.3 ms	0.8 ms
• for capacitive load	3 ms	0.8 ms
• for inductive load	0.3 ms	
<b>Encoder</b>		
<b>Connection of signal encoders</b>		
• for current measurement as 2-wire transducer	No	
• for current measurement as 4-wire transducer	Yes	
• for resistance measurement with two-wire connection		Yes
• for resistance measurement with three-wire connection		Yes
• for resistance measurement with four-wire connection		Yes

**Technical specifications** (continued)

Article number	<b>6ES7334-0CE01-0AA0</b> SM334, 4AI, 2AQ, non isolated	<b>6ES7334-0KE00-0AB0</b> SM334, 4AI/2AQ, 0-10V f.PT100
<b>Errors/accuracies</b>		
<b>Operational error limit in overall temperature range</b>		
• Voltage, relative to input range, (+/-)	0.9 %	0.7 %; 0 to 10V
• Current, relative to input range, (+/-)	0.8 %	
• Resistance, relative to input range, (+/-)		3.5 %; 10 kOhm
• Resistance thermometer, relative to input range, (+/-)		1 %
• Voltage, relative to output range, (+/-)	0.6 %	1 %
• Current, relative to output range, (+/-)	1 %	
<b>Basic error limit (operational limit at 25 °C)</b>		
• Voltage, relative to input range, (+/-)	0.7 %	0.5 %; 0 to 10V
• Current, relative to input range, (+/-)	0.6 %	
• Resistance, relative to input range, (+/-)		2.8 %; 10 kOhm
• Resistance thermometer, relative to input range, (+/-)		0.8 %
• Voltage, relative to output range, (+/-)	0.5 %	0.85 %
• Current, relative to output range, (+/-)	0.5 %	
<b>Interrupts/diagnostics/status information</b>		
Alarms	No	No
Diagnostics function	No	No
<b>Potential separation</b>		
<b>Potential separation analog inputs</b>		
• between the channels and backplane bus	No	Yes
<b>Potential separation analog outputs</b>		
• between the channels and backplane bus	No	Yes
<b>Connection method</b>		
required front connector	20-pin	20-pin
<b>Dimensions</b>		
Width	40 mm	40 mm
Height	125 mm	125 mm
Depth	117 mm	117 mm
<b>Weights</b>		
Weight, approx.	285 g	200 g

# SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

## SM 334 analog input/output modules

Ordering data	Article No.	Ordering data	Article No.
<b>SM 334 analog input/output modules</b> Incl. labeling strips, bus connector 4 inputs, 2 outputs 4 inputs, 2 outputs, resistance measurement, Pt 100	<b>6ES7334-0CE01-0AA0</b> <b>6ES7334-0KE00-0AB0</b>	<b>Label cover</b> 10 units (spare part), for modules with 20-pin front connector	<b>6ES7392-2XY00-0AA0</b>
<b>Front connector</b> 20-pin, with screw contacts <ul style="list-style-type: none"> <li>• 1 unit</li> <li>• 100 units</li> </ul> 20-pin, with spring-loaded terminals <ul style="list-style-type: none"> <li>• 1 unit</li> <li>• 100 units</li> </ul>	<b>6ES7392-1AJ00-0AA0</b> <b>6ES7392-1AJ00-1AB0</b> <b>6ES7392-1BJ00-0AA0</b> <b>6ES7392-1BJ00-1AB0</b>	<b>Labeling strips</b> 10 units (spare part), for modules with 20-pin front connector	<b>6ES7392-2XX00-0AA0</b>
<b>Front door, elevated design</b> e.g. for 32-channel modules; for connecting 1.3 mm <sup>2</sup> /16 AWG wires	<b>6ES7328-0AA00-7AA0</b>	<b>Labeling sheets for machine labeling</b> For modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
<b>SIMATIC TOP connect</b>	See page 5/251	Petrol Light beige Yellow Red	<b>6ES7392-2AX00-0AA0</b> <b>6ES7392-2BX00-0AA0</b> <b>6ES7392-2CX00-0AA0</b> <b>6ES7392-2DX00-0AA0</b>
<b>Bus connectors</b> 1 unit (spare part)	<b>6ES7390-0AA00-0AA0</b>	<b>SIMATIC Manual Collection</b>	<b>6ES7998-8XC01-8YE0</b>
<b>Shield connection element</b> 80 mm wide, with 2 rows for 4 shield connection clamps each	<b>6ES7390-5AA00-0AA0</b>	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	
<b>Shield connection clamps</b> 2 units For 2 cables with 2 mm to 6 mm diameter For 1 cable with 3 mm to 8 mm diameter For 1 cable with 4 mm to 13 mm diameter	<b>6ES7390-5AB00-0AA0</b> <b>6ES7390-5BA00-0AA0</b> <b>6ES7390-5CA00-0AA0</b>	<b>SIMATIC Manual Collection update service for 1 year</b> Current "Manual Collection" DVD and the three subsequent updates	<b>6ES7998-8XC01-8YE2</b>

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

## Technical specifications

Article number	6AG1331-1KF02-7AB0	6AG1331-7KB02-2AB0	6AG1331-7KF02-2AB0
Based on	6ES7331-1KF02-0AB0 SIPLUS SM331 8AI	6ES7331-7KB02-0AB0 SIPLUS SM331 2AI	6ES7331-7KF02-0AB0 SIPLUS SM331 8AI
<b>Ambient conditions</b>			
<b>Ambient temperature during operation</b>			
• min.	-25 °C	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies
<b>Altitude during operation relating to sea level</b>			
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>			
<b>Use in stationary industrial systems</b>			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

# SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 analog modules

## SIPLUS S7-300 SM 331

### Technical specifications (continued)

Article number	6AG1331-1KF02-7AB0	6AG1331-7KB02-2AB0	6AG1331-7KF02-2AB0	6AG1331-7KF02-2AB0
Based on	6ES7331-1KF02-0AB0 SIPLUS SM331 8AI	6ES7331-7KB02-0AB0 SIPLUS SM331 2AI	6ES7331-7KF02-0AB0 SIPLUS SM331 8AI	6ES7331-7KF02-0AB0 SIPLUS SM331 8AI
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>				
- to biologically active substances according to EN 60721-3-5				Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5				Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5				Yes; Class 5S3 incl. sand, dust; *
<b>Use on ships/at sea</b>				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Article number	6AG1331-7NF00-2AB0	6AG1331-7NF10-2AB0	6AG1331-7PF01-4AB0	6AG1331-7PF11-4AB0
Based on	6ES7331-7NF00-0AB0 SIPLUS S7-300 SM331 8AI - 40pol	6ES7331-7NF10-0AB0 SIPLUS SM331 8AI - 40pol	6ES7331-7PF01-0AB0 SIPLUS SM331 8AI	6ES7331-7PF11-0AB0 SIPLUS S7-300 SM331 8AI 40pol
<b>Ambient conditions</b>				
<b>Ambient temperature during operation</b>				
• min.	-25 °C; = Tmin	-25 °C; = Tmin	0 °C; = Tmin	0 °C; = Tmin
• max.	70 °C; = Tmax; for use on railway vehicles according to EN 50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/UL hazardous use applies	60 °C; = Tmax	60 °C; = Tmax	60 °C; = Tmax
<b>Altitude during operation relating to sea level</b>				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>				
<b>Use in stationary industrial systems</b>				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

## Technical specifications (continued)

Article number	6AG1331-7NF00-2AB0	6AG1331-7NF10-2AB0	6AG1331-7PF01-4AB0	6AG1331-7PF11-4AB0
Based on	6ES7331-7NF00-0AB0 SIPLUS S7-300 SM331 8AI - 40pol	6ES7331-7NF10-0AB0 SIPLUS SM331 8AI - 40pol	6ES7331-7PF01-0AB0 SIPLUS SM331 8AI	6ES7331-7PF11-0AB0 SIPLUS S7-300 SM331 8AI 40pol
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>				
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request			
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *			
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *			
<b>Use on ships/at sea</b>				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

**SIMATIC S7-300 Advanced Controllers**

I/O modules

SIPLUS S7-300 analog modules

**SIPLUS S7-300 SM 331**

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**Ordering data****Article No.****SIPLUS S7-300 SM 331 analog input modules***For industrial applications with extended ambient conditions*Extended temperature range and exposure to media

8 inputs, 13-bit resolution

**6AG1331-1KF02-7AB0**

2 inputs, 9/12/14-bit resolution

**6AG1331-7KB02-2AB0**

8 inputs, 9/12/14-bit resolution

**6AG1331-7KF02-2AB0**

8 inputs, enhanced 16-bit resolution

**6AG1331-7NF00-2AB0**

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

**6AG1331-7NF10-2AB0**Exposure to media

8 inputs, for thermal resistors

**6AG1331-7PF01-4AB0**

8 inputs, for thermocouples

**6AG1331-7PF11-4AB0***For rolling stock railway applications*Conforms to EN 50155

8 inputs, 9/12/14-bit resolution

**6AG1331-7KF02-2AB0**

8 inputs, enhanced 16-bit resolution

**6AG1331-7NF00-2AB0****Accessories***Mandatory***Front connector**

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

**6ES7392-1BM01-0AA0****6ES7392-1BM01-1AB0***Consumables***Front door, elevated design**E.g. for 32-channel modules; for connecting 1.3 mm<sup>2</sup>/16 AWG conductors; circuit diagram and nameplates in petrol**6ES7328-0AA00-7AA0****Bus connectors**

1 unit (spare part)

**6ES7390-0AA00-0AA0****Article No.****Labeling strips**

10 units; spare part

For modules with 20-pin front connector

**6ES7392-2XX00-0AA0**

For modules with 40-pin front connector

**6ES7392-2XX10-0AA0****Label cover**

10 units; spare part

For modules with 20-pin front connector

**6ES7392-2XY00-0AA0**

For modules with 40-pin front connector

**6ES7392-2XY10-0AA0***Documentation***SIMATIC Manual Collection****6ES7998-8XC01-8YE0**

Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC

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

Current "Manual Collection" DVD and the three subsequent updates



## Overview



- Analog outputs
- For connection of analog actuators

Note:

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

## Technical specifications

Article number	6AG1332-5HD01-7AB0	6AG1332-7ND02-4AB0	6AG1332-5HB01-2AB0	6AG1332-5HF00-2AB0
Based on	6ES7332-5HD01-0AB0 SIPLUS S7-300 SM332 4AQ U/I	6ES7332-7ND02-0AB0 SIPLUS S7-300 SM332 4AQ	6ES7332-5HB01-0AB0 SIPLUS S7-300 SM332 2AQ	6ES7332-5HF00-0AB0 SIPLUS S7-300 SM 332 8AQ - 40pol
<b>Ambient conditions</b>				
<b>Ambient temperature during operation</b>				
• min.	-25 °C; = Tmin	0 °C; = Tmin	-25 °C; = Tmin	-25 °C
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	60 °C; = Tmax	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
<b>Altitude during operation relating to sea level</b>				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>				
<b>Use in stationary industrial systems</b>				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

**SIMATIC S7-300 Advanced Controllers**

I/O modules

SIPLUS S7-300 analog modules

**SIPLUS S7-300 SM 332****Technical specifications** (continued)

Article number	<b>6AG1332-5HD01-7AB0</b>	<b>6AG1332-7ND02-4AB0</b>	<b>6AG1332-5HB01-2AB0</b>	<b>6AG1332-5HF00-2AB0</b>
Based on	<b>6ES7332-5HD01-0AB0</b>	<b>6ES7332-7ND02-0AB0</b>	<b>6ES7332-5HB01-0AB0</b>	<b>6ES7332-5HF00-0AB0</b>
	SIPLUS S7-300 SM332 4AQ U/I	SIPLUS S7-300 SM332 4AQ	SIPLUS S7-300 SM332 2AQ	SIPLUS S7-300 SM 332 8AQ - 40pol
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>				
- to biologically active substances according to EN 60721-3-5			Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	
- to chemically active substances according to EN 60721-3-5			Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	
- to mechanically active substances according to EN 60721-3-5			Yes; Class 5S3 incl. sand, dust; *	
<b>Use on ships/at sea</b>				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data	Article No.	Ordering data	Article No.
<b>SIPLUS S7-300 SM 332 analog output modules</b> <i>For industrial applications with extended ambient conditions</i> <u>Extended temperature range and exposure to media</u> 2 outputs, 11/12-bit 4 outputs, 11/12-bit 8 outputs, 11/12-bit <u>Exposure to media</u> 4 outputs, 16-bit; only exposure to media <i>For rolling stock railway applications</i> <u>Conforms to EN 50155</u> 2 outputs, 11/12-bit	<b>6AG1332-5HB01-2AB0</b> <b>6AG1332-5HD01-7AB0</b> <b>6AG1332-5HF00-2AB0</b>  <b>6AG1332-7ND02-4AB0</b>  <b>6AG1332-5HB01-2AB0</b>	<b>Bus connectors</b> 1 unit (spare part)	<b>6ES7390-0AA00-0AA0</b>
<b>Accessories</b> <i>Mandatory</i> <b>Front connector</b> 20-pin, with spring-loaded contacts <ul style="list-style-type: none"> <li>• 1 unit</li> <li>• 100 units</li> </ul> 40-pin, with spring-loaded contacts <ul style="list-style-type: none"> <li>• 1 unit</li> <li>• 100 units</li> </ul> <i>Consumables</i> <b>Front door, elevated design</b> E.g. for 32-channel modules; for connecting 1.3 mm <sup>2</sup> /16 AWG conductors; circuit diagram and nameplates in petrol	<b>6ES7392-1BJ00-0AA0</b> <b>6ES7392-1BJ00-1AB0</b>  <b>6ES7392-1BM01-0AA0</b> <b>6ES7392-1BM01-1AB0</b>  <b>6ES7328-0AA00-7AA0</b>	<b>Labeling strips</b> 10 units; spare part For modules with 20-pin front connector For modules with 40-pin front connector  <b>Label cover</b> 10 units; spare part For modules with 20-pin front connector For modules with 40-pin front connector  <i>Documentation</i> <b>SIMATIC Manual Collection</b> Electronic manuals on DVD, multi-language: 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	<b>6ES7392-2XX00-0AA0</b> <b>6ES7392-2XX10-0AA0</b>  <b>6ES7392-2XY00-0AA0</b> <b>6ES7392-2XY10-0AA0</b>  <b>6ES7998-8XC01-8YE0</b>

**SIMATIC S7-300 Advanced Controllers**

I/O modules

SIPLUS S7-300 analog modules

**SIPLUS S7-300 SM 334****Overview**

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

Note:

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

**Technical specifications**

Article number	<b>6AG1334-0KE00-7AB0</b>
Based on	<b>6ES7334-0KE00-0AB0</b> SIPLUS S7-300 SM334 4AE 2AQ
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• min.	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
<b>Altitude during operation relating to sea level</b>	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>	
<b>Use in stationary industrial systems</b>	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *
<b>Use on ships/at sea</b>	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data	Article No.		Article No.
<b>SIPLUS S7-300 SM 334 analog input/output modules</b> <i>For industrial applications with extended ambient conditions</i> <u>Extended temperature range and exposure to media</u> 4 inputs, 2 outputs; resistance measurement, Pt 100	<b>6AG1334-0KE00-7AB0</b>	<b>Bus connectors</b> 1 unit (spare part)	<b>6ES7390-0AA00-0AA0</b>
<b>Accessories</b> <i>Mandatory</i> <b>Front connector</b> 20-pin, with spring-loaded contacts <ul style="list-style-type: none"> <li>• 1 unit</li> <li>• 100 units</li> </ul> 40-pin, with spring-loaded contacts <ul style="list-style-type: none"> <li>• 1 unit</li> <li>• 100 units</li> </ul>	<b>6ES7392-1BJ00-0AA0</b> <b>6ES7392-1BJ00-1AB0</b>  <b>6ES7392-1BM01-0AA0</b> <b>6ES7392-1BM01-1AB0</b>	<b>Labeling strips</b> 10 units; spare part For modules with 20-pin front connector For modules with 40-pin front connector	<b>6ES7392-2XX00-0AA0</b>  <b>6ES7392-2XX10-0AA0</b>
<i>Consumables</i> <b>Front door, elevated design</b> E.g. for 32-channel modules; for connecting 1.3 mm <sup>2</sup> /16 AWG conductors; circuit diagram and nameplates in petrol	<b>6ES7328-0AA00-7AA0</b>	<b>Label cover</b> 10 units; spare part For modules with 20-pin front connector For modules with 40-pin front connector <i>Documentation</i> <b>SIMATIC Manual Collection</b> Electronic manuals on DVD, multi-language: 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	<b>6ES7392-2XY00-0AA0</b>  <b>6ES7392-2XY10-0AA0</b>  <b>6ES7998-8XC01-8YE0</b>
		<b>SIMATIC Manual Collection update service for 1 year</b> Current "Manual Collection" DVD and the three subsequent updates	<b>6ES7998-8XC01-8YE2</b>

**SIMATIC S7-300 Advanced Controllers**

I/O modules

F-digital/analog modules

**SM 326 F-digital input modules - Safety Integrated****Overview**

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

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**Technical specifications**

Article number	<b>6ES7326-1RF01-0AB0</b>	<b>6ES7326-1BK02-0AB0</b>
	SM326, 8DI, DC24V, failsafe	SM326, F-DI 24 X DC24V, failsafe
<b>General information</b>		
Product type designation	SM326, F-DI 8x 24 V DC	SM326, F-DI 24x 24 V DC
<b>Supply voltage</b>		
Rated value (DC)		24 V
Reverse polarity protection	Yes	Yes
<b>Input current</b>		
from load voltage L+ (without load), max.	160 mA	450 mA
from backplane bus 5 V DC, max.	90 mA	100 mA
<b>Encoder supply</b>		
Number of outputs	8	4; Isolated
Type of output voltage	8.2 V DC	
<b>Output current</b>		
• Rated value		400 mA
<b>Power loss</b>		
Power loss, typ.	4.5 W	10 W
<b>Digital inputs</b>		
Number of digital inputs	8	24
<b>Number of simultaneously controllable inputs</b>		
<b>all mounting positions</b>		
- up to 40 °C, max.	8	24
- up to 60 °C, max.	8	24; (at 24 V) or 18 (at 28.8 V)
<b>Input voltage</b>		
• Type of input voltage	DC	DC
• Rated value (DC)		24 V
• for signal "0"		-30 to +5V
• for signal "1"		+11 to +30V
<b>Input current</b>		
• 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

## Technical specifications (continued)

Article number	6ES7326-1RF01-0AB0	6ES7326-1BK02-0AB0
	SM326, 8DI, DC24V, failsafe	SM326, F-DI 24 X DC24V, failsafe
<b>Input delay (for rated value of input voltage)</b>		
<b>for standard inputs</b>		
- at "0" to "1", max.		3.4 ms
- at "1" to "0", max.		3.4 ms
<b>for NAMUR inputs</b>		
- at "0" to "1", max.	1.2 to 3 ms	
- at "1" to "0", max.	1.2 to 3 ms	
<b>Cable length</b>		
• shielded, max.	200 m	200 m
• unshielded, max.	100 m	100 m
<b>Encoder</b>		
<b>Connectable encoders</b>		
• 2-wire sensor		Yes; if short-circuit test is deactivated
- permissible quiescent current (2-wire sensor), max.		2 mA
<b>Interrupts/diagnostics/status information</b>		
<b>Alarms</b>		
• Diagnostic alarm	Yes; Parameterizable	Yes
<b>Diagnostic messages</b>		
• Diagnostic information readable		Yes
<b>Ex(i) characteristics</b>		
Module for Ex(i) protection	Yes	
<b>Maximum values of input circuits (per channel)</b>		
• 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
<b>Potential separation</b>		
<b>Potential separation digital inputs</b>		
• between the channels	Yes	Yes
• between the channels, in groups of		12
• between the channels and backplane bus	Yes	Yes
• between the channels and the power supply of the electronics	Yes	
<b>Standards, approvals, certificates</b>		
<b>Highest safety class achievable in safety mode</b>		
• acc. to DIN VDE 0801		AK 6
• acc. to EN 954	Cat. 4	Cat. 4
• SIL acc. to IEC 61508	SIL 2 (single-channel), SIL 3 (two-channel)	SIL 3
<b>Use in hazardous areas</b>		
• Test number KEMA	99 ATEX 2671 X	
<b>Connection method</b>		
required front connector	1x 40-pin	40-pin
<b>Dimensions</b>		
Width	80 mm	80 mm
Height	125 mm	125 mm
Depth	120 mm	120 mm
<b>Weights</b>		
Weight, approx.	482 g	442 g

**SIMATIC S7-300 Advanced Controllers**

I/O modules

F-digital/analog modules

**SM 326 F-digital input modules - Safety Integrated**

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Ordering data	Article No.	Article No.
<b>SM 326 F-digital input module</b>		
24 inputs, 24 V DC	<b>6ES7326-1BK02-0AB0</b>	
8 inputs, 24 V DC, NAMUR	<b>6ES7326-1RF01-0AB0</b>	
<b>S7 Distributed Safety V5.4 SP5 Update 2 programming tool</b>		
Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP		
Requirement: Windows 7 SP1 (64-bit), Windows 10 Professional/Enterprise (64-bit), Windows Server 2008 R2 SP1 (64-bit), Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit); STEP 7 from V5.5 SP1; Please also note the operating systems that have been released for the STEP 7 version used		
Floating license for 1 user; software and documentation on DVD; license key on USB flash drive	<b>6ES7833-1FC02-0YA5</b>	
Floating license for 1 user; software, documentation and license key for download <sup>1)</sup> ; email address required for delivery	<b>6ES7833-1FC02-0YH5</b>	
<b>S7 Distributed Safety upgrade</b>		
From V5.x to V5.4; floating license for 1 user; software and documentation on DVD; license key on USB flash drive	<b>6ES7833-1FC02-0YE5</b>	
<b>STEP 7 Safety Advanced V15.1</b>		
Task: Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco I/O		
Requirement: STEP 7 Professional V15.1		
Floating license for 1 user; software and documentation on DVD; license key on USB flash drive	<b>6ES7833-1FA15-0YA5</b>	
Floating license for 1 user; software, documentation and license key for download <sup>1)</sup> ; email address required for delivery	<b>6ES7833-1FA15-0YH5</b>	
<b>DIN rail for active bus modules</b>		
For max. 5 active bus modules for hot swapping function		
• 483 mm (19") long		<b>6ES7195-1GA00-0XA0</b>
• 530 mm long		<b>6ES7195-1GF30-0XA0</b>
• 620 mm long		<b>6ES7195-1GG30-0XA0</b>
• 2 000 mm long		<b>6ES7195-1GC00-0XA0</b>
<b>Active bus module</b>		<b>6ES7195-7HC00-0XA0</b>
BM 1 x 80 for 1 module with 80 mm width		
<b>SITOP power supply module</b>		<b>6ES7307-1EA01-0AA0</b>
For ET 200M; 120/230 V AC, 24 V DC, 5 A; Type PS 307-1E		
<b>Front connectors</b>		
40-pin, with screw contacts		
• 1 unit		<b>6ES7392-1AM00-0AA0</b>
• 100 units		<b>6ES7392-1AM00-1AB0</b>
40-pin, with spring-loaded contacts		
• 1 unit		<b>6ES7392-1BM01-0AA0</b>
• 100 units		<b>6ES7392-1BM01-1AB0</b>
<b>Front door, higher version, for F-modules</b>		<b>6ES7328-7AA10-0AA0</b>
For F-modules; for connecting 1.3 mm <sup>2</sup> /16 AWG wires; wiring diagram and labels in yellow		
<b>Labeling strips</b>		<b>6ES7392-2XX20-0AA0</b>
For F-modules (spare part); 10 units		
<b>Label cover</b>		<b>6ES7392-2XY20-0AA0</b>
For F-modules (spare part); 10 units		
<b>LK 393 cable guide</b>		<b>6ES7393-4AA10-0AA0</b>
For F-modules; L+ and M connections; 5 units		
<b>SIMATIC Manual Collection</b>		<b>6ES7998-8XC01-8YE0</b>
Electronic manuals on DVD, multi-language: 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		
<b>SIMATIC Manual Collection update service for 1 year</b>		<b>6ES7998-8XC01-8YE2</b>
Current "Manual Collection" DVD and the three subsequent updates		

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



## Overview



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

## Technical specifications

Article number	6ES7326-2BF10-0AB0	6ES7326-2BF41-0AB0
	SM326, F-DQ10XDC24V/2A PP, failsafe	SM 326, F-DQ 8 X DC 24V/2A PM
<b>General information</b>		
Product type designation	SM 326, F-DQ 10x24 V DC/2 A PP	SM 326, F-DQ 8x24 V DC/2 A PM
<b>Supply voltage</b>		
Rated value (DC)	24 V; 1L+	24 V; 1L+
Reverse polarity protection	Yes	Yes
<b>Load voltage L+</b>		
• Rated value (DC)	24 V; 2L+, 3L+	24 V; 2L+, 3L+
• Reverse polarity protection	No	No
<b>Input current</b>		
from supply voltage 1L+, max.	100 mA	75 mA
from load voltage 2L+ (without load), max.	100 mA	100 mA
from load voltage 3L+ (without load), max.	100 mA	100 mA
from backplane bus 5 V DC, max.	100 mA	100 mA
<b>Power loss</b>		
Power loss, typ.	6 W	12 W
<b>Digital outputs</b>		
Number of digital outputs	10	8
Short-circuit protection	Yes	Yes
Limitation of inductive shutdown voltage to		L+ (-33 V)
<b>Switching capacity of the outputs</b>		
• on lamp load, max.	5 W	5 W
<b>Output voltage</b>		
• for signal "1", min.	L+ (-1.0 V)	L+ (-1.0 V)
<b>Output current</b>		
• 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

**SIMATIC S7-300 Advanced Controllers**

I/O modules

F-digital/analog modules

**SM 326 F-digital output modules - Safety Integrated****Technical specifications** (continued)

Article number	<b>6ES7326-2BF10-0AB0</b> SM326, F-DQ10XDC24V/2A PP, failsafe	<b>6ES7326-2BF41-0AB0</b> SM 326, F-DQ 8 X DC 24V/2A PM
<b>Switching frequency</b>		
• with resistive load, max.	25 Hz	30 Hz
• with inductive load, max.	25 Hz	2 Hz
• on lamp load, max.	10 Hz	10 Hz
<b>Total current of the outputs (per group)</b>		
<b>horizontal installation</b>		
- up to 40 °C, max.	10 A	7.5 A
- up to 60 °C, max.	6 A	5 A
<b>vertical installation</b>		
- up to 40 °C, max.	5 A	5 A
<b>Cable length</b>		
• shielded, max.	1 000 m	200 m; 200 m for SIL 3, AK 6, Cat 4
• unshielded, max.	600 m	200 m
<b>Interrupts/diagnostics/status information</b>		
<b>Alarms</b>		
• Diagnostic alarm	Yes	Yes; Parameterizable
<b>Diagnostic messages</b>		
• Diagnostic information readable	Yes	Yes
<b>Potential separation</b>		
<b>Potential separation digital outputs</b>		
• between the channels	Yes	Yes
• between the channels, in groups of	5	4
• between the channels and backplane bus	Yes	Yes
• between the channels and the power supply of the electronics	Yes	Yes
<b>Standards, approvals, certificates</b>		
<b>Highest safety class achievable in safety mode</b>		
• acc. to DIN VDE 0801	AK 5 and 6	
• acc. to EN 954	Cat. 4	Cat. 4
• SIL acc. to IEC 61508	SIL 3	SIL 3
<b>Connection method</b>		
required front connector	40-pin	40-pin
<b>Dimensions</b>		
Width	40 mm	80 mm
Height	125 mm	125 mm
Depth	120 mm	120 mm
<b>Weights</b>		
Weight, approx.	330 g	465 g

Ordering data	Article No.	Article No.
<b>SM 326 F-digital output module</b>		
10 outputs, 24 V DC, 2 A PP; width 40 mm	<b>6ES7326-2BF10-0AB0</b>	
8 outputs, 24 V DC, 2 A PM; width 80 mm	<b>6ES7326-2BF41-0AB0</b>	
<b>S7 Distributed Safety V5.4 SP5 Update 2 programming tool</b>		
Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP		
Requirement: Windows 7 SP1 (64-bit), Windows 10 Professional/Enterprise (64-bit), Windows Server 2008 R2 SP1 (64-bit), Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit); STEP 7 from V5.5 SP1; Please also note the operating systems that have been released for the STEP 7 version used		
Floating license for 1 user; software and documentation on DVD; license key on USB flash drive	<b>6ES7833-1FC02-0YA5</b>	
Floating license for 1 user; software, documentation and license key for download <sup>1)</sup> ; email address required for delivery	<b>6ES7833-1FC02-0YH5</b>	
<b>S7 Distributed Safety upgrade</b>		
From V5.x to V5.4; floating license for 1 user; software and documentation on DVD; license key on USB flash drive	<b>6ES7833-1FC02-0YE5</b>	
<b>STEP 7 Safety Advanced V15.1</b>		
Task: Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco I/O		
Requirement: STEP 7 Professional V15.1		
Floating license for 1 user; software and documentation on DVD; license key on USB flash drive	<b>6ES7833-1FA15-0YA5</b>	
Floating license for 1 user; software, documentation and license key for download <sup>1)</sup> ; email address required for delivery	<b>6ES7833-1FA15-0YH5</b>	
		<b>DIN rail for active bus modules</b>
		For max. 5 active bus modules, for function "Insertion and removal"
		• 483 mm (19") long • 530 mm long • 620 mm long • 2 000 mm long
		<b>Active bus modules</b>
		BM 2 x 40 for accepting 2 I/O modules each 40 mm wide
		<b>6ES7195-1GA00-0XA0</b> <b>6ES7195-1GF30-0XA0</b> <b>6ES7195-1GG30-0XA0</b> <b>6ES7195-1GC00-0XA0</b>
		BM 1 x 80 for accepting 1 I/O module 80 mm wide
		<b>6ES7195-7HB00-0XA0</b> <b>6ES7195-7HC00-0XA0</b>
		<b>SITOP power supply module</b>
		For ET 200M; 120/230 V AC, 24 V DC, 5 A; Type PS 307-1E
		<b>6ES7307-1EA01-0AA0</b>
		<b>Front connectors</b>
		40-pin, with screw contacts
		• 1 unit • 100 units
		<b>6ES7392-1AM00-0AA0</b> <b>6ES7392-1AM01-1AB0</b>
		40-pin, with spring-loaded contacts
		• 1 unit • 100 units
		<b>6ES7392-1BM01-0AA0</b> <b>6ES7392-1BM01-1AB0</b>
		<b>Front door, higher version, for F-modules</b>
		For F-modules; for connecting 1.3 mm <sup>2</sup> /16 AWG wires; wiring diagram and labels in yellow
		<b>6ES7328-7AA10-0AA0</b>
		<b>Labeling strips</b>
		For F-modules (spare part), 10 units
		<b>6ES7392-2XX20-0AA0</b>
		<b>Label cover</b>
		For F-modules (spare part), 10 units
		<b>6ES7392-2XY20-0AA0</b>
		<b>LK 393 cable guide</b>
		For F-modules; L+ and M connections, 5 units
		<b>6ES7393-4AA10-0AA0</b>
		<b>SIMATIC Manual Collection</b>
		Electronic manuals on DVD, multi-language: 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
		<b>6ES7998-8XC01-8YE0</b>
		<b>SIMATIC Manual Collection update service for 1 year</b>
		Current "Manual Collection" DVD and the three subsequent updates
		<b>6ES7998-8XC01-8YE2</b>

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

**SIMATIC S7-300 Advanced Controllers**

I/O modules

F-digital/analog modules

**SM 336 F-analog input modules - Safety Integrated****Overview**

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

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**Technical specifications**

Article number	<b>6ES7336-4GE00-0AB0</b> SM 336, f.AI 6 X 0/4 ... 20mA HART
<b>Supply voltage</b>	
Rated value (DC)	24 V
Reverse polarity protection	Yes
<b>Input current</b>	
From power supply L+, typ.	150 mA
from backplane bus 5 V DC, max.	90 mA
<b>Power loss</b>	
Power loss, typ.	4.5 W
<b>Analog inputs</b>	
Number of analog inputs	6
permissible input current for current input (destruction limit), max.	40 mA
<b>Input ranges (rated values), currents</b>	
• 0 to 20 mA	Yes
• 4 mA to 20 mA	Yes
<b>Cable length</b>	
• shielded, max.	1 000 m
<b>Analog value generation for the inputs</b>	
<b>Integration and conversion time/resolution per channel</b>	
• Resolution with overrange (bit including sign), max.	16 bit; 15 bit + sign
• Integration time (ms)	20 ms @ 50 Hz, 16.7 ms @ 60 Hz
• Interference voltage suppression for interference frequency f1 in Hz	f=n x (f1 ±0.5 %)
<b>Encoder</b>	
<b>Connection of signal encoders</b>	
• for current measurement as 2-wire transducer	Yes
• for current measurement as 4-wire transducer	Yes

Article number	<b>6ES7336-4GE00-0AB0</b> SM 336, f.AI 6 X 0/4 ... 20mA HART
<b>Errors/accuracies</b>	
<b>Operational error limit in overall temperature range</b>	
• Current, relative to input range, (+/-)	0.2 %; 40 µA
<b>Basic error limit (operational limit at 25 °C)</b>	
• Current, relative to input range, (+/-)	0.1 %
<b>Interrupts/diagnostics/status information</b>	
<b>Alarms</b>	
• Diagnostic alarm	Yes
<b>Diagnostic messages</b>	
• Diagnostic information readable	Yes
<b>Potential separation</b>	
<b>Potential separation analog inputs</b>	
• between the channels	Yes
• between the channels and backplane bus	Yes
• between the channels and the power supply of the electronics	Yes
<b>Standards, approvals, certificates</b>	
<b>Highest safety class achievable in safety mode</b>	
• acc. to EN 954	4
• SIL acc. to IEC 61508	SIL 3
<b>Connection method</b>	
required front connector	20-pin
<b>Dimensions</b>	
Width	40 mm
Height	125 mm
Depth	120 mm
<b>Weights</b>	
Weight, approx.	350 g

Ordering data	Article No.	Article No.
<b>SM 336 F-analog input module</b> 6 inputs, 15 bit, 0/4 - 20 mA HART	<b>6ES7336-4GE00-0AB0</b>	
<b>S7 Distributed Safety V5.4 SP5 Update 2 programming tool</b>  Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP Requirement: Windows 7 SP1 (64-bit), Windows 10 Professional/Enterprise (64-bit), Windows Server 2008 R2 SP1 (64-bit), Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit); STEP 7 from V5.5 SP1; Please also note the operating systems that have been released for the STEP 7 version used  Floating license for 1 user; software and documentation on DVD; license key on USB flash drive  Floating license for 1 user; software, documentation and license key for download <sup>1)</sup> ; email address required for delivery	<b>6ES7833-1FC02-0YA5</b>  <b>6ES7833-1FC02-0YH5</b>	<b>DIN rail for active bus modules</b>  For max. 5 active bus modules for hot swapping function • 483 mm long • 530 mm long • 620 mm long • 2 000 mm long  <b>Active bus module BM 2x40</b>  Bus module for accepting 2 I/O modules each 40 mm wide  <b>SITOP power supply module</b>  For ET 200M; 120/230 V AC, 24 V DC, 5 A; Type PS 307-1E  <b>Front connectors</b>  20-pin, with screw contacts • 1 unit • 100 units  20-pin, with spring-loaded contacts • 1 unit • 100 units  <b>Front door, higher version, for F-modules</b>  For F-modules; for connecting 1.3 mm <sup>2</sup> /16 AWG wires; wiring diagram and labels in yellow  <b>Labeling strips</b>  For F-modules (spare part), 10 units  <b>Label cover</b>  For F-modules (spare part), 10 units  <b>LK 393 cable guide</b>  For F-modules; L+ and M connections, 5 units  <b>SIMATIC Manual Collection</b>  Electronic manuals on DVD, multi-language: 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  <b>SIMATIC Manual Collection update service for 1 year</b>  Current "Manual Collection" DVD and the three subsequent updates
<b>S7 Distributed Safety upgrade</b>  From V5.x to V5.4; floating license for 1 user; software and documentation on DVD; license key on USB flash drive	<b>6ES7833-1FC02-0YE5</b>	<b>6ES7195-1GA00-0XA0</b> <b>6ES7195-1GF30-0XA0</b> <b>6ES7195-1GG30-0XA0</b> <b>6ES7195-1GC00-0XA0</b> <b>6ES7195-7HB00-0XA0</b> <b>6ES7307-1EA01-0AA0</b> <b>6ES7392-1AJ00-0AA0</b> <b>6ES7392-1AJ00-1AB0</b> <b>6ES7392-1BJ00-0AA0</b> <b>6ES7392-1BJ00-1AB0</b> <b>6ES7328-7AA10-0AA0</b> <b>6ES7392-2XX20-0AA0</b> <b>6ES7392-2XY20-0AA0</b> <b>6ES7393-4AA10-0AA0</b> <b>6ES7998-8XC01-8YE0</b> <b>6ES7998-8XC01-8YE2</b>
<b>STEP 7 Safety Advanced V15.1</b>  Task: Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco I/O Requirement: STEP 7 Professional V15.1  Floating license for 1 user; software and documentation on DVD; license key on USB flash drive  Floating license for 1 user; software, documentation and license key for download <sup>1)</sup> ; email address required for delivery	<b>6ES7833-1FA15-0YA5</b>  <b>6ES7833-1FA15-0YH5</b>	

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

## SIMATIC S7-300 Advanced Controllers

I/O modules

F-digital/analog modules

### Safety protector

#### Overview



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

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

Application	Safety protector must be used
<b>Central use after CPU 31xF-2 DP or CPU 31xF-2 PN/DP</b> <ul style="list-style-type: none"> <li>• Only fail-safe modules in the tier</li> <li>• Standard and fail-safe modules in the tier</li> </ul>	Yes, behind the CPU Yes, after the last standard module and before the first fail-safe module
<b>Central use after CPU 31xF-2 DP or CPU 31xF-2 PN/DP in an expansion rack</b> <ul style="list-style-type: none"> <li>• Only fail-safe modules in the tier</li> <li>• Standard and fail-safe modules in the tier</li> </ul>	Yes, after the IM 36x Yes, after the last standard module and before the first fail-safe module
<b>Distributed behind the IM 153-2 with copper connection</b> <ul style="list-style-type: none"> <li>• Only fail-safe modules in the station</li> <li>• Standard and fail-safe modules in the station</li> </ul>	Yes, after the IM 153-2 Yes, after the last standard module and before the first fail-safe module
<b>Distributed behind the IM 153-2 with fiber-optic connection</b> <ul style="list-style-type: none"> <li>• Only fail-safe modules in the station</li> <li>• Standard and fail-safe modules in the station</li> </ul>	No Yes, after the last standard module and before the first fail-safe module

#### Technical specifications

Article number	<b>6ES7195-7KF00-0XA0</b> Safety Protector betw. F- and Std-Mod.
<b>Weights</b>	
Weight, approx.	10 g

#### Ordering data

#### Article No.

<b>Safety protector</b> For simultaneous operation of fail-safe and standard modules in ET 200M	<b>6ES7195-7KF00-0XA0</b>
<b>Bus safety protector</b> For holding the safety protector in ET 200M	<b>6ES7195-7HG00-0XA0</b>

# SIMATIC S7-300 Advanced Controllers

## I/O modules

### SIPLUS S7-300 F-digital/analog modules

#### SIPLUS S7-300 SM 326 - Safety Integrated

## Overview



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

#### Note:

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

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## Technical specifications

Article number	6AG1326-1BK02-2AB0	6AG1326-1BK02-2AY0	6AG1326-1RF01-4AB0
Based on	6ES7326-1BK02-0AB0 SIPLUS S7-300 SM326F DI24	6ES7326-1BK02-0AB0 SIPLUS S7-300 SM326F DI24	6ES7326-1RF01-0AB0 SIPLUS S7-300 SM326F DI8 NAMUR
<b>Ambient conditions</b>			
<b>Ambient temperature during operation</b>			
• min.	-25 °C; = Tmin	-25 °C; = Tmin	0 °C; = Tmin
• max.	60 °C; = Tmax; *+70 °C where forced convection with a minimum air velocity of 0.7 m/s through the modules and rated voltage of 24 V ±5 % are ensured. If in the course of maintenance or automatic diagnosis it is determined that the admissible specified parameters have been exceeded, the modules should be subjected to a proof test (function check) by the manufacturer.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	60 °C; = Tmax
<b>Altitude during operation relating to sea level</b>			
• Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
<b>Relative humidity</b>			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>			
<b>Use in stationary industrial systems</b>			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

# SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 F-digital/analog modules

## SIPLUS S7-300 SM 326 - Safety Integrated

### Technical specifications (continued)

Article number	6AG1326-1BK02-2AB0	6AG1326-1BK02-2AY0	6AG1326-1RF01-4AB0
Based on	6ES7326-1BK02-0AB0 SIPLUS S7-300 SM326F DI24	6ES7326-1BK02-0AB0 SIPLUS S7-300 SM326F DI24	6ES7326-1RF01-0AB0 SIPLUS S7-300 SM326F DI8 NAMUR
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>			
- to biologically active substances according to EN 60721-3-5		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	
- to chemically active substances according to EN 60721-3-5		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	
- to mechanically active substances according to EN 60721-3-5		Yes; Class 5S3 incl. sand, dust; *	
<b>Use on ships/at sea</b>			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *		Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>			
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

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### Ordering data

#### SIPLUS S7-300 SM 326 F-digital input

For industrial applications with extended ambient conditions

#### Extended temperature range and exposure to media

24 inputs, 24 V DC, failsafe, with diagnostics interrupt

6AG1326-1BK02-2AB0

8 inputs, 24 V DC, NAMUR, failsafe

6AG1326-1RF01-4AB0

For rolling stock railway applications

#### Conforms to EN 50155

24 inputs, 24 V DC, failsafe, with diagnostics interrupt

6AG1326-1BK02-2AY0

#### Accessories

Mandatory

#### Front connector

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

Accessories for hot swapping function

#### Active bus module

BM 1 x 80 for 1 module, 80 mm wide

6AG1195-7HC00-2XA0

### Article No.

#### Consumables

#### DIN rail for active bus modules

For max. 5 active bus modules for hot swapping function

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

6ES7195-1GA00-0XA0  
6ES7195-1GF30-0XA0  
6ES7195-1GG30-0XA0  
6ES7195-1GC00-0XA0

#### Front door, elevated design, for F-modules

For F-modules; for connecting 1.3 mm<sup>2</sup>/16 AWG wires; wiring diagram and labels in yellow

6ES7328-7AA10-0AA0

#### Labeling strips

For F-modules (spare part); 10 units

6ES7392-2XX20-0AA0

#### Label cover

For F-modules (spare part); 10 units

6ES7392-2XY20-0AA0

#### LK 393 cable guide

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

6ES7393-4AA10-0AA0



# SIMATIC S7-300 Advanced Controllers

## I/O modules

### SIPLUS S7-300 F-digital/analog modules

#### SIPLUS S7-300 SM 326 - Safety Integrated

Ordering data	Article No.	Ordering data	Article No.
<p><i>Programming tools and documentation</i></p> <p><b>S7 Distributed Safety V5.4 SP5 Update 2 programming tool</b></p> <p>Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP</p> <p>Requirement: Windows 7 SP1 (64-bit), Windows 10 Professional/Enterprise (64-bit), Windows Server 2008 R2 SP1 (64-bit), Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit); STEP 7 as of V5.5 SP1; Please also consider the operating systems that have been released for the used STEP 7 version</p> <p>Floating license for 1 user; software and documentation on DVD; license key on USB flash drive</p> <p>Floating license for 1 user; software, documentation and license key for download<sup>1)</sup>; email address required for delivery</p> <p><b>S7 Distributed Safety upgrade</b></p> <p>From V5.x to V5.4; floating license for 1 user; software and documentation on DVD; license key on USB flash drive</p>	<p><b>6ES7833-1FC02-0YA5</b></p> <p><b>6ES7833-1FC02-0YH5</b></p> <p><b>6ES7833-1FC02-0YE5</b></p>	<p><b>STEP 7 Safety Advanced V15.1</b></p> <p>Task: Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco I/O</p> <p>Requirement: STEP 7 Professional V15.1</p> <p>Floating license for 1 user, software and documentation on DVD; license key on USB flash drive</p> <p>Floating license for 1 user, software, documentation and license key for download<sup>1)</sup>; email address required for delivery</p> <p><b>SIMATIC Manual Collection</b></p> <p>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</p> <p><b>SIMATIC Manual Collection update service for 1 year</b></p> <p>Current "Manual Collection" DVD and the three subsequent updates</p>	<p><b>6ES7833-1FA15-0YA5</b></p> <p><b>6ES7833-1FA15-0YH5</b></p> <p><b>6ES7998-8XC01-8YE0</b></p> <p><b>6ES7998-8XC01-8YE2</b></p>

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

**SIMATIC S7-300 Advanced Controllers**

I/O modules

SIPLUS S7-300 F-digital/analog modules

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

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

Note:

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

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**Technical specifications**

Article number	<b>6AG1326-2BF10-2AB0</b>	<b>6AG1326-2BF10-2AY0</b>	<b>6AG1326-2BF41-2AB0</b>	<b>6AG1326-2BF41-2AY0</b>
Based on	<b>6ES7326-2BF10-0AB0</b> SIPLUS S7-300 SM326F 10 DQ	<b>6ES7326-2BF10-0AB0</b> SIPLUS S7-300 SM326 10F-DQ	<b>6ES7326-2BF41-0AB0</b> SIPLUS S7-300 SM326F DQ8	<b>6ES7326-2BF41-0AB0</b> SIPLUS S7-300 SM326 F DQ8 EN50155
<b>Ambient conditions</b>				
<b>Ambient temperature during operation</b>				
• min.	-25 °C	-25 °C; = Tmin	-25 °C	-25 °C; = Tmin
• max.	60 °C; = Tmax; *+70 °C when forced convection at a minimum air speed of 0.3 m/s through the modules is ensured. If in the course of maintenance or automatic diagnosis it is determined that the admissible specified parameters have been exceeded, the modules should be subjected to a proof test (function check) by the manufacturer.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	60 °C	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155
<b>Altitude during operation relating to sea level</b>				
• Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
<b>Relative humidity</b>				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>				
<b>Use in stationary industrial systems</b>				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

# SIMATIC S7-300 Advanced Controllers

## I/O modules

### SIPLUS S7-300 F-digital/analog modules

#### SIPLUS S7-300 SM 326 - Safety Integrated

#### Technical specifications (continued)

Article number	6AG1326-2BF10-2AB0	6AG1326-2BF10-2AY0	6AG1326-2BF41-2AB0	6AG1326-2BF41-2AY0
Based on	6ES7326-2BF10-0AB0 SIPLUS S7-300 SM326F 10 DQ	6ES7326-2BF10-0AB0 SIPLUS S7-300 SM326 10F-DQ	6ES7326-2BF41-0AB0 SIPLUS S7-300 SM326F DQ8	6ES7326-2BF41-0AB0 SIPLUS S7-300 SM326 F DQ8 EN50155
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>				
- to biologically active substances according to EN 60721-3-5		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5		Yes; Class 5S3 incl. sand, dust; *		Yes; Class 5S3 incl. sand, dust; *
<b>Use on ships/at sea</b>				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *		Yes; Class 6S3 incl. sand, dust; *	
<b>Remark</b>				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

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#### Ordering data

	Article No.	Article No.
<b>SIPLUS S7-300 SM 326 F-digital output</b>		
<i>For industrial applications with extended ambient conditions</i>		<i>Accessories for hot swapping function</i>
<u>Extended temperature range and exposure to media</u>		<b>Active bus module</b>
10 outputs, 24 V DC, 2 A, failsafe	6AG1326-2BF10-2AB0	BM 2 x 40 for accepting 2 I/O modules, each 40 mm wide
8 outputs, 24 V DC, 2 A, failsafe, current sinking output	6AG1326-2BF41-2AB0	BM 1 x 80 for 1 module, 80 mm wide
<i>For rolling stock railway applications</i>		<i>Consumables</i>
Conforms to EN 50155		<b>DIN rail for active bus modules</b>
10 outputs, 24 V DC, 2 A, failsafe	6AG1326-2BF10-2AY0	For max. 5 active bus modules for hot swapping function
8 outputs, 24 V DC, 2 A, failsafe, current sinking output	6AG1326-2BF41-2AY0	<ul style="list-style-type: none"> <li>• Length 483 mm (19")</li> <li>• Length 530 mm</li> <li>• Length 620 mm</li> <li>• Length 2000 mm</li> </ul>
<b>Accessories</b>		<b>Front door, elevated design, for F-modules</b>
<i>Mandatory</i>		For F-modules; for connecting 1.3 mm <sup>2</sup> /16 AWG wires; wiring diagram and labels in yellow
<b>Front connector</b>		<b>Labeling strips</b>
40-pin, with spring-loaded contacts		For F-modules (spare part); 10 units
<ul style="list-style-type: none"> <li>• 1 unit</li> <li>• 100 units</li> </ul>	6ES7392-1BM01-0AA0 6ES7392-1BM01-1AB0	<b>Label cover</b>
		For F-modules (spare part); 10 units
		<b>LK 393 cable guide</b>
		For F-modules; L+ and M connections; 5 units

**SIMATIC S7-300 Advanced Controllers**

I/O modules

SIPLUS S7-300 F-digital/analog modules

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

Task:

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

Requirement:

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

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

**6ES7833-1FC02-0YA5**

Floating license for 1 user; software, documentation and license key for download<sup>1)</sup>; email address required for delivery

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

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

**6ES7833-1FC02-0YE5****STEP 7 Safety Advanced V15.1**

Task:

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

Requirement:

STEP 7 Professional V15.1

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

**6ES7833-1FA15-0YA5**

Floating license for 1 user, software, documentation and license key for download<sup>1)</sup>; email address required for delivery

**6ES7833-1FA15-0YH5****SIMATIC Manual Collection**

Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC

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

Current "Manual Collection" DVD and the three subsequent updates

**6ES7998-8XC01-8YE2**

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

# SIMATIC S7-300 Advanced Controllers

## I/O modules

### SIPLUS S7-300 F-digital/analog modules

#### SIPLUS S7-300 SM 336 - Safety Integrated

## Overview



- Analog inputs for fail-safe SIPLUS S7 systems
- Applicable in the ET 200M distributed I/O device with IM 153-2 HF as well as centrally with SIPLUS S7-31xF-2 DP
- Properties of the SM 336; F-AI 6 x 0/4 ... 20 mA HART:
  - 6 analog inputs with galvanic isolation between channels and backplane bus
  - Input ranges: 0 mA to 20 mA, 4 mA to 20 mA
  - Short-circuit proof power supply of 2 or 4-wire transmitter via the module
  - External encoder supply possible
  - Applicable in safety mode
  - HART communication
  - Firmware update using HW Config
  - Identification data
  - Temperature range -25 ... +70 °C; (+70 °C when ensuring a forced convection with a minimal air velocity of 0.3 m/s through the module. If a violation of the permissible, specified parameters is detected during maintenance or by automatic diagnostics, the modules must be proof-tested by the manufacturer. Without this measure the temperature range is -25...60°C)

#### Note:

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

## Technical specifications

Article number	<b>6AG1336-4GE00-2AB0</b>
Based on	<b>6ES7336-4GE00-0AB0</b> SIPLUS S7-300 SM336 F 6AI 15BIT
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• min.	-25 °C; = Tmin; Startup @ -25 °C
• max.	60 °C; = Tmax; *+70 °C when forced convection at a minimum air speed of 0.3 m/s through the modules is ensured. If in the course of maintenance or automatic diagnosis it is determined that the admissible specified parameters have been exceeded, the modules should be subjected to a proof test (function check) by the manufacturer.
• At cold restart, min.	-25 °C
<b>Ambient temperature during storage/transportation</b>	
• min.	-40 °C
• max.	70 °C
<b>Altitude during operation relating to sea level</b>	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
<b>Relative humidity</b>	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>	
<b>Use in stationary industrial systems</b>	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *
<b>Use on ships/at sea</b>	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!

**SIMATIC S7-300 Advanced Controllers**

I/O modules

SIPLUS S7-300 F-digital/analog modules

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

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**Ordering data****Article No.****Article No.****SIPLUS S7-300 SM 336  
F-analog input module***For industrial applications with  
extended ambient conditions*Extended temperature range and  
exposure to media6 inputs, 15 bits, 0/4 ... 20 mA  
HART**6AG1336-4GE00-2AB0****Accessories***Mandatory***Front connector**

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

**6ES7392-1BJ00-0AA0****6ES7392-1BJ00-1AB0***Accessories for hot swapping  
function***Active bus module**BM 2 x 40 for accepting  
2 I/O modules, each 40 mm wide**6AG1195-7HB00-7XA0***Consumables***DIN rail for active bus modules**For max. 5 active bus modules for  
hot swapping function

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

**6ES7195-1GA00-0XA0****6ES7195-1GF30-0XA0****6ES7195-1GG30-0XA0****6ES7195-1GC00-0XA0****Front door, elevated design,  
for F-modules****6ES7328-7AA10-0AA0**For F-modules; for connecting  
1.3 mm<sup>2</sup>/16 AWG wires; wiring  
diagram and labels in yellow**Labeling strips****6ES7392-2XX20-0AA0**

For F-modules (spare part); 10 units

**Label cover****6ES7392-2XY20-0AA0**

For F-modules (spare part); 10 units

**LK 393 cable guide****6ES7393-4AA10-0AA0**For F-modules;  
L+ and M connections; 5 units*Programming tools and  
documentation***S7 Distributed Safety V5.4 SP5  
Update 2 programming tool****Task:**Configuration software for  
configuring fail-safe user programs  
for SIMATIC S7-300F, S7-400F,  
WinAC RTX F, ET 200S, ET 200M,  
ET 200iSP, ET 200pro, ET 200eco,  
ET 200SP**Requirement:**Windows 7 SP1 (64-bit),  
Windows 10 Professional/Enterprise  
(64-bit),  
Windows Server 2008 R2 SP1  
(64-bit),  
Windows Server 2012 R2 (64-bit),  
Windows Server 2016 (64-bit);  
STEP 7 as of V5.5 SP1;  
Please also consider the operating  
systems that have been released  
for the used STEP 7 versionFloating license for 1 user;  
software and documentation on  
DVD; license key on USB flash drive**6ES7833-1FC02-0YA5**Floating license for 1 user;  
software, documentation and  
license key for download<sup>1)</sup>;  
email address required for delivery**6ES7833-1FC02-0YH5****S7 Distributed Safety upgrade**From V5.x to V5.4;  
floating license for 1 user;  
software and documentation on  
DVD; license key on USB flash drive**6ES7833-1FC02-0YE5****STEP 7 Safety Advanced V15.1****Task:**Engineering tool for configuring and  
programming fail-safe user  
programs for SIMATIC S7-1200 FC,  
S7-1500F, S7-1500F Software  
Controller, S7-300F, S7-400F,  
WinAC RTX F, ET 200SP F Controller  
and the fail-safe ET 200SP,  
ET 200MP, ET 200S, ET 200M,  
ET 200iSP, ET 200pro and  
ET 200eco I/O**Requirement:**

STEP 7 Professional V15.1

Floating license for 1 user,  
software and documentation on  
DVD; license key on USB flash drive**6ES7833-1FA15-0YA5**Floating license for 1 user,  
software, documentation and  
license key for download<sup>1)</sup>;  
email address required for delivery**6ES7833-1FA15-0YH5****SIMATIC Manual Collection**Electronic manuals on DVD,  
multilingual:  
LOGO!, SIMADYN, SIMATIC bus  
components, SIMATIC C7,  
SIMATIC Distributed I/O,  
SIMATIC HMI, SIMATIC Sensors,  
SIMATIC NET, SIMATIC PC-based  
Automation, SIMATIC PCS 7,  
SIMATIC PG/PC, SIMATIC S7,  
SIMATIC Software, SIMATIC TDC**6ES7998-8XC01-8YE0****SIMATIC Manual Collection  
update service for 1 year**Current "Manual Collection" DVD  
and the three subsequent updates**6ES7998-8XC01-8YE2**

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

## Overview



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

### Note:

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

## Technical specifications

Article number	<b>6AG1195-7KF00-2XA0</b>
Based on	<b>6ES7195-7KF00-0XA0</b> SIPLUS S7-300 safety protector
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• min.	-25 °C; = Tmin
• max.	60 °C; = Tmax
<b>Ambient temperature during storage/transportation</b>	
• min.	-40 °C
• max.	70 °C
<b>Altitude during operation relating to sea level</b>	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
<b>Relative humidity</b>	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>	
<b>Use in stationary industrial systems</b>	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *
<b>Use on ships/at sea</b>	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!

## Ordering data

## Article No.

### SIPLUS F safety protector

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

*For industrial applications with extended ambient conditions*

Extended temperature range and exposure to media

**6AG1195-7KF00-2XA0**

### Accessories

#### SIPLUS ET 200M bus safety protector F

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

Extended temperature range and exposure to media

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

## SIMATIC S7-300 Advanced Controllers

I/O modules

Ex digital modules

### Ex digital input modules

#### Overview



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

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#### Technical specifications

Article number	<b>6ES7321-7RD00-0AB0</b> SM321, 4DI, DC24V, HAZARDOUS AREAS
<b>Supply voltage</b>	
<b>Load voltage L+</b>	
• Rated value (DC)	24 V
<b>Input current</b>	
from load voltage L+ (without load), max.	50 mA
from backplane bus 5 V DC, max.	80 mA
<b>Encoder supply</b>	
Type of output voltage	via the inputs
<b>Power loss</b>	
Power loss, typ.	1.1 W
<b>Digital inputs</b>	
Number of NAMUR inputs	4
<b>Input voltage</b>	
• Rated value (DC)	8.2 V; from internal power circuit supply
<b>Input current</b>	
• on wire-break, max.	0.1 mA
• on short-circuit, max.	8.5 mA
<b>for NAMUR encoders</b>	
- for signal "0"	0.35 to 1.2 mA
- for signal "1"	2.1 to 7 mA
<b>Input delay (for rated value of input voltage)</b>	
• Input frequency (with a time delay of 0.1 ms), max.	2 kHz
<b>for NAMUR inputs</b>	
- parameterizable	Yes; 0.1 / 0.5 / 3 / 15 / 20 ms (plus 0.25 ms preparation time)
<b>Cable length</b>	
• unshielded, max.	200 m
<b>Encoder</b>	
<b>Connectable encoders</b>	
• NAMUR encoder	Yes; Two-wire connection

Article number	<b>6ES7321-7RD00-0AB0</b> SM321, 4DI, DC24V, HAZARDOUS AREAS
<b>Interrupts/diagnostics/status information</b>	
<b>Diagnostic messages</b>	
• Diagnostic information readable	Yes
<b>Ex(i) characteristics</b>	
<b>Maximum values of input circuits (per channel)</b>	
• 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
<b>Potential separation</b>	
<b>Potential separation digital inputs</b>	
• Potential separation digital inputs	Yes
• between the channels, in groups of	1
<b>Standards, approvals, certificates</b>	
<b>Use in hazardous areas</b>	
• Type of protection acc. to EN 50020 (CENELEC)	[Ex 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
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• max.	60 °C
<b>Connection method</b>	
required front connector	20-pin
<b>Weights</b>	
Weight, approx.	230 g



Ordering data	Article No.		Article No.
<b>Ex digital input module</b> 4 inputs, isolated, NAMUR	<b>6ES7321-7RD00-0AB0</b>	<b>Labeling sheets for machine inscription</b> for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
<b>Front connector</b> 20-pin, with screw contacts • 1 unit • 100 units	<b>6ES7392-1AJ00-0AA0</b> <b>6ES7392-1AJ00-1AB0</b>	Petrol	<b>6ES7392-2AX00-0AA0</b>
<b>Front door, elevated design</b> e.g. for 32 channel modules; enables connection of 1.3 mm <sup>2</sup> /16 AWG wires	<b>6ES7328-0AA00-7AA0</b>	Light beige	<b>6ES7392-2BX00-0AA0</b>
<b>LK 393 cable guide</b> Mandatory for operation in Ex-hazard areas	<b>6ES7393-4AA00-0AA0</b>	Yellow	<b>6ES7392-2CX00-0AA0</b>
<b>Labeling strips</b> 10 units (spare part), for modules with 20-pin front connector	<b>6ES7392-2XX00-0AA0</b>	Red	<b>6ES7392-2DX00-0AA0</b>
<b>Label cover</b> 10 units (spare part), for modules with 20-pin front connector	<b>6ES7392-2XY00-0AA0</b>	<b>SIMATIC Manual Collection</b> 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	<b>6ES7998-8XC01-8YE0</b>
		<b>SIMATIC Manual Collection update service for 1 year</b> Current "Manual Collection" DVD and the three subsequent updates	<b>6ES7998-8XC01-8YE2</b>

## SIMATIC S7-300 Advanced Controllers

I/O modules

Ex digital modules

### Ex digital output modules

#### Overview



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

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#### Technical specifications

Article number	6ES7322-5SD00-0AB0	6ES7322-5RD00-0AB0
	SM322, 4DQ, 24V DC, 10MA, HAZARDOUS AREAS	SM322, 4DQ, 15V DC, 20MA, HAZARDOUS AREAS
<b>Supply voltage</b>		
<b>Load voltage L+</b>		
• Rated value (DC)	24 V	24 V
<b>Input current</b>		
from load voltage L+ (without load), max.	160 mA	160 mA
from backplane bus 5 V DC, max.	85 mA	85 mA
<b>Power loss</b>		
Power loss, typ.	3 W	3 W
<b>Digital outputs</b>		
Number of digital outputs	4	4
Short-circuit protection	Yes; Electronic	Yes; Electronic
• Response threshold, typ.	Output current with short-circuit protection, min. 10 mA + 10 %	Output current with short-circuit protection, min. 20.5 mA + 10 %
<b>Load resistance range</b>		
• upper limit	390 Ω; Two-wire connection	200 Ω; Two-wire connection
<b>Output voltage</b>		
• Rated value (DC)	24 V	15 V
<b>Output current</b>		
• for signal "1" permissible range for 0 to 60 °C, max.	10 mA; ±10 %	20 mA; ±10 %
<b>Switching frequency</b>		
• with resistive load, max.	100 Hz	100 Hz
<b>Cable length</b>		
• unshielded, max.	200 m	200 m
<b>Interrupts/diagnostics/status information</b>		
<b>Diagnostic messages</b>		
• Diagnostic information readable	Yes	Yes
• Short-circuit	Yes	Yes
<b>Ex(i) characteristics</b>		
<b>Maximum values of output circuits (per channel)</b>		
• 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

## Technical specifications (continued)

Article number	6ES7322-5SD00-0AB0	6ES7322-5RD00-0AB0
	SM322, 4DQ, 24V DC, 10MA, HAZARDOUS AREAS	SM322, 4DQ, 15V DC, 20MA, HAZARDOUS AREAS
<b>Potential separation</b>		
<b>Potential separation digital outputs</b>		
• Potential separation digital outputs	Yes	Yes
• between the channels, in groups of	1	1
<b>Standards, approvals, certificates</b>		
<b>Use in hazardous areas</b>		
• 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
<b>Ambient conditions</b>		
<b>Ambient temperature during operation</b>		
• max.	60 °C	60 °C
<b>Connection method</b>		
required front connector	20-pin	20-pin
<b>Weights</b>		
Weight, approx.	230 g	230 g

## Ordering data

Ordering data	Article No.	Ordering data	Article No.
<b>Ex digital output modules</b>		<b>Labeling sheets for machine inscription</b>	
4 outputs, isolated, 24 V DC, 10 mA	6ES7322-5SD00-0AB0	for modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units	
4 outputs, isolated, 15 V DC, 20 mA	6ES7322-5RD00-0AB0		
<b>Front connector</b>		Petrol	6ES7392-2AX00-0AA0
20-pin, with screw contacts		Light beige	6ES7392-2BX00-0AA0
• 1 unit	6ES7392-1AJ00-0AA0	Yellow	6ES7392-2CX00-0AA0
• 100 units	6ES7392-1AJ00-1AB0	Red	6ES7392-2DX00-0AA0
<b>Front door, elevated design</b>		<b>SIMATIC Manual Collection</b>	6ES7998-8XC01-8YE0
e.g. for 32 channel modules; enables connection of 1.3 mm <sup>2</sup> /16 AWG wires	6ES7328-0AA00-7AA0	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	
<b>LK 393 cable guide</b>	6ES7393-4AA00-0AA0	<b>SIMATIC Manual Collection update service for 1 year</b>	6ES7998-8XC01-8YE2
Mandatory for operation in Ex-hazard areas		Current "Manual Collection" DVD and the three subsequent updates	
<b>Labeling strips</b>	6ES7392-2XX00-0AA0		
10 units (spare part), for modules with 20-pin front connector			
<b>Label cover</b>	6ES7392-2XY00-0AA0		
10 units (spare part), for modules with 20-pin front connector			

## SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 Ex digital modules

### SIPLUS S7-300 Ex digital input modules

#### Overview



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

#### Note:

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

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#### Technical specifications

Article number	<b>6AG1321-7RD00-4AB0</b>
Based on	<b>6ES7321-7RD00-0AB0</b> SIPLUS S7-300 SM 321 4DI NAMUR
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• min.	0 °C; = Tmin
• max.	60 °C; = Tmax
<b>Ambient temperature during storage/transportation</b>	
• min.	-40 °C
• max.	70 °C
<b>Altitude during operation relating to sea level</b>	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

Article number	<b>6AG1321-7RD00-4AB0</b>
Based on	<b>6ES7321-7RD00-0AB0</b> SIPLUS S7-300 SM 321 4DI NAMUR
<b>Resistance</b>	
<b>Use in stationary industrial systems</b>	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
<b>Use on ships/at sea</b>	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!

## SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 Ex digital modules

## SIPLUS S7-300 Ex digital input modules

Ordering data	Article No.	Ordering data	Article No.
<b>SIPLUS S7-300 Ex digital input module</b>		<b>Labeling sheets for machine inscription</b>	
<i>Exposure to media</i>		For modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
4 inputs, isolated, NAMUR	<b>6AG1321-7RD00-4AB0</b>	Petrol	<b>6ES7392-2AX00-0AA0</b>
<b>Accessories</b>		Light beige	<b>6ES7392-2BX00-0AA0</b>
<i>Mandatory</i>		Yellow	<b>6ES7392-2CX00-0AA0</b>
<b>Front connector</b>		Red	<b>6ES7392-2DX00-0AA0</b>
20-pin, with spring-loaded contacts		<i>Documentation</i>	
• 1 unit	<b>6ES7392-1BJ00-0AA0</b>	<b>SIMATIC Manual Collection</b>	<b>6ES7998-8XC01-8YE0</b>
• 100 units	<b>6ES7392-1BJ00-1AB0</b>	Electronic manuals on DVD, multi-language: 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	
<i>Consumables</i>		<b>SIMATIC Manual Collection update service for 1 year</b>	<b>6ES7998-8XC01-8YE2</b>
<b>DIN rail for active bus modules</b>		Current "Manual Collection" DVD and the three subsequent updates	
For max. 5 active bus modules for hot swapping function			
• Length 483 mm (19")	<b>6ES7195-1GA00-0XA0</b>		
• Length 530 mm	<b>6ES7195-1GF30-0XA0</b>		
• Length 620 mm	<b>6ES7195-1GG30-0XA0</b>		
• Length 2000 mm	<b>6ES7195-1GC00-0XA0</b>		
<b>Front door, elevated design</b>	<b>6ES7328-0AA00-7AA0</b>		
E.g. for 32-channel modules; for connecting 1.3 mm <sup>2</sup> /16 AWG conductors; circuit diagram and nameplates in petrol			
<b>LK 393 cable guide</b>	<b>6ES7393-4AA00-0AA0</b>		
Mandatory for operation in hazardous areas			
<b>Labeling strips</b>	<b>6ES7392-2XX00-0AA0</b>		
10 units (spare part), for modules with 20-pin front connector			
<b>Label cover</b>	<b>6ES7392-2XY00-0AA0</b>		
10 units (spare part), for modules with 20-pin front connector			

## SIMATIC S7-300 Advanced Controllers

I/O modules

Ex analog modules

### Ex analog input modules

#### Overview



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

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#### Technical specifications

Article number	6ES7331-7RD00-0AB0	6ES7331-7SF00-0AB0
	SM331, 4AE, 0/4-20MA, EX-ZONE	SM331, 8AE THERMO/4AE PT100, EX-ZONE
<b>Supply voltage</b>		
<b>Load voltage L+</b>		
• Rated value (DC)	24 V	24 V
<b>Input current</b>		
from load voltage L+ (without load), max.	250 mA	
from backplane bus 5 V DC, max.	60 mA	120 mA
<b>Output voltage</b>		
<b>Power supply to the transmitters</b>		
• Rated value (DC)	13 V; at 22 mA	
• No-load voltage (DC)	25.2 V	
<b>Power loss</b>		
Power loss, typ.	3 W	0.6 W
<b>Analog inputs</b>		
Number of analog inputs	4	8; 8x thermocouples; 4x RTD thermoresistors
permissible input current for current input (destruction limit), max.	40 mA	
<b>Input ranges (rated values), currents</b>		
• 0 to 20 mA	Yes	
• 4 mA to 20 mA	Yes	
<b>Input ranges (rated values), thermocouples</b>		
• 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
<b>Input ranges (rated values), resistance thermometer</b>		
• Ni 100		Yes
• Pt 100		Yes
• Pt 200		Yes
<b>Cable length</b>		
• shielded, max.	200 m	200 m; TC: 50 m

## Technical specifications (continued)

Article number	6ES7331-7RD00-0AB0	6ES7331-7SF00-0AB0
	SM331, 4AE, 0/4-20MA, EX-ZONE	SM331, 8AE THERMO/4AE PT100, EX-ZONE
<b>Analog value generation for the inputs</b>		
Measurement principle	Sigma Delta	Sigma Delta
<b>Integration and conversion time/resolution per channel</b>		
• Resolution with overrange (bit including sign), max.	16 bit; 10 bit to 15 bit + sign	16 bit; 10 bit to 15 bit + sign
• Integration time, parameterizable	Yes; 2.5 to 100 ms	Yes; 2.5 to 100 ms
• Interference voltage suppression for interference frequency f1 in Hz	10 to 400 Hz	10 to 400 Hz
<b>Encoder</b>		
<b>Connection of signal encoders</b>		
• for current measurement as 2-wire transducer	Yes	Yes
• for current measurement as 4-wire transducer	Yes	Yes
<b>Errors/accuracies</b>		
Temperature error (relative to input range), (+/-)		0.001 %/K; Temperature error: 0.001 to 0.002 %/K
<b>Operational error limit in overall temperature range</b>		
• Current, relative to input range, (+/-)	0.45 %	
• Resistance thermometer, relative to input range, (+/-)		0.04 %; 0.09 to 0.04%
<b>Basic error limit (operational limit at 25 °C)</b>		
• Current, relative to input range, (+/-)	0.1 %	
• Resistance thermometer, relative to input range, (+/-)		0.008 %; 0.018 ... 0.008%
<b>Interference voltage suppression for <math>f = n \times (f1 \pm 1 \%)</math>, f1 = interference frequency</b>		
• 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
<b>Interrupts/diagnostics/status information</b>		
<b>Diagnostic messages</b>		
• 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
<b>Ex(i) characteristics</b>		
<b>Maximum values of input circuits (per channel)</b>		
• 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
<b>Potential separation</b>		
<b>Potential separation analog inputs</b>		
• Potential separation analog inputs	Yes	Yes

# SIMATIC S7-300 Advanced Controllers

I/O modules

Ex analog modules

## Ex analog input modules

### Technical specifications (continued)

Article number	<b>6ES7331-7RD00-0AB0</b>	<b>6ES7331-7SF00-0AB0</b>
	SM331, 4AE, 0/4-20mA, EX-ZONE	SM331, 8AE THERMO/4AE PT100, EX-ZONE
<b>Permissible potential difference</b>		
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 the 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
<b>Standards, approvals, certificates</b>		
<b>Use in hazardous areas</b>		
• Type of protection acc. to EN 50020 (GENELEC)	[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
<b>Ambient conditions</b>		
<b>Ambient temperature during operation</b>		
• max.	60 °C	60 °C
<b>Connection method</b>		
required front connector	20-pin	20-pin
<b>Weights</b>		
Weight, approx.	290 g	210 g

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### Ordering data

#### Ex analog input modules

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

**6ES7331-7RD00-0AB0**

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

**6ES7331-7SF00-0AB0**

#### Front connector

20-pin, with screw contacts

- 1 unit
- 100 units

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

#### Front door, elevated design

e.g. for 32 channel modules; enables connection of 1.3 mm<sup>2</sup>/16 AWG wires**6ES7328-0AA00-7AA0**

#### LK 393 cable guide

Mandatory for operation in Ex-hazard areas

**6ES7393-4AA00-0AA0**

#### Labeling strips

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

**6ES7392-2XX00-0AA0**

#### Label cover

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

**6ES7392-2XY00-0AA0**

#### Labeling sheets for machine inscription

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

Petrol

**6ES7392-2AX00-0AA0**

Light beige

**6ES7392-2BX00-0AA0**

Yellow

**6ES7392-2CX00-0AA0**

Red

**6ES7392-2DX00-0AA0**

#### SIMATIC Manual Collection

Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC

**6ES7998-8XC01-8YE0**

#### SIMATIC Manual Collection update service for 1 year

Current "Manual Collection" DVD and the three subsequent updates

**6ES7998-8XC01-8YE2**



## Overview



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

## Technical specifications

Article number	<b>6ES7332-5RD00-0AB0</b> SIMATIC S7, SM 332 ANALOG OUTPUT
<b>Supply voltage</b>	
<b>Load voltage L+</b>	
• Rated value (DC)	24 V
<b>Input current</b>	
from load voltage L+ (without load), max.	200 mA
from backplane bus 5 V DC, max.	80 mA
<b>Power loss</b>	
Power loss, typ.	4 W
<b>Analog outputs</b>	
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
<b>Output ranges, current</b>	
• 0 to 20 mA	Yes
• 4 mA to 20 mA	Yes
<b>Connection of actuators</b>	
• for current output two-wire connection	Yes
<b>Load impedance (in rated range of output)</b>	
• with current outputs, max.	500 Ω
<b>Cable length</b>	
• shielded, max.	200 m
<b>Analog value generation for the outputs</b>	
<b>Integration and conversion time/ resolution per channel</b>	
• Resolution with overrange (bit including sign), max.	15 bit
• Basic conversion time (ms)	2.5 ms
<b>Errors/accuracies</b>	
<b>Operational error limit in overall temperature range</b>	
• Current, relative to output range, (+/-)	0.55 %
<b>Basic error limit (operational limit at 25 °C)</b>	
• Current, relative to output range, (+/-)	0.2 %

Article number	<b>6ES7332-5RD00-0AB0</b> SIMATIC S7, SM 332 ANALOG OUTPUT
<b>Interrupts/diagnostics/ status information</b>	
Diagnostics function	Yes
<b>Diagnostic messages</b>	
• Diagnostic information readable	Yes
• Overrange	Yes
• Wire-break in actuator cable	Yes
<b>Ex(i) characteristics</b>	
<b>Maximum values of output circuits (per channel)</b>	
• 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
<b>Potential separation</b>	
<b>Potential separation analog outputs</b>	
• Potential separation analog outputs	Yes
<b>Permissible potential difference</b>	
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
Between the 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
<b>Standards, approvals, certificates</b>	
<b>Use in hazardous areas</b>	
• 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
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• max.	60 °C
<b>Connection method</b>	
required front connector	20-pin
<b>Weights</b>	
Weight, approx.	280 g

**SIMATIC S7-300 Advanced Controllers**

I/O modules

Ex analog modules

**Ex analog output modules****Ordering data****Article No.****Ex analog output module**

4 outputs, isolated, 0/4 to 20 mA

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

20-pin, with screw contacts

- 1 unit
- 100 units

**6ES7392-1AJ00-0AA0****6ES7392-1AJ00-1AB0****Front door, elevated design**e.g. for 32 channel modules;  
enables connection of  
1.3 mm<sup>2</sup>/16 AWG wires**6ES7328-0AA00-7AA0****LK 393 cable guide**Mandatory for operation in  
hazardous areas**6ES7393-4AA00-0AA0****Labeling strips**10 units (spare part), for modules  
with 20-pin front connector**6ES7392-2XX00-0AA0****Label cover**10 units (spare part), for modules  
with 20-pin front connector**6ES7392-2XY00-0AA0****Labeling sheets for machine  
inscription**For modules with 20-pin front  
connector, DIN A4, for printing with  
laser printer; 10 units

Petrol

**6ES7392-2AX00-0AA0**

Light beige

**6ES7392-2BX00-0AA0**

Yellow

**6ES7392-2CX00-0AA0**

Red

**6ES7392-2DX00-0AA0****Article No.****SIMATIC Manual Collection****6ES7998-8XC01-8YE0**Electronic manuals on DVD,  
multilingual:  
LOGO!, SIMADYN, SIMATIC bus  
components, SIMATIC C7,  
SIMATIC Distributed I/O,  
SIMATIC HMI, SIMATIC Sensors,  
SIMATIC NET, SIMATIC PC-based  
Automation, SIMATIC PCS 7,  
SIMATIC PG/PC, SIMATIC S7,  
SIMATIC Software, SIMATIC TDC**SIMATIC Manual Collection  
update service for 1 year****6ES7998-8XC01-8YE2**Current "Manual Collection" DVD  
and the three subsequent updates

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## Overview



- Analog inputs for signals from the Ex field
- For the connection of intrinsically safe analog equipment from the Ex field
- 4 analog inputs in 4 channel groups (single-channel isolation)
- Measurement type and range can be selected for each channel
- Programmable diagnostics and diagnostic interrupt
- Programmable threshold alarm
- HART-compatible inputs (6AG1331-7RD00-2AB0 only)

Note:

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

## Technical specifications

Article number	6AG1331-7RD00-2AB0	6AG1331-7SF00-4AB0
Based on	6ES7331-7RD00-0AB0 SIPLUS S7-300 SM331 4AI	6ES7331-7SF00-0AB0 SIPLUS S7-300 SM331 20pol
<b>Ambient conditions</b>		
<b>Ambient temperature during operation</b>		
• min.	-25 °C; = Tmin	0 °C; = Tmin
• max.	60 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use, 70 °C only 4 wire	60 °C; = Tmax
<b>Ambient temperature during storage/transportation</b>		
• min.	-40 °C	-40 °C
• max.	70 °C	70 °C
<b>Altitude during operation relating to sea level</b>		
• Installation altitude above sea level, max.	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>		
<b>Use in stationary industrial systems</b>		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
<b>Use on ships/at sea</b>		
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>		
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

**SIMATIC S7-300 Advanced Controllers**

I/O modules

SIPLUS S7-300 Ex analog modules

**SIPLUS S7-300 Ex analog input modules****Ordering data****Article No.****Article No.****SIPLUS S7-300 Ex analog input modules**Extended temperature range and exposure to media

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

**6AG1331-7RD00-2AB0**Exposure to media

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

**6AG1331-7SF00-4AB0****Accessories***Mandatory***Front connector**

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

**6ES7392-1BJ00-0AA0****6ES7392-1BJ00-1AB0***Consumables***DIN rail for active bus modules**

For max. 5 active bus modules for hot swapping function

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

**6ES7195-1GA00-0XA0****6ES7195-1GF30-0XA0****6ES7195-1GG30-0XA0****6ES7195-1GC00-0XA0****Front door, elevated design**E.g. for 32-channel modules; for connecting 1.3 mm<sup>2</sup>/16 AWG conductors; circuit diagram and nameplates in petrol**6ES7328-0AA00-7AA0****LK 393 cable guide**

Mandatory for operation in hazardous areas

**6ES7393-4AA00-0AA0****Labeling strips**

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

**6ES7392-2XX00-0AA0****Label cover**

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

**6ES7392-2XY00-0AA0****Labeling sheets for machine inscription**

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

Petrol

**6ES7392-2AX00-0AA0**

Light beige

**6ES7392-2BX00-0AA0**

Yellow

**6ES7392-2CX00-0AA0**

Red

**6ES7392-2DX00-0AA0***Documentation***SIMATIC Manual Collection****6ES7998-8XC01-8YE0**

Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC

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

Current "Manual Collection" DVD and the three subsequent updates

## Overview



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

## Note:

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

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

## Technical specifications

Article number	<b>6ES7350-1AH03-0AE0</b> FM350-1, counter mod. up to 500KHZ
<b>Supply voltage</b>	
<b>Auxiliary voltage 1L+, load voltage 2L+</b>	
• Rated value (DC)	24 V
<b>non-periodic skip</b>	
- Duration	500 ms
- Recovery time	50 s
- Value	35 V
<b>Input current</b>	
from load voltage 1L+ (without load), max.	40 mA
from backplane bus 5 V DC, max.	160 mA
<b>5 V encoder supply</b>	
• 5 V	Yes; 5.2 V $\pm$ 2 %
• Output current, max.	300 mA
<b>24 V encoder supply</b>	
• 24 V	Yes; 1L+ (-3 V)
• Output current, max.	400 mA
<b>Power loss</b>	
Power loss, typ.	4.5 W
<b>Digital inputs</b>	
Number of digital inputs	3
Functions	1 for gate start, 1 for gate stop, 1 for setting the counter
<b>Input voltage</b>	
• for signal "0"	-28.8 ... +5V
• for signal "1"	+11 to +28.8V
<b>Input current</b>	
• for signal "1", typ.	9 mA
<b>Digital outputs</b>	
Number of digital outputs	2
Short-circuit protection	Yes; Clocked electronically
Limitation of inductive shutdown voltage to	2L+ (-39 V)
<b>Output voltage</b>	
• for signal "0", max.	3 V
• for signal "1", min.	2L+ (-1,5 V)

Article number	<b>6ES7350-1AH03-0AE0</b> FM350-1, counter mod. up to 500KHZ
<b>Output current</b>	
• 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
<b>Output delay with resistive load</b>	
• "0" to "1", max.	300 $\mu$ s
<b>Encoder</b>	
<b>Connectable encoders</b>	
• 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
<b>Counter</b>	
Number of counter inputs	1
Counting range, description	32 bit or $\pm$ 31 bit
Minimum pulse width, adjustable	Yes; 2.5 or 25 $\mu$ s
<b>Counter input 5 V</b>	
• Type	RS 422
• Terminating resistor	220 $\Omega$
• Differential input voltage	1,3 V
• Counting frequency, max.	500 kHz
<b>Counter input 24 V</b>	
• Input voltage for signal "0"	-28.8 ... +5V
• Input voltage for signal "1"	+11 to +28.8V
• Input current for signal "1", typ.	9 mA
• Counting frequency, max.	200 kHz
• Minimum pulse width	2.5 $\mu$ s

# SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

## FM 350-1 counter module

### Technical specifications (continued)

Article number	<b>6ES7350-1AH03-0AE0</b> FM350-1, counter mod. up to 500KHZ
<b>Potential separation</b>	
<b>Potential separation digital inputs</b>	
• between the channels and backplane bus	Yes; Optocoupler
<b>Potential separation digital outputs</b>	
• between the channels and backplane bus	Yes; Optocoupler
<b>Potential separation counter</b>	
• between the channels and backplane bus	Yes; Optocoupler

Article number	<b>6ES7350-1AH03-0AE0</b> FM350-1, counter mod. up to 500KHZ
<b>Connection method</b>	
required front connector	1x 20-pin
<b>Dimensions</b>	
Width	40 mm
Height	125 mm
Depth	120 mm
<b>Weights</b>	
Weight, approx.	250 g

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### Ordering data

Ordering data	Article No.
<b>FM 350-1 counter module</b> With 1 channel, max. 500 kHz; for incremental encoder	<b>6ES7350-1AH03-0AE0</b>
<b>Coding plug - Range card for analog inputs</b> Spare part	<b>6ES7974-0AA00-0AA0</b>
<b>Front connector</b> 20-pin, with screw contacts • 1 unit • 100 units 20-pin, with spring-loaded contacts • 1 unit • 100 units	<b>6ES7392-1AJ00-0AA0</b> <b>6ES7392-1AJ00-1AB0</b> <b>6ES7392-1BJ00-0AA0</b> <b>6ES7392-1BJ00-1AB0</b>
<b>Bus connectors</b> 1 unit (spare part)	<b>6ES7390-0AA00-0AA0</b>
<b>Labeling strips</b> 10 units (spare part)	<b>6ES7392-2XX00-0AA0</b>
<b>Labeling sheets for machine inscription</b>	See under "Accessories", page 5/266
<b>Slot number label</b> Spare part	<b>6ES7912-0AA00-0AA0</b>
<b>Shield connection element</b> 80 mm wide, with 2 rows for 4 terminals each	<b>6ES7390-5AA00-0AA0</b>
<b>Shield connection clamps</b> 2 units For 2 cables with 2 mm to 6 mm diameter For 1 cable with 3 mm to 8 mm diameter For 1 cable with 4 mm to 13 mm diameter	<b>6ES7390-5AB00-0AA0</b> <b>6ES7390-5BA00-0AA0</b> <b>6ES7390-5CA00-0AA0</b>
<b>Connectable incremental encoders 6FX2 001-2...</b>	Refer to the Industry Mall under SIMODRIVE Sensor or Motion Connect 500 (see also <a href="http://www.siemens.com/simatic-technology">http://www.siemens.com/simatic-technology</a> )

### Article No.

#### Signal cable

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

Length code:

0 m  
100 m  
200 m0 m  
10 m  
20 m  
30 m  
40 m  
50 m  
60 m  
70 m  
80 m  
90 m0 m  
1 m  
2 m  
3 m  
4 m  
5 m  
6 m  
7 m  
8 m  
9 m**6FX5002-2CA12-**

1	2	3	0
---	---	---	---

1  
2  
3A  
B  
C  
D  
E  
F  
G  
H  
J  
KA  
B  
C  
D  
E  
F  
G  
H  
J  
K

## Overview



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

## Note:

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

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

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## Technical specifications

Article number	<b>6ES7350-2AH01-0AE0</b> FM350-2, Counter Mod., 8 Channels, 20KHz
<b>Supply voltage</b>	
<b>Auxiliary voltage 1L+, load voltage 2L+</b>	
• Rated value (DC)	24 V
<b>Input current</b>	
from load voltage L+ (without load), max.	150 mA
from backplane bus 5 V DC, max.	100 mA
<b>Encoder supply</b>	
Type of output voltage	NAMUR-encoder supply: 8.2 V $\pm$ 2 %
Short-circuit protection	Yes
<b>Output current</b>	
• Rated value	200 mA
<b>Power loss</b>	
Power loss, typ.	10 W
<b>Digital inputs</b>	
Number of digital inputs	8
Number of NAMUR inputs	8
Functions	1 each for gate start/ gate stop
<b>Input voltage</b>	
• for signal "0"	-3 to +5V
• for signal "1"	11 to 30.2 V
<b>Input current</b>	
• for signal "0", max. (permissible quiescent current)	2 mA
• for signal "1", typ.	9 mA
<b>Input delay (for rated value of input voltage)</b>	
<b>for standard inputs</b>	
- at "0" to "1", max.	50 $\mu$ s
<b>Cable length</b>	
• shielded, max.	100 m

Article number	<b>6ES7350-2AH01-0AE0</b> FM350-2, Counter Mod., 8 Channels, 20KHz
<b>Digital outputs</b>	
Number of digital outputs	8
Short-circuit protection	Yes
Limitation of inductive shutdown voltage to	L+ (-40 V)
<b>Output voltage</b>	
• for signal "1", min.	L+ (-0.8 V)
<b>Output current</b>	
• for signal "1" rated value	0.5 A
• for signal "0" residual current, max.	0.5 mA
<b>Output delay with resistive load</b>	
• "0" to "1", max.	300 $\mu$ s
<b>Switching frequency</b>	
• with resistive load, max.	500 Hz
• with inductive load, max.	0.5 Hz
<b>Total current of the outputs (per group)</b>	
<b>horizontal installation</b>	
- up to 40 °C, max.	4 A
- up to 60 °C, max.	2 A
<b>all other mounting positions</b>	
- up to 40 °C, max.	2 A
<b>Cable length</b>	
• shielded, max.	600 m
• unshielded, max.	100 m
<b>Encoder</b>	
<b>Connectable encoders</b>	
• Incremental encoder (asymmetrical)	Yes
• 24 V initiator	Yes
• 24 V directional element	Yes
• NAMUR encoder	Yes
• 2-wire sensor	Yes

# SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

## FM 350-2 counter module

### Technical specifications (continued)

Article number	<b>6ES7350-2AH01-0AE0</b> FM350-2, Counter Mod., 8 Channels, 20KHz
<b>NAMUR encoder</b>	
• 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
<b>Interrupts/diagnostics/ status information</b>	
Diagnostics function	Yes; Diagnostic information readable
<b>Alarms</b>	
• Diagnostic alarm	Yes; Parameterizable
• Hardware interrupt	Yes; Parameterizable
<b>Counter input 24 V</b>	
• Number	8; 32 bit or ±31 bit
• Input voltage for signal "0"	-3 to +5V
• Input voltage for signal "1"	11 to 30.2 V
• Input current for signal "0", max. (permissible quiescent current)	2 mA
• Input current for signal "1", typ.	9 mA
• Input delay, max.	50 µs
• Counting frequency, max.	20 kHz; Incremental encoder: 10 kHz
• Cable length, max.	100 m

Article number	<b>6ES7350-2AH01-0AE0</b> FM350-2, Counter Mod., 8 Channels, 20KHz
<b>Potential separation</b>	
<b>Potential separation digital inputs</b>	
• between the channels and backplane bus	Yes; and shielding
<b>Potential separation digital outputs</b>	
• between the channels and backplane bus	Yes; and shielding
<b>Potential separation counter</b>	
• between the channels and backplane bus	Yes; and shielding
<b>Connection method</b>	
required front connector	1x 40-pin
<b>Dimensions</b>	
Width	80 mm
Height	125 mm
Depth	120 mm
<b>Weights</b>	
Weight, approx.	460 g

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### Ordering data

Ordering data	Article No.
<b>FM 350-2 counter module</b> With 8 channels, max. 20 kHz; for 24 V incremental encoders and NAMUR encoders; incl. configuration package and electronic documentation on CD	<b>6ES7350-2AH01-0AE0</b>
<b>Front connector</b> 40-pin, with screw contacts • 1 unit • 100 units 40-pin, with spring-loaded contacts • 1 unit • 100 units	<b>6ES7392-1AM00-0AA0</b> <b>6ES7392-1AM00-1AB0</b> <b>6ES7392-1BM01-0AA0</b> <b>6ES7392-1BM01-1AB0</b>
<b>Bus connectors</b> 1 unit (spare part)	<b>6ES7390-0AA00-0AA0</b>
<b>Labeling strips</b> 10 units (spare part)	<b>6ES7392-2XX10-0AA0</b>
<b>Labeling sheets for machine inscription</b>	See under "Accessories", page 5/266

### Article No.

<b>Slot number label</b> Spare part	<b>6ES7912-0AA00-0AA0</b>
<b>Shield connection element</b> 80 mm wide, with 2 rows for 4 terminals each	<b>6ES7390-5AA00-0AA0</b>
<b>Terminal elements</b> 2 units For 2 cables with 2 mm to 6 mm diameter For 1 cable with 3 mm to 8 mm diameter For 1 cable with 4 mm to 13 mm diameter	<b>6ES7390-5AB00-0AA0</b> <b>6ES7390-5BA00-0AA0</b> <b>6ES7390-5CA00-0AA0</b>
<b>Signal cable</b> Pre-assembled for HTL and TTL encoder, without sub D connector, UL/DESINA Length code:	<b>6FX5002-2CA12- ■ ■ ■ 0</b>  See FM 350-1, page 5/142



## 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:

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

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

## Technical specifications

Article number	<b>6ES7351-1AH02-0AE0</b> FM351 positioning Mod. rapid/creep Feed
<b>Supply voltage</b>	
Rated value (DC)	
• 24 V DC	Yes
<b>Load voltage L+</b>	
• Rated value (DC)	24 V
<b>Input current</b>	
Current consumption, max.	350 mA
from backplane bus 5 V DC, max.	150 mA
<b>Encoder supply</b>	
<b>5 V encoder supply</b>	
• 5 V	Yes
• Output current, max.	350 mA
• Cable length, max.	32 m
<b>24 V encoder supply</b>	
• 24 V	Yes
• Output current, max.	400 mA; Per channel
• Cable length, max.	100 m
<b>Power loss</b>	
Power loss, typ.	7.9 W

Article number	<b>6ES7351-1AH02-0AE0</b> FM351 positioning Mod. rapid/creep Feed
<b>Digital inputs</b>	
Number of digital inputs	8
Functions	Reference cams, reversing cams, flying actual value setting, start/stop positioning
<b>Input voltage</b>	
• Rated value (DC)	24 V
• for signal "0"	-3 to +5V
• for signal "1"	+11 to +30V
<b>Input current</b>	
• for signal "0", max. (permissible quiescent current)	2 mA
• for signal "1", typ.	6 mA
<b>Digital outputs</b>	
Number of digital outputs	8
Functions	Rapid traverse, creep, run right, run left
Short-circuit protection	Yes
<b>Output voltage</b>	
• Rated value (DC)	24 V
• for signal "1", min.	UP - 0.8 V
<b>Output current</b>	
• 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

**SIMATIC S7-300 Advanced Controllers**

I/O modules

Function modules

**FM 351 positioning module****Technical specifications (continued)**

Article number	<b>6ES7351-1AH02-0AE0</b> FM351 positioning Mod. rapid/creep Feed
<b>Encoder</b>	
<b>Connectable encoders</b>	
• 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
<b>Encoder signals, incremental encoder (symmetrical)</b>	
• Trace mark signals	A, notA, B, notB
• Zero mark signal	N, notN
• Input voltage	5 V difference signal (phys. RS 422)
• Input frequency, max.	0.5 MHz
<b>Encoder signals, incremental encoder (asymmetrical)</b>	
• 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
<b>Encoder signals, absolute encoder (SSI)</b>	
• Input signal	5 V difference signal (phys. RS 422)
• Data signal	DATA, notDATA
• Clock signal	CL, notCL
• Telegram length, parameterizable	13 or 25 bit
• Clock frequency, max.	1.5 MHz
• Gray code	Yes
• Cable length, shielded, max.	200 m; At max. 188 kHz

Article number	<b>6ES7351-1AH02-0AE0</b> FM351 positioning Mod. rapid/creep Feed
<b>Potential separation</b>	
<b>Potential separation digital inputs</b>	
• Potential separation digital inputs	Yes
<b>Potential separation digital outputs</b>	
• Potential separation digital outputs	Yes
<b>Connection method</b>	
required front connector	1x 20-pin
<b>Dimensions</b>	
Width	80 mm
Height	125 mm
Depth	120 mm
<b>Weights</b>	
Weight, approx.	550 g

Ordering data	Article No.	Signal cables	Article No.
<b>FM 351 positioning module</b> For rapid traverse and creep speed drives	<b>6ES7351-1AH02-0AE0</b>	<b>Signal cables</b> Preassembled for SSI absolute encoder, UL/DESINA	<b>6FX50 2-2CC11-</b>
<b>Front connectors</b> 20-pin, with screw contacts • 1 unit • 100 units	<b>6ES7392-1AJ00-0AA0</b> <b>6ES7392-1AJ00-1AB0</b>	Preassembled for TTL encoder 6FX2001-1, UL/DESINA	<b>6FX50 2-2CD01-</b>
20-pin, with spring-loaded contacts • 1 unit • 100 units	<b>6ES7392-1BJ00-0AA0</b> <b>6ES7392-1BJ00-1AB0</b>	Preassembled for TTL encoder 24 V, UL/DESINA	<b>6FX50 2-2CD24-</b>
<b>Bus connectors</b> 1 unit (spare part)	<b>6ES7390-0AA00-0AA0</b>	Not crimped	<b>0</b>
<b>Labeling strips</b> 10 units (spare part)	<b>6ES7392-2XX00-0AA0</b>	Module end crimped, connector case supplied	<b>1</b>
<b>Slot number label</b> Spare part	<b>6ES7912-0AA00-0AA0</b>	Motor end crimped, connector case supplied	<b>4</b>
<b>Labeling sheets for machine inscription</b> Spare part	See under "Accessories", page 5/266	0 m	<b>1</b>
<b>Shield connection element</b> 80 mm wide, with 2 rows for 4 terminals each	<b>6ES7390-5AA00-0AA0</b>	100 m	<b>2</b>
<b>Terminal elements</b> 2 units	<b>6ES7390-5AB00-0AA0</b>	200 m	<b>3</b>
For 2 cables with 2 mm to 6 mm diameter	<b>6ES7390-5BA00-0AA0</b>	0 m	<b>A</b>
For 1 cable with 3 mm to 8 mm diameter	<b>6ES7390-5CA00-0AA0</b>	10 m	<b>B</b>
For 1 cable with 4 mm to 13 mm diameter		20 m	<b>C</b>
		30 m	<b>D</b>
		40 m	<b>E</b>
		50 m	<b>F</b>
		60 m	<b>G</b>
		70 m	<b>H</b>
		80 m	<b>J</b>
		90 m	<b>K</b>
		0 m	<b>A</b>
		1 m	<b>B</b>
		2 m	<b>C</b>
		3 m	<b>D</b>
		4 m	<b>E</b>
		5 m	<b>F</b>
		6 m	<b>G</b>
		7 m	<b>H</b>
		8 m	<b>J</b>
		9 m	<b>K</b>
		0.0 m	<b>0</b>
		0.1 m	<b>1</b>
		0.2 m	<b>2</b>
		0.3 m	<b>3</b>
		0.4 m	<b>4</b>
		0.5 m	<b>5</b>
		0.6 m	<b>6</b>
		0.7 m	<b>7</b>
		0.8 m	<b>8</b>

# SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

## FM 352 cam controllers

### 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:

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

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

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### Technical specifications

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

Article number	<b>6ES7352-1AH02-0AE0</b> FM352 Electron. Cam-operated Control
<b>Output current</b>	
• 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
<b>Encoder</b>	
<b>Connectable encoders</b>	
• 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
<b>Encoder signals, incremental encoder (symmetrical)</b>	
• Trace mark signals	A, notA, B, notB
• Zero mark signal	N, notN
• Input voltage	5 V difference signal (phys. RS 422)
• Input frequency, max.	1 MHz
<b>Encoder signals, incremental encoder (asymmetrical)</b>	
• 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
<b>Encoder signals, absolute encoder (SSI)</b>	
• Data signal	DATA, notDATA
• Clock signal	CL, notCL
• Telegram length, parameterizable	13 or 25 bit
• Clock frequency, max.	1 MHz
• Gray code	Yes
• Cable length, shielded, max.	320 m; at max. 125 kHz

## Technical specifications (continued)

Article number	<b>6ES7352-1AH02-0AE0</b> FM352 Electron. Cam-operated Control
<b>Potential separation</b>	
<b>Potential separation digital inputs</b>	
• Potential separation digital inputs	No
<b>Potential separation digital outputs</b>	
• Potential separation digital outputs	No
<b>Connection method</b>	
required front connector	1x 20-pin

Article number	<b>6ES7352-1AH02-0AE0</b> FM352 Electron. Cam-operated Control
<b>Dimensions</b>	
Width	80 mm
Height	125 mm
Depth	120 mm
<b>Weights</b>	
Weight, approx.	550 g

## Ordering data

## Article No.

<b>FM352 electronic cam controller</b>	<b>6ES7352-1AH02-0AE0</b>
<b>Front connectors</b>	
20-pin, with screw contacts	
• 1 unit	<b>6ES7392-1AJ00-0AA0</b>
• 100 units	<b>6ES7392-1AJ00-1AB0</b>
20-pin, with spring-loaded contacts	
• 1 unit	<b>6ES7392-1BJ00-0AA0</b>
• 100 units	<b>6ES7392-1BJ00-1AB0</b>
<b>Bus connectors</b>	<b>6ES7390-0AA00-0AA0</b>
1 unit (spare part)	
<b>Labeling strips</b>	<b>6ES7392-2XX00-0AA0</b>
10 units (spare part)	
<b>Labeling sheets for machine inscription</b>	See under "Accessories", page 5/266
<b>Slot number label</b>	<b>6ES7912-0AA00-0AA0</b>
Spare part	
<b>Shield connection element</b>	<b>6ES7390-5AA00-0AA0</b>
80 mm wide, with 2 rows for 4 terminals each	
<b>Shield connection clamps</b>	
2 units	
For 2 cables with 2 mm to 6 mm diameter	<b>6ES7390-5AB00-0AA0</b>
For 1 cable with 3 mm to 8 mm diameter	<b>6ES7390-5BA00-0AA0</b>
For 1 cable with 4 mm to 13 mm diameter	<b>6ES7390-5CA00-0AA0</b>

## Signal cable

## Article No.

Pre-assembled for SSI absolute encoder, UL/DESINA	<b>6FX50</b>	<b>2-2CC11-</b>	
Pre-assembled for TTL encoder 6FX2001-1, UL/DESINA	<b>6FX50</b>	<b>2-2CD01-</b>	
Pre-assembled for TTL encoder 24 V, UL/DESINA	<b>6FX50</b>	<b>2-2CD24-</b>	
Not crimped	<b>0</b>		
Module end crimped, connector case supplied	<b>1</b>		
Motor end crimped, connector case supplied	<b>4</b>		
0 m			<b>1</b>
100 m			<b>2</b>
200 m			<b>3</b>
0 m			<b>A</b>
10 m			<b>B</b>
20 m			<b>C</b>
30 m			<b>D</b>
40 m			<b>E</b>
50 m			<b>F</b>
60 m			<b>G</b>
70 m			<b>H</b>
80 m			<b>J</b>
90 m			<b>K</b>
0 m			<b>A</b>
1 m			<b>B</b>
2 m			<b>C</b>
3 m			<b>D</b>
4 m			<b>E</b>
5 m			<b>F</b>
6 m			<b>G</b>
7 m			<b>H</b>
8 m			<b>J</b>
9 m			<b>K</b>
0.0 m			<b>0</b>
0.1 m			<b>1</b>
0.2 m			<b>2</b>
0.3 m			<b>3</b>
0.4 m			<b>4</b>
0.5 m			<b>5</b>
0.6 m			<b>6</b>
0.7 m			<b>7</b>
0.8 m			<b>8</b>

## SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

### FM 352-5 high-speed Boolean processor

#### 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  $\mu$ s).
- 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 DQ.
- 2 versions: Current sinking or current sourcing digital outputs.
- 1 channel for connection of a 24-V incremental encoder, a 5-V incremental encoder (RS 422) or an SSI absolute encoder.

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

#### Note:

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

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

#### Technical specifications

Article number	6ES7352-5AH01-0AE0	6ES7352-5AH11-0AE0
	FM 352-5, Boolean Processor 12DI/8DQ	FM 352-5 PNP, Boolean Processor 12DI/8DQ
<b>Supply voltage</b>		
Rated value (DC)		
• 24 V DC	Yes	Yes
<b>Load voltage L+</b>		
• Rated value (DC)	24 V	24 V
• Reverse polarity protection	Yes	Yes
<b>Input current</b>		
from load voltage 1L+, max.	150 mA; typ. 60 mA	150 mA; typ. 60 mA
from load voltage 2L+ (without load), max.	200 mA; typ. 60 mA, DI/DO supply	200 mA; typ. 60 mA, DI/DO supply
from load voltage 3L+ (with encoder), max.	600 mA; typ. 80 mA plus encoder supply	600 mA; typ. 80 mA plus encoder supply
from load voltage 3L+ (without load), max.	200 mA; typ. 80 mA	200 mA; typ. 80 mA
from backplane bus 5 V DC, typ.	135 mA	135 mA
<b>Encoder supply</b>		
<b>5 V encoder supply</b>		
• 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
<b>24 V encoder supply</b>		
• 24 V	Yes	Yes
• Short-circuit protection	Yes; Overvoltage and overheating protection if overloaded; diagnostics if output reaches temperature limit; no protection on applying a normal or counter voltage	Yes; Overvoltage and overheating protection if overloaded; diagnostics if output reaches temperature limit; no protection on applying a normal or counter voltage
• Output current, max.	400 mA	400 mA
<b>Power loss</b>		
Power loss, typ.	6.5 W	6.5 W
<b>Memory</b>		
Type of memory	RAM	RAM
Memory size	128 kbyte; required for operation, MMC	128 kbyte; required for operation, MMC

### Technical specifications (continued)

Article number	<b>6ES7352-5AH01-0AEO</b> FM 352-5, Boolean Processor 12DI/8DQ	<b>6ES7352-5AH11-0AEO</b> FM 352-5 PNP, Boolean Processor 12DI/8DQ
<b>Digital inputs</b>		
Number of digital inputs	8; Standard and up to 12 with 24 V DC encoder inputs as digital inputs	8; Standard and up to 12 with 24 V DC encoder inputs as digital inputs
<b>Input voltage</b>		
• Rated value (DC)	24 V	24 V
• for signal "0"	-30 to +5V	-30 to +5V
• for signal "1"	+11 to +30V	+11 to +30V
<b>Input current</b>		
• for signal "0", max. (permissible quiescent current)	1.5 mA	1.5 mA
• for signal "1", typ.	3.8 mA	3.8 mA
<b>Input delay (for rated value of input voltage)</b>		
• 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
<b>for standard inputs</b>		
- at "0" to "1", max.	3 µs; typ. 1.5 µs	3 µs; typ. 1.5 µs
<b>Cable length</b>		
• shielded, max.	600 m	600 m
• unshielded, max.	100 m; Shielded cable recommended if filtering delay is set to less than 1.6 ms	100 m; Shielded cable recommended if filtering delay is set to less than 1.6 ms
<b>Digital outputs</b>		
Number of digital outputs	8	8
Current-sinking	Yes	No
Current-sourcing	No	Yes
Short-circuit protection	Yes; Overvoltage protection, thermal protection	Yes; Overvoltage protection, thermal protection
• Response threshold, typ.	1.7 to 3.5 A	1.7 to 3.5 A
Limitation of inductive shutdown voltage to	2M -45 V typ., (-40 V to -55 V); comment: no protection against inductive kickback >55 mJ	2M -45 V typ., (-40 V to -55 V); comment: no protection against inductive kickback >55 mJ
Controlling a digital input	No	Yes
<b>Switching capacity of the outputs</b>		
• on lamp load, max.	5 W	5 W
<b>Output voltage</b>		
• 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
<b>Output current</b>		
• 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
<b>Output delay with resistive load</b>		
• "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
<b>Parallel switching of two outputs</b>		
• for uprating	Yes; 2	Yes; 2
<b>Switching frequency</b>		
• 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
<b>Cable length</b>		
• shielded, max.	600 m	600 m
• unshielded, max.	100 m	100 m

# SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

## FM 352-5 high-speed Boolean processor

### Technical specifications (continued)

Article number	<b>6ES7352-5AH01-0AEO</b> FM 352-5, Boolean Processor 12DI/8DQ	<b>6ES7352-5AH11-0AEO</b> FM 352-5 PNP, Boolean Processor 12DI/8DQ
<b>Encoder</b>		
<b>Connectable encoders</b>		
• 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
<b>Encoder signals, incremental encoder (symmetrical)</b>		
• Trace mark signals	A, notA, B, notB	A, notA, B, notB
• Zero mark signal	N, notN	N, notN
• Input voltage	5 V difference signal (phys. RS 422)	5 V difference signal (phys. RS 422)
• Input frequency, max.	500 kHz	500 kHz
• Cable length, shielded, max.	100 m; 100 m with 24 V supply and 500 kHz; 32 m with 5 V supply and 500 kHz	100 m; 100 m with 24 V supply and 500 kHz; 32 m with 5 V supply and 500 kHz
<b>Encoder signals, incremental encoder (asymmetrical)</b>		
• 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.
<b>Encoder signals, absolute encoder (SSI)</b>		
• Data signal	DATA, notDATA	DATA, notDATA
• Clock signal	CK, notCK	CK, notCK
• Telegram length, parameterizable	13 or 25 bit	13 or 25 bit
• Clock frequency, max.	1 MHz; 125 kHz, 250 kHz, 500 kHz or 1 MHz	1 MHz; 125 kHz, 250 kHz, 500 kHz or 1 MHz
• Cable length, shielded, max.	320 m; At 125 kHz	320 m; At 125 kHz
• Monoflop time	settable: 16/32/48/64 $\mu$ s	settable: 16/32/48/64 $\mu$ s
• Listening mode	Yes; one or two stations	Yes; one or two stations
• Multiturn	Yes; 25 bit message frame	Yes; 25 bit message frame
<b>Encoder signal evaluation</b>		
• Counting direction, forward	Yes	Yes
• Counting direction, backward	Yes	Yes
<b>Response times</b>		
Input- to output response time	5 V input to 24 V output, 0 filter: 1 to 4 $\mu$ s (typ.); 24 V input to 24 V output, 0 filter: 2 to 6 $\mu$ s (typ.)	5 V input to 24 V output, 0 filter: 1 to 4 $\mu$ s (typ.); 24 V input to 24 V output, 0 filter: 2 to 6 $\mu$ s (typ.)
<b>Interfaces</b>		
<b>Point-to-point connection</b>		
• Updating times	PLC interface: 1.7 ms	PLC interface: 1.7 ms
<b>Interrupts/diagnostics/status information</b>		
<b>Alarms</b>		
• Diagnostic alarm	Yes; 1L, 2L, 3L missing; MMC error; output overload (8); encoder supply overload; differential wire break; parameterization error; SSI message frame overflow	Yes; 1L, 2L, 3L missing; MMC error; output overload (8); encoder supply overload; differential wire break; parameterization error; SSI message frame overflow
• Hardware interrupt	Yes; 8 available; for generation by user program	Yes; 8 available; for generation by user program
<b>Diagnostic messages</b>		
• Wire-break in signal transmitter cable	Yes	Yes
• Overflow/underflow	Yes	Yes
• missing load voltage	Yes	Yes



## Technical specifications (continued)

Article number	<b>6ES7352-5AH01-0AE0</b> FM 352-5, Boolean Processor 12DI/8DQ	<b>6ES7352-5AH11-0AE0</b> FM 352-5 PNP, Boolean Processor 12DI/8DQ
<b>Counter</b>		
Counting range, description	Counting range (16-bit counters): -32 768 to 32 767 (user-specific within this range); counting range (32-bit counters): -2 147 483 648 to 2 147 483 647 (user-specific within this range)	Counting range (16-bit counters): -32 768 to 32 767 (user-specific within this range); counting range (32-bit counters): -2 147 483 648 to 2 147 483 647 (user-specific within this range)
Counting range, lower limit	-2 147 483 648	-2 147 483 648
Counting range, upper limit	2 147 483 647	2 147 483 647
<b>Counting mode</b>		
• Counting mode, individual	Yes	Yes
• Counting mode, continuous	Yes	Yes
• Counting mode, periodic	Yes	Yes
<b>Potential separation</b>		
between 1L and 2L and 3L	Yes	Yes
<b>Potential separation digital inputs</b>		
• Potential separation digital inputs	Yes; Yes CPU, I/O and sensor units are isolated	Yes; Yes CPU, I/O and sensor units are isolated
<b>Configuration</b>		
<b>Programming</b>		
• Program cycle time (scan)	1 µs	1 µs
<b>Connection method</b>		
required front connector	1x 40-pin	1x 40-pin
<b>Dimensions</b>		
Width	80 mm	80 mm
Height	125 mm	125 mm
Depth	120 mm	120 mm
<b>Weights</b>		
Weight, approx.	434 g; Module weight: approx. 434 g (with 1L connection and without I/O connection or MMC); shipping weight: approx. 500 g (with bus and 1L connection and without I/O connection or MMC)	434 g; Module weight: approx. 434 g (with 1L connection and without I/O connection or MMC); shipping weight: approx. 500 g (with bus and 1L connection and without I/O connection or MMC)

# SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

## FM 352-5 high-speed Boolean processor

### Ordering data

### Article No.

#### FM 352-5 high-speed Boolean processor

with current sinking digital outputs

**6ES7352-5AH01-0AE0**

with current sourcing digital outputs

**6ES7352-5AH11-0AE0**

#### Micro Memory Card

128 KB

**6ES7953-8LG31-0AA0**

512 KB

**6ES7953-8LJ31-0AA0**

2 MB

**6ES7953-8LL31-0AA0**

#### Front connector

40-pin, with screw contacts

- 1 unit
- 100 units

**6ES7392-1AM00-0AA0**

**6ES7392-1AM00-1AB0**

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

**6ES7392-1BM01-1AB0**

### Article No.

#### Signal cables

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

**6FX5002-2CA12-** ■ ■ ■ 0

To SSI absolute encoders 6FX2001-5, preassembled, without Sub-D connector

**6FX5002-2CC12-** ■ ■ ■

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

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

5

## Overview



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

## Technical specifications

Article number	6ES7355-0VH10-0AE0	6ES7355-1VH10-0AE0
	Control unit FM355C, 4 chan.	Control unit FM355S, 4 chan.
<b>Supply voltage</b>		
<b>Load voltage L+</b>		
• Rated value (DC)	24 V	24 V
<b>Input current</b>		
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
<b>Power loss</b>		
Power loss, typ.	6.5 W	5.5 W
Power loss, max.	7.8 W	6.9 W
<b>Digital inputs</b>		
Number of digital inputs	8	8
Input characteristic curve in accordance with IEC 61131, type 2	Yes	Yes
<b>Input voltage</b>		
• Rated value (DC)	24 V	24 V
• for signal "0"	-3 to +5V	-3 to +5V
• for signal "1"	13 to 30V	13 to 30V
<b>Input current</b>		
• for signal "1", typ.	7 mA	7 mA
<b>Cable length</b>		
• shielded, max.	1 000 m	1 000 m
• unshielded, max.	600 m	600 m
<b>Digital outputs</b>		
Number of digital outputs		8
Short-circuit protection		Yes; Electronic
Limitation of inductive shutdown voltage to		L+ (-1.5 V)
Controlling a digital input		Yes
<b>Switching capacity of the outputs</b>		
• on lamp load, max.		5 W
<b>Load resistance range</b>		
• lower limit		240 Ω
• upper limit		4 kΩ

# SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

## FM 355 controller module

### Technical specifications (continued)

Article number	6ES7355-0VH10-0AEO	6ES7355-1VH10-0AEO
	Control unit FM355C, 4 chan.	Control unit FM355S, 4 chan.
<b>Output voltage</b>		
• for signal "1", min.		L+ (-2.5 V)
<b>Output current</b>		
• 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
<b>Parallel switching of two outputs</b>		
• for logic links		Yes
<b>Switching frequency</b>		
• with resistive load, max.		100 Hz
• with inductive load, max.		0.5 Hz
• on lamp load, max.		100 Hz
<b>Total current of the outputs (per group)</b>		
<b>all mounting positions</b>		
- up to 60 °C, max.		400 mA
<b>Cable length</b>		
• shielded, max.		1 000 m
• unshielded, max.		600 m
<b>Analog inputs</b>		
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
<b>Input ranges (rated values), voltages</b>		
• 0 to +10 V	Yes	Yes
• -1.75 V to +11.75 V	Yes	Yes
• -80 mV to +80 mV	Yes	Yes
<b>Input ranges (rated values), currents</b>		
• 0 to 20 mA	Yes	Yes
• 0 to 23.5 mA	Yes	Yes
• -3.5 mA to +23.5 mA	Yes	Yes
• 4 mA to 20 mA	Yes	Yes
<b>Input ranges (rated values), thermocouples</b>		
• Type B	Yes	Yes
• Type J	Yes	Yes
• Type K	Yes	Yes
• Type R	Yes	Yes
• Type S	Yes	Yes
<b>Input ranges (rated values), resistance thermometer</b>		
• Pt 100	Yes	Yes
<b>Thermocouple (TC)</b>		
<b>Temperature compensation</b>		
- internal temperature compensation	Yes	Yes
- external temperature compensation with Pt100	Yes	Yes
<b>Characteristic linearization</b>		
• parameterizable	Yes	Yes
- for thermocouples	Type B, J, K, R, S	Type B, J, K, R, S
- for resistance thermometer	Pt100 (standard)	Pt100 (standard)
<b>Cable length</b>		
• shielded, max.	200 m; 50 m at 80 mV and thermocouples	200 m; 50 m at 80 mV and thermocouples

## Technical specifications (continued)

Article number	6ES7355-0VH10-0AEO	6ES7355-1VH10-0AEO
	Control unit FM355C, 4 chan.	Control unit FM355S, 4 chan.
<b>Analog outputs</b>		
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	
<b>Output ranges, voltage</b>		
• 0 to 10 V	Yes	
• -10 V to +10 V	Yes	
<b>Output ranges, current</b>		
• 0 to 20 mA	Yes	
• 4 mA to 20 mA	Yes	
<b>Connection of actuators</b>		
• for voltage output two-wire connection	Yes	
• for current output two-wire connection	Yes	
<b>Load impedance (in rated range of output)</b>		
• with voltage outputs, min.	1 k $\Omega$	
• with voltage outputs, capacitive load, max.	1 $\mu$ F	
• with current outputs, max.	500 $\Omega$	
• with current outputs, inductive load, max.	1 mH	
<b>Cable length</b>		
• shielded, max.	200 m; 50 m at 80 mV and thermocouples	
<b>Analog value generation for the inputs</b>		
Measurement principle	integrating	integrating
<b>Integration and conversion time/ resolution per channel</b>		
• Resolution with overrange (bit including sign), max.	14 bit; 12 bit or 14 bit, parameterizable	14 bit; 12 bit 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 Hz 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 Hz and 60 Hz
<b>Analog value generation for the outputs</b>		
<b>Settling time</b>		
• for resistive load	0.1 ms	
• for capacitive load	3.3 ms	
• for inductive load	0.5 ms	
<b>Encoder</b>		
<b>Connection of signal encoders</b>		
• for voltage measurement	Yes	Yes
• for current measurement as 4-wire transducer	Yes	Yes
<b>Connectable encoders</b>		
• 2-wire sensor	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA

## SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

## FM 355 controller module

## Technical specifications (continued)

Article number	6ES7355-0VH10-0AEO	6ES7355-1VH10-0AEO
	Control unit FM355C, 4 chan.	Control unit FM355S, 4 chan.
<b>Errors/accuracies</b>		
Linearity error (relative to input range), (+/-)	0.05 %	0.05 %
Temperature error (relative to input range), (+/-)	0.005 %/K	0.005 %/K
Linearity error (relative to output range), (+/-)	0.05 %	
Temperature error (relative to output range), (+/-)	0.02 %/K	
<b>Operational error limit in overall temperature range</b>		
• Voltage, relative to input range, (+/-)	0.6 %; ±0.6 to ±1%	0.6 %; ±0.6 to ±1%
• Current, relative to input range, (+/-)	0.6 %; ±0.6 to ±1%	0.6 %; ±0.6 to ±1%
• Resistance thermometer, relative to input range, (+/-)	0.6 %; ±0.6 to ±1%	0.6 %; ±0.6 to ±1%
• Voltage, relative to output range, (+/-)	0.5 %	
• Current, relative to output range, (+/-)	0.6 %	
<b>Basic error limit (operational limit at 25 °C)</b>		
• Voltage, relative to input range, (+/-)	0.4 %; 80 mV: ±0.6 %; 250 to 1 000 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 1 000 mV: ±0.4 %; 2.5 to 10 V: ±0.6 %; 3.2 to 20 mA: ±0.5 %
• Current, relative to input range, (+/-)	0.4 %; ±0.4 to ±0.6 %	0.4 %; ±0.4 to ±0.6 %
• Resistance thermometer, relative to input range, (+/-)	0.4 %; ±0.4 to ±0.6 %	0.4 %; ±0.4 to ±0.6 %
• Voltage, relative to output range, (+/-)	0.3 %	
• Current, relative to output range, (+/-)	0.5 %	
<b>Interference voltage suppression for <math>f = n \times (f_1 \pm 1 \%)</math>, <math>f_1 =</math> interference frequency</b>		
• Series mode interference (peak value of interference < rated value of input range), min.	40 dB	40 dB
• Common mode interference (USS < 2.5 V), min.	70 dB	70 dB
<b>Interrupts/diagnostics/status information</b>		
Substitute values connectable	Yes; Parameterizable	Yes; Parameterizable
<b>Integrated Functions</b>		
<b>Control technology</b>		
• Number of closed-loop controllers	4	4
<b>Potential separation</b>		
<b>Potential separation controller</b>		
• between the channels	No	No
• between the channels and backplane bus	Yes; Optocoupler	Yes; Optocoupler
<b>Connection method</b>		
required front connector	2x 20-pin	2x 20-pin
<b>Dimensions</b>		
Width	80 mm	80 mm
Height	125 mm	125 mm
Depth	120 mm	120 mm
<b>Weights</b>		
Weight, approx.	470 g	470 g

Ordering data	Article No.		Article No.
<b>FM 355 C controller module</b> With 4 analog outputs for 4 continuous controllers	6ES7355-0VH10-0AE0	<b>Labeling sheets for machine inscription</b>	See under "Accessories", page 5/266
<b>FM 355 S controller module</b> With 8 digital outputs for 4 step or pulse controllers	6ES7355-1VH10-0AE0	<b>Slot number label</b> Spare part	6ES7912-0AA00-0AA0
<b>Front connector</b> 20-pin, with screw contacts • 1 unit • 100 units	6ES7392-1AJ00-0AA0 6ES7392-1AJ00-1AB0	<b>Shield connection element</b> 80 mm wide, with 2 rows for 4 terminals each	6ES7390-5AA00-0AA0
20-pin, with spring-loaded contacts • 1 unit • 100 units	6ES7392-1BJ00-0AA0 6ES7392-1BJ00-1AB0	<b>Shield connection clamps</b> 2 units For 2 cables with 2 mm to 6 mm diameter	6ES7390-5AB00-0AA0
<b>Bus connectors</b> 1 unit (spare part)	6ES7390-0AA00-0AA0	For 1 cable with 3 mm to 8 mm diameter	6ES7390-5BA00-0AA0
<b>Labeling strips</b> 10 units (spare part)	6ES7392-2XX00-0AA0	For 1 cable with 4 mm to 13 mm diameter	6ES7390-5CA00-0AA0

## SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

### FM 355-2 temperature controller module

#### Overview



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

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#### Technical specifications

Article number	6ES7355-2CH00-0AE0	6ES7355-2SH00-0AE0
	Temp. control unit FM355-2C, 4 chan.	Temp. control unit FM355-2S, 4 chan.
<b>Supply voltage</b>		
<b>Load voltage L+</b>		
• Rated value (DC)	24 V	24 V
<b>Input current</b>		
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
<b>Power loss</b>		
Power loss, typ.	6.5 W	5.5 W
Power loss, max.	7.8 W	6.9 W
<b>Digital inputs</b>		
Number of digital inputs	8	8
Input characteristic curve in accordance with IEC 61131, type 2	Yes	Yes
<b>Input voltage</b>		
• Rated value (DC)	24 V	24 V
• for signal "0"	-3 to +5V	-3 to +5V
• for signal "1"	13 to 30V	13 to 30V
<b>Input current</b>		
• for signal "1", typ.	7 mA	7 mA
<b>Cable length</b>		
• shielded, max.	1 000 m	1 000 m
• unshielded, max.	600 m	600 m
<b>Digital outputs</b>		
Number of digital outputs		8
Short-circuit protection		Yes; Electronic
Limitation of inductive shutdown voltage to		L+ (-1.5 V)
Controlling a digital input		Yes
<b>Switching capacity of the outputs</b>		
• on lamp load, max.		5 W
<b>Load resistance range</b>		
• lower limit		240 Ω
• upper limit		4 kΩ
<b>Output voltage</b>		
• for signal "1", min.		L+ (-2.5 V)



## Technical specifications (continued)

Article number	6ES7355-2CH00-0AE0	6ES7355-2SH00-0AE0
	Temp. control unit FM355-2C, 4 chan.	Temp. control unit FM355-2S, 4 chan.
<b>Output current</b>		
• 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
<b>Parallel switching of two outputs</b>		
• for logic links		Yes
<b>Switching frequency</b>		
• with resistive load, max.		100 Hz
• with inductive load, max.		0.5 Hz
• on lamp load, max.		100 Hz
<b>Total current of the outputs (per group)</b>		
<b>all mounting positions</b>		
- up to 60 °C, max.		400 mA
<b>Cable length</b>		
• shielded, max.		1 000 m
• unshielded, max.		600 m
<b>Analog inputs</b>		
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
<b>Input ranges (rated values), voltages</b>		
• 0 to +10 V	Yes	Yes
• -1.75 V to +11.75 V	Yes	Yes
<b>Input ranges (rated values), currents</b>		
• 0 to 20 mA	Yes	Yes
• 0 to 23.5 mA	Yes	Yes
• -3.5 mA to +23.5 mA	Yes	Yes
• 4 mA to 20 mA	Yes	Yes
<b>Input ranges (rated values), thermocouples</b>		
• Type B	Yes	Yes
• Type E	Yes	Yes
• Type J	Yes	Yes
• Type K	Yes	Yes
• Type R	Yes	Yes
• Type S	Yes	Yes
<b>Input ranges (rated values), resistance thermometer</b>		
• Pt 100	Yes	Yes
<b>Thermocouple (TC)</b>		
<b>Temperature compensation</b>		
- internal temperature compensation	Yes	Yes
- external temperature compensation with Pt100	Yes	Yes
<b>Characteristic linearization</b>		
• parameterizable	Yes	Yes
- for thermocouples	Type B, E, J, K, R, S	Type B, E, J, K, R, S
- for resistance thermometer	Pt100 (standard)	Pt100 (standard)
<b>Cable length</b>		
• shielded, max.	200 m; 50 m at 80 mV and thermocouples	200 m; 50 m at 80 mV and thermocouples

## SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

### FM 355-2 temperature controller module

#### Technical specifications (continued)

Article number	6ES7355-2CH00-0AE0	6ES7355-2SH00-0AE0
	Temp. control unit FM355-2C, 4 chan.	Temp. control unit FM355-2S, 4 chan.
<b>Analog outputs</b>		
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	
<b>Output ranges, voltage</b>		
• 0 to 10 V	Yes	
• -10 V to +10 V	Yes	
<b>Output ranges, current</b>		
• 0 to 20 mA	Yes	
• 4 mA to 20 mA	Yes	
<b>Connection of actuators</b>		
• for voltage output two-wire connection	Yes	
• for current output two-wire connection	Yes	
<b>Load impedance (in rated range of output)</b>		
• with voltage outputs, min.	1 k $\Omega$	
• with voltage outputs, capacitive load, max.	1 $\mu$ F	
• with current outputs, max.	500 $\Omega$	
• with current outputs, inductive load, max.	1 mH	
<b>Cable length</b>		
• shielded, max.	200 m; 50 m at 80 mV and thermocouples	
<b>Analog value generation for the inputs</b>		
Measurement principle	integrating	integrating
<b>Integration and conversion time/ resolution per channel</b>		
• 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
<b>Analog value generation for the outputs</b>		
<b>Settling time</b>		
• for resistive load	0.1 ms	
• for capacitive load	3.3 ms	
• for inductive load	0.5 ms	
<b>Encoder</b>		
<b>Connection of signal encoders</b>		
• for voltage measurement	Yes	Yes
• for current measurement as 4-wire transducer	Yes	Yes
<b>Connectable encoders</b>		
• 2-wire sensor	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA

## Technical specifications (continued)

Article number	6ES7355-2CH00-0AEO	6ES7355-2SH00-0AEO
	Temp. control unit FM355-2C, 4 chan.	Temp. control unit FM355-2S, 4 chan.
<b>Errors/accuracies</b>		
Linearity error (relative to input range), (+/-)	0.05 %	0.05 %
Temperature error (relative to input range), (+/-)	0.005 %/K	0.005 %/K
Linearity error (relative to output range), (+/-)	0.05 %	
Temperature error (relative to output range), (+/-)	0.02 %/K	
<b>Operational error limit in overall temperature range</b>		
• Voltage, relative to input range, (+/-)	0.6 %; ±0.6 to ±0.7 %	0.06 %; ±0.06 to ±0.7 %
• Current, relative to input range, (+/-)	0.6 %; ±0.6 to ±0.7 %	0.06 %; ±0.06 to ±0.7 %
• Resistance thermometer, relative to input range, (+/-)	0.6 %; ±0.6 to ±0.7 %	0.06 %; ±0.06 to ±0.7 %
• Voltage, relative to output range, (+/-)	0.5 %	
• Current, relative to output range, (+/-)	0.6 %	
<b>Basic error limit (operational limit at 25 °C)</b>		
• Voltage, relative to input range, (+/-)	0.04 %; ±0.04 to ±0.5 %	0.04 %; ±0.04 to ±0.5 %
• Current, relative to input range, (+/-)	0.04 %; ±0.04 to ±0.5 %	0.04 %; ±0.04 to ±0.5 %
• Resistance thermometer, relative to input range, (+/-)	0.04 %; ±0.04 to ±0.5 %	0.04 %; ±0.04 to ±0.5 %
• Voltage, relative to output range, (+/-)	0.4 %	
• Current, relative to output range, (+/-)	0.5 %	
<b>Interference voltage suppression for <math>f = n \times (f1 \pm 1 \%)</math>, <math>f1 =</math> interference frequency</b>		
• Series mode interference (peak value of interference < rated value of input range), min.	40 dB	40 dB
• Common mode interference (USS < 2.5 V), min.	70 dB	70 dB
<b>Interrupts/diagnostics/status information</b>		
Substitute values connectable	Yes; Parameterizable	Yes; Parameterizable
<b>Integrated Functions</b>		
<b>Control technology</b>		
• Number of closed-loop controllers	4	4
<b>Potential separation</b>		
<b>Potential separation controller</b>		
• between the channels	No	No
• between the channels and backplane bus	Yes; Optocoupler	Yes; Optocoupler
<b>Connection method</b>		
required front connector	2x 20-pin	2x 20-pin
<b>Dimensions</b>		
Width	80 mm	80 mm
Height	125 mm	125 mm
Depth	120 mm	120 mm
<b>Weights</b>		
Weight, approx.	470 g	470 g

**SIMATIC S7-300 Advanced Controllers**

I/O modules

Function modules

**FM 355-2 temperature controller module****Ordering data****Article No.****FM 355-2 C temperature controller module****6ES7355-2CH00-0AE0**

With 4 analog outputs for 4 continuous-action controllers

**FM 355-2 S temperature controller module****6ES7355-2SH00-0AE0**

With 8 digital outputs for 4 step or pulse controllers

**Front connector**

20-pin, with screw contacts

- 1 unit
- 100 units

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

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

**6ES7392-1BJ00-0AA0**  
**6ES7392-1BJ00-1AB0****Bus connectors****6ES7390-0AA00-0AA0**

1 unit (spare part)

**Article No.****Labeling strips****6ES7392-2XX00-0AA0**

10 units (spare part)

**Labeling sheets for machine inscription**

See under "Accessories", page 5/266

**Slot number label****6ES7912-0AA00-0AA0**

Spare part

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

80 mm wide, with 2 rows for 4 terminals each

**Shield connection clamps**

2 units

For 2 cables with 2 mm to 6 mm diameter

**6ES7390-5AB00-0AA0**

For 1 cable with 3 mm to 8 mm diameter

**6ES7390-5BA00-0AA0**

For 1 cable with 4 mm to 13 mm diameter

**6ES7390-5CA00-0AA0**

## 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/pre-assembled cables for counting and positioning functions are available under SIMODRIVE Sensor or Motion Connect 500.

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

## Technical specifications

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

Article number	<b>6ES7338-4BC01-0AB0</b> SM 338, f. 3 SSI encoders
<b>Encoder</b>	
Number of connectable encoders, max.	3
<b>Connectable encoders</b>	
• Absolute encoder (SSI)	Yes
• 2-wire sensor	Yes
<b>Encoder signals, absolute encoder (SSI)</b>	
• 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
<b>Interrupts/diagnostics/status information</b>	
<b>Alarms</b>	
• Diagnostic alarm	Yes
<b>Potential separation</b>	
Potential separation exists	No
<b>Connection method</b>	
required front connector	20-pin
<b>Dimensions</b>	
Width	40 mm
Height	125 mm
Depth	120 mm
<b>Weights</b>	
Weight, approx.	235 g

**SIMATIC S7-300 Advanced Controllers**

I/O modules

Function modules

**SM 338 POS input module****Ordering data****Article No.****SM 338 POS input module**

For position sensing with 3 SSI encoders

**6ES7338-4BC01-0AB0****Front connector**

20-pin, with screw contacts

- 1 unit
- 100 units

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

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

**6ES7392-1BJ00-0AA0****6ES7392-1BJ00-1AB0****Front door, elevated design****6ES7328-0AA00-7AA0**e.g. for 32-channel modules;  
for connecting 1.3 mm<sup>2</sup>/16 AWG  
conductors**SIMATIC Manual Collection****6ES7998-8XC01-8YE0**Electronic manuals on DVD,  
multilingual:  
LOGO!, SIMADYN, SIMATIC bus  
components, SIMATIC C7,  
SIMATIC Distributed I/O,  
SIMATIC HMI, SIMATIC Sensors,  
SIMATIC NET, SIMATIC PC-based  
Automation, SIMATIC PCS 7,  
SIMATIC PG/PC, SIMATIC S7,  
SIMATIC Software, SIMATIC TDC**SIMATIC Manual Collection  
update service for 1 year****6ES7998-8XC01-8YE2**Current "Manual Collection" DVD  
and the three subsequent updates**Article No.****Signal cable**Pre-assembled for SSI absolute  
encoder 6FX2001-5, without Sub-D  
connector, UL/DESINA**6FX5002-2CC12-**0 m  
100 m  
200 m0 m  
10 m  
20 m  
30 m  
40 m  
50 m  
60 m  
70 m  
80 m  
90 m0 m  
1 m  
2 m  
3 m  
4 m  
5 m  
6 m  
7 m  
8 m  
9 m  
0.0 m  
0.1 m  
0.2 m  
0.3 m  
0.4 m  
0.5 m  
0.6 m  
0.7 m  
0.8 m1  
2  
3A  
B  
C  
D  
E  
F  
G  
H  
J  
KA  
B  
C  
D  
E  
F  
G  
H  
J  
K0  
1  
2  
3  
4  
5  
6  
7  
8

5

## 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 P320-4, SIMOTION D4x5-2
- Can also be used with external encoders

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## Technical specifications

Article number	<b>6ES7174-0AA10-0AA0</b> IM 174 for connecting analog drives
<b>Supply voltage</b>	
Rated value (DC)	
• 24 V DC	Yes
<b>Input current</b>	
Current consumption, max.	500 mA
from backplane bus 5 V DC, max.	100 mA
<b>Encoder supply</b>	
<b>5 V encoder supply</b>	
• 5 V	Yes
• Output current, max.	1.2 A
• Cable length, max.	25 m
<b>24 V encoder supply</b>	
• 24 V	Yes
• Output current, max.	1.4 A
• Cable length, max.	100 m
<b>Absolute encoder (SSI) encoder supply</b>	
• Absolute encoder (SSI)	Yes
• Short-circuit protection	Yes
<b>Power loss</b>	
Power loss, typ.	12 W
<b>Digital inputs</b>	
Number of digital inputs	10
<b>Input voltage</b>	
• for signal "0"	-3 to +5V
• for signal "1"	+11 to +30V
<b>Input current</b>	
• for signal "0", max. (permissible quiescent current)	2 mA
• for signal "1", typ.	8 mA
<b>Input delay (for rated value of input voltage) for standard inputs</b>	
- at "0" to "1", min.	15 µs
<b>Cable length</b>	
• shielded, max.	100 m

Article number	<b>6ES7174-0AA10-0AA0</b> IM 174 for connecting analog drives
<b>Digital outputs</b>	
Number of digital outputs	8
Short-circuit protection	Yes
<b>Switching capacity of the outputs</b>	
• with resistive load, max.	1 A
• on lamp load, max.	30 W
<b>Output voltage</b>	
• Rated value (DC)	24 V; L+
• for signal "1", min.	L+ (-3 V)
• for signal "1", max.	3 V
<b>Output current</b>	
• 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
<b>Output delay with resistive load</b>	
• "0" to "1", max.	500 µs
<b>Switching frequency</b>	
• with resistive load, max.	500 Hz
• with inductive load, max.	0.5 Hz
<b>Relay outputs</b>	
• Number of relay outputs	4
• Number of operating cycles, max.	50 000
<b>Switching capacity of contacts</b>	
- with resistive load, max.	1 A
<b>Cable length</b>	
• shielded, max.	600 m
<b>Analog outputs</b>	
Number of analog outputs	4
<b>Output ranges, voltage</b>	
• -10 V to +10 V	Yes
<b>Analog value generation for the outputs</b>	
<b>Integration and conversion time/ resolution per channel</b>	
• Resolution with overrange (bit including sign), max.	15 bit

# SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

## IM 174 PROFIBUS module

### Technical specifications (continued)

Article number	<b>6ES7174-0AA10-0AA0</b> IM 174 for connecting analog drives
<b>Encoder</b>	
Number of connectable encoders, max.	4
<b>Connectable encoders</b>	
• Incremental encoder (symmetrical)	Yes
• Absolute encoder (SSI)	Yes
• 2-wire sensor	Yes
- permissible quiescent current (2-wire sensor), max.	2 mA
<b>Encoder signals, incremental encoder (symmetrical)</b>	
• Trace mark signals	A, notA, B, notB
• Zero mark signal	N, notN
• Input voltage	5 V difference signal (phys. RS 422)
• Input frequency, max.	1 MHz
• Cable length, shielded, max.	35 m; 35 m at max. 500 kHz; 10 m at max. 1 MHz
<b>Encoder signals, absolute encoder (SSI)</b>	
• Input signal	5 V difference signal (phys. RS 422)
• Data signal	DATA, notDATA
• Clock signal	CL, notCL
• Telegram length, parameterizable	13, 21, 24 bit
• Clock frequency, max.	1.5 MHz; 187.5 KHz 1.5 MHz (parameterizable)
• Binary code	Yes
• Gray code	Yes
• Cable length, shielded, max.	250 m; 250 m at 187.5 kHz, 10 m at 1.5 MHz
<b>Isochronous mode</b>	
Isochronous operation (application synchronized up to terminal)	Yes
shortest clock pulse	1.5 ms
<b>Interrupts/diagnostics/status information</b>	
<b>Alarms</b>	
• Diagnostic alarm	Yes

Article number	<b>6ES7174-0AA10-0AA0</b> IM 174 for connecting analog drives
<b>Drive interface</b>	
Number of drive interfaces	4
<b>Analog drive</b>	
<b>Setpoint signal</b>	
- Short-circuit proof	Yes; max. 45 mA, min. 3.3 kOhm load impedance
- Rated voltage range	-10.5 V to +10.5 V
- Output current	-3 to +3 mA
<b>Output controller enable</b>	
- 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
<b>Stepper drive</b>	
• Differential output voltage, min.	2 V; R = 100 Ohm
• Differential output voltage for signal "0", max.	1 V; For I = -20 mA
• Differential output voltage for signal "1", min.	3.7 V; 3.7 V at I = -20 mA; 4.5 V at I = -100 µA,
• Load resistance, min.	55 Ω
• Output current, max.	60 mA
• Pulse frequency	750 kHz
• Cable length, shielded, max.	50 m; in hybrid operation with analog axes 35 m, in asymmetrical transmission 10 m
<b>Potential separation</b>	
<b>Potential separation digital inputs</b>	
• Potential separation digital inputs	Yes; to encoders, analog outputs, DP interface; no to other DI/DOs
<b>Potential separation digital outputs</b>	
• Potential separation digital outputs	Yes; to encoders, analog outputs, DP interface; no to other DI/DOs
<b>Connection method</b>	
required front connector	40-pin
<b>Dimensions</b>	
Width	160 mm
Height	125 mm
Depth	118 mm
<b>Weights</b>	
Weight, approx.	1 kg



Ordering data	Article No.		Article No.
<p><b>IM 174 PROFIBUS module</b></p> <p>PROFIBUS module for connecting analog drives and stepper drives to a controller</p>	<p><b>6ES7174-0AA10-0AA0</b></p>	<p><b>Setpoint cable</b></p> <p>for the connection between IM 174 and SIMODRIVE 611-A</p> <p>0 m</p> <p>100 m</p> <p>200 m</p> <hr/> <p>0 m</p> <p>10 m</p> <p>20 m</p> <p>30 m</p> <p>40 m</p> <p>50 m</p> <p>60 m</p> <p>70 m</p> <p>80 m</p> <p>90 m</p> <hr/> <p>0 m</p> <p>1 m</p> <p>2 m</p> <p>3 m</p> <p>4 m</p> <p>5 m</p> <p>6 m</p> <p>7 m</p> <p>8 m</p> <p>9 m</p> <hr/> <p>0.0 m</p> <p>0.1 m</p> <p>0.2 m</p> <p>0.3 m</p> <p>0.4 m</p> <p>0.5 m</p> <p>0.6 m</p> <p>0.7 m</p> <p>0.8 m</p>	<p><b>6FX2002-3AD01-</b></p> <p>1</p> <p>2</p> <p>3</p> <hr/> <p>A</p> <p>B</p> <p>C</p> <p>D</p> <p>E</p> <p>F</p> <p>G</p> <p>H</p> <p>J</p> <p>K</p> <hr/> <p>A</p> <p>B</p> <p>C</p> <p>D</p> <p>E</p> <p>F</p> <p>G</p> <p>H</p> <p>J</p> <p>K</p> <hr/> <p>0</p> <p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7</p> <p>8</p>

# SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

## SIWAREX U

### Overview



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

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### Technical specifications

SIWAREX U	
<b>Integration in automation systems</b>	<ul style="list-style-type: none"> <li>• S7-300 Direct integration</li> <li>• S7-1500 Through ET 200M</li> <li>• S7-400 (H) Through ET 200M</li> <li>• PCS 7 (H) Through ET 200M</li> <li>• Automation systems from other vendors Through ET 200M</li> <li>• Stand-alone (without SIMATIC CPU) Possible with IM 153-1</li> </ul>
<b>Communication interfaces</b>	<ul style="list-style-type: none"> <li>• SIMATIC S7 (P bus)</li> <li>• RS 232</li> <li>• TTY</li> </ul>
<b>Connection of remote displays</b> (through TTY serial interface)	Gross, channel 1, 2 or default value 1, 2
<b>Scale adjustment</b>	Through SIMATIC (P bus) or PC using SIWATOOL U (RS 232)
<b>Measuring properties</b>	
Error limit to DIN 1319-1 of full-scale value at 20 °C ± 10 K (68 °F ± 10 K)	0.05%
Internal resolution ADC	65535
Data format of weight values	2 byte (fixed-point)
<b>Number of measurements/second</b>	50
<b>Digital filter</b>	0.05 ... 5 Hz (in 7 steps), mean value filter
<b>Weighing functions</b>	
Weight values	Gross
Limit values	2 (min./max.)
Zero-setting function	Per command
<b>Load cells</b>	Strain gauges in 4-wire or 6-wire system

SIWAREX U	
<b>Load cell powering</b>	
Supply voltage $U_s$ (rated value)	6 V DC <sup>1)</sup>
Max. supply current	≤ 150 mA per channel
Permissible load resistance	
• $R_{Lmin}$	> 40 Ω per channel
• $R_{Lmax}$	< 4 010 Ω
With Ex(i) interface	
• $R_{Lmin}$	> 87 Ω per channel
• $R_{Lmax}$	< 4 010 Ω
<b>Permissible load cell characteristic</b>	Up to 4 mV/V
<b>Max. distance of load cells</b>	500 m <sup>2)</sup> 150/500 m for gas group IIC 500 m <sup>2)</sup> for gas group IIB (see SIWAREX IS Manual)
<b>Intrinsically-safe load cell powering</b>	Optional (Ex interface) with SIWAREX IS
<b>Auxiliary power supply</b>	
Rated voltage	24 V DC
Max. power consumption	150 mA (single-channel) / 240 mA (dual-channel)
Current consumption on backplane bus	≤ 100 mA
<b>Certification</b>	ATEX 95, FM, cUL <sub>US</sub> Haz. Loc.
<b>IP degree of protection to EN 60529; IEC 60529</b>	IP20
<b>Climatic requirements</b>	
$T_{min}$ (IND) to $T_{max}$ (IND) (operating temperature)	
• Horizontal installation	0 ... +60 °C (32 ... 140 °F)
• Vertical installation	0 ... +40 °C (32 ... 104 °F)
<b>EMC requirements according to</b>	according to NAMUR NE21, Part 1; EN 61326
<b>Dimensions</b>	40 x 125 x 130 mm (1.58 x 4.92 x 5.12 in)

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

<sup>2)</sup> Possible up to 1000 m under certain conditions when using the recommended cable (accessories).

Ordering data	Article No.	Article No.
<b>SIWAREX U</b> For SIMATIC S7 and ET 200M, incl. bus connector, weight 0.3 kg (0.661 lb)		
Single-channel version <sup>1)</sup> for connecting one scale	7MH4950-1AA01	
Two-channel version <sup>2)</sup> for connecting two scales	7MH4950-2AA01	
<b>SIWATOOL V4 &amp; V7</b> Service and commissioning software for SIWAREX weighing modules	7MH4900-1AK01	
<b>SIWAREX U configuration package for PCS7, version 8.0</b> Suitable for 7MH4950-xAA01 • Function block for CFC • Faceplate • Manual	7MH4950-3AK62	
<b>SIWAREX PCS7 AddOn Library for PCS7 V8.x and V9.0</b> • Supports PROFINET  APL faceplates and function blocks for: • SIWAREX U • SIWAREX FTA • SIWAREX FTC_B (conveyor scales) • SIWAREX WP321  Classic faceplate and function block for: • SIWAREX FTC_L (loss in weight)	7MH4900-1AK61	
<b>SIWATOOL connection cable</b> From SIWAREX U/CS with serial PC interface, for 9-pin PC interfaces (RS 232), length 3 m (9.84 ft)	7MH4607-8CA	
<b>Installation material (mandatory)</b>		
<b>20-pin front connector with screw contacts</b> Required for each SIWAREX module	6ES7392-1AJ00-0AA0	
<b>Shield connection element</b> Sufficient for two SIWAREX U modules	6ES7390-5AA00-0AA0	
<b>Shield connection clamp</b> Contents: 2 units (suitable for cable with diameter 4 ... 13 mm) (0.16 ... 0.51 in)  Note: one shield connection clamp each is required for: • Scale connection • RS 485 interface • RS 232 interface	6ES7390-5CA00-0AA0	
<b>S7 DIN rail</b> • 160 mm (6.30 in) • 480 mm (18.90 in) • 530 mm (20.87 in) • 830 mm (32.68 in) • 2000 mm (78.74 in)	6ES7390-1AB60-0AA0 6ES7390-1AE80-0AA0 6ES7390-1AF30-0AA0 6ES7390-1AJ30-0AA0 6ES7390-1BC00-0AA0	
<b>Accessories (optional)</b>		
<b>Labeling strips</b> (10 units, spare part)		6ES7392-2XX00-0AA0
<b>Remote displays (option)</b>  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 Postfach 1180 D-66565 Eppelborn, Germany Tel.: +49 6806/980-0 Fax: +49 6806/980-999 Internet: <a href="http://www.siebert.de">http://www.siebert.de</a>  Detailed information is available from the manufacturer.		
<b>SIWAREX JB junction box, aluminum housing</b>  For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.		7MH5001-0AA20
<b>SIWAREX JB junction box, stainless steel housing</b>  For connecting up to 4 load cells in parallel.		7MH5001-0AA00
<b>SIWAREX JB junction box, stainless steel housing (ATEX)</b>  For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).		7MH4710-1EA01
<b>Ex interface SIWAREX IS</b> For intrinsically safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing system. Compatibility of load cells must be checked separately.  • With short-circuit current < 199 mA DC  • With short-circuit current < 137 mA DC		7MH4710-5BA 7MH4710-5CA

**SIMATIC S7-300 Advanced Controllers**

I/O modules

Function modules

**SIWAREX U****Ordering data****Article No.****Cable (optional)****Cable Li2Y 1 x 2 x 0.75 ST +  
2 x (2 x 0.34 ST) – CY**

For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two EBs. For permanent installation. Occasional bending is possible.

External diameter:  
approx. 10.8 mm (0.43 in)

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

Sold by the meter.

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

**7MH4702-8AG**  
**7MH4702-8AF**

**Article No.****Commissioning****Commissioning charge for one static scale with SIWAREX module**

(Travel and setup charge must be ordered separately)

Scope:

- Recording of data
- Checking of mechanical installation of the scale
- Checking of electrical wiring and function
- Static adjustment of the scale

Requirements:

- Mechanical design functional
- Modules electrically wired and tested
- Calibration weights available
- Free access to scale

**9LA1110-8SN50-0AA0**

**Flat charge for travel and setup in Germany**

**9LA1110-8RA10-0AA0**

- 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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## Overview



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

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

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

## Technical specifications

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

SIWAREX FTA	
<b>Max. distance of load cells</b>	
When using the recommended cable:	
Standard	1 000 m (3 280 ft)
In hazardous area <sup>1)</sup>	
• For gases of group IIC	300 m (984 ft)
• For gases of group IIB	1000 m (3 280 ft)
<b>Connection to load cells in Ex zone 1</b>	Optionally via SIWAREX IS Ex interface
<b>Ex approvals zone 2 and safety</b>	ATEX 95, FM, cUL <sub>US</sub> Haz. Loc.
<b>Auxiliary power supply</b>	
Rated voltage	24 V DC
Max. power consumption	500 mA
Current consumption on backplane bus	Typ. 55 mA
<b>Inputs/outputs</b>	
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
<b>Approvals</b>	
EU type approval (CE, OIML R76)	
EU prototype test to MID (OIML R51, R61, R107)	
<b>Degree of protection according to EN 60529; IEC 60529</b>	IP20
<b>Climatic requirements</b>	
$T_{min}(\text{IND}) \dots T_{max}(\text{IND})$ (operating temperature)	
• Horizontal installation	-10 ... 60 °C (14 ... 140 °F)
• Vertical installation	-10 ... 40 °C (14 ... 104 °F)
<b>EMC requirements</b>	
EN 61326, EN 45501, NAMUR NE21, Part 1	
<b>Dimensions</b>	
80 x 125 x 130 mm (3.15 x 4.92 x 5.12 in)	
<b>Weight</b>	
600 g (0.44 lb)	

<sup>1)</sup> For further details, see Ex interface, type SIWAREX IS

## SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

## SIWAREX FTA

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## Ordering data

## Article No.

## Article No.

**SIWAREX FTA**

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

7MH4900-2AA01

**SIWAREX FTA Manual**

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

**SIWAREX FTA "Getting started"**

Sample software shows beginners how to program the scales in STEP 7.

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

**SIWATOOL V4 & V7**

Service and commissioning software for SIWAREX weighing modules

7MH4900-1AK01

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

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

7MH4900-2AK63

**SIWAREX PCS7 AddOn Library for PCS7 V8.x and V9.0**

- Supports PROFINET

APL faceplates and function blocks for:

- SIWAREX U
- SIWAREX FTA
- SIWAREX FTC\_B (belt scales)
- SIWAREX WP321

Classic faceplate and function block for:

- SIWAREX FTC\_L (loss in weight)

7MH4900-1AK61

**Calibration set for SIWAREX FTA**

For verification of up to 5 scales comprising:

- 3 x inscription foil for label
- 1 x protection film
- Guidelines for verification, verification certificates and approvals, adaptable label, SIWAREX FTA Manual on CD-ROM

7MH4900-2AY10

**SIWATOOL connection cable**

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

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

7MH4702-8CA  
7MH4702-8CB**Front connector, 40-pin**

Required for each SIWAREX module

- With screw contacts
- With spring-loaded terminals

6ES7392-1AM00-0AA0

6ES7392-1BM01-0AA0

**Shield connection element**

Sufficient for one SIWAREX FTA module

6ES7390-5AA00-0AA0

**Shield connection clamp**

6ES7390-5CA00-0AA0

Contents: 2 units (suitable for cable with diameter 4 ... 13 mm) (0.16 ... 0.51 in)

Note:

one shield connection clamp each is required for:

- Scale connection
- RS 485 interface
- RS 232 interface

**S7 DIN rail**

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

6ES7390-1AB60-0AA0

6ES7390-1AE80-0AA0

6ES7390-1AF30-0AA0

6ES7390-1AJ30-0AA0

6ES7390-1BC00-0AA0

**MMC memory**

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

7MH4900-2AY21

**Remote displays (option)**

The Siebert S102 and S302 remote digital displays can be directly connected to the SIWAREX FTA via an RS 485 interface.

Siebert Industrieelektronik GmbH  
Postfach 1180  
D-66565 Eppelborn, Germany  
Tel.: +49 6806/980-0  
Fax: +49 6806/980-999  
Internet: <http://www.siebert.de>

Detailed information is available from the manufacturer.

**SIWAREX JB junction box, aluminum housing**

7MH5001-0AA20

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

**SIWAREX JB junction box, stainless steel housing**

7MH5001-0AA00

For connecting up to 4 load cells in parallel.

**SIWAREX JB junction box, stainless steel housing (ATEX)**

7MH4710-1EA01

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

**Ex interface SIWAREX IS**

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

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

7MH4710-5BA

7MH4710-5CA

Ordering data	Article No.	Commissioning	Article No.
<p><b>Cable (optional)</b></p> <p><b>Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY</b></p> <p>For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two EBs. For permanent installation. Occasional bending is possible.</p> <p>External diameter: approx. 10.8 mm (0.43 in)</p> <p>Permissible ambient temperature -40 ... +80 °C (-40 ... +176 °F).</p> <p>Sold by the meter.</p> <ul style="list-style-type: none"> <li>• Sheath color: orange</li> <li>• For hazardous atmospheres. Sheath color: blue.</li> </ul>	<p><b>7MH4702-8AG</b> <b>7MH4702-8AF</b></p>	<p><b>Commissioning charge for one static scale with SIWAREX module</b></p> <p>(Travel and setup charge must be ordered separately)</p> <p>Scope:</p> <ul style="list-style-type: none"> <li>• Recording of data</li> <li>• Checking of mechanical installation of the scale</li> <li>• Checking of electrical wiring and function</li> <li>• Static adjustment of the scale</li> </ul> <p>Requirements:</p> <ul style="list-style-type: none"> <li>• Mechanical design functional</li> <li>• Modules electrically wired and tested</li> <li>• Calibration weights available</li> <li>• Free access to scale</li> </ul> <p><b>Flat charge for travel and setup in Germany</b></p>	<p><b>9LA1110-8SN50-0AA0</b></p> <p><b>9LA1110-8RA10-0AA0</b></p>

## SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

### SIWAREX FTC

#### Overview



The SIWAREX FTC (Flexible Technology for Continuous Weighing) is a versatile and flexible weighing module for belt scales, loss-in-weight feeders and solid 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.

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#### Technical specifications

SIWAREX FTC	
<b>Use in automation systems</b>	
S7-300	Directly or via ET 200M
S7-1500	Through ET 200M
S7-400 (H)	Through ET 200M
PCS 7 (H)	Through ET 200M
<b>Communication interfaces</b>	
S7	Through backplane bus
RS 232	For SIWATOOL or printer connection
RS 485	For remote display or digital load cell
<b>Module parameterization</b>	
	Using SIMATIC S7
	Using SIWATOOL FTC software (RS 232)
<b>Measuring properties</b>	
Accuracy to EN 45501	$3 \times 6\,000\,d \geq 0.5\ \mu\text{V/e}$
Internal resolution	+/- 8 million parts
Internal/external updating rate	400/100 Hz
<b>Several parameterizable digital filters</b>	
	Critically damped, Bessel, Butterworth (0.05 ... 20 Hz), mean-value filter
<b>Weighing functions</b>	
	<ul style="list-style-type: none"> <li>Non-automatic weighing machine, force measurement</li> <li>Belt scale</li> <li>Loss-in-weight feeder</li> <li>Solid flow meter</li> </ul>
<b>Load cells</b>	
	Strain gages in 4-wire or 6-wire system
3 characteristic value ranges	1, 2 or 4 mV/V
<b>Load cell powering</b>	
Supply voltage $U_S$ (rated value)	10.3 V DC
Max. supply current	184 mA
Permissible load cell resistance	
• $R_{Lmin}$	$> 56\ \Omega$
	$> 87\ \Omega$ with Ex interface
• $R_{Lmax}$	$\leq 4\,010\ \Omega$

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

<sup>1)</sup> For further details, see Ex interface, type SIWAREX IS



Ordering data	Article No.	Article No.
<b>SIWAREX FTC</b> Weighing electronics for S7-300 and ET 200M. Applications: Belt scales, force measurement, loss-in-weight feeders and solid flow meters	7MH4900-3AA01	<b>40-pin front connector with screw contacts</b> Required for each SIWAREX module <ul style="list-style-type: none"> <li>• With screw contacts</li> <li>• With spring-loaded terminals</li> </ul>
<b>SIWAREX FTC_B manual for belt scales</b> Available in a range of languages Free download on the Internet at: <a href="http://www.siemens.com/weighing-technology">http://www.siemens.com/weighing-technology</a>		<b>Shield connection element</b> Sufficient for one SIWAREX FTC module
<b>SIWAREX FTC_L manual for solid flow meters and loss-in-weight feeders</b> Available in a range of languages Free download on the Internet at: <a href="http://www.siemens.com/weighing-technology">http://www.siemens.com/weighing-technology</a>		<b>Shield connection clamp</b> Contents: 2 units (suitable for cable with diameter 4 ... 13 mm) Note: one shield connection clamp each is required for: <ul style="list-style-type: none"> <li>• Scale connection</li> <li>• RS 485 interface</li> <li>• RS 232 interface</li> </ul>
<b>SIWAREX FTC "Getting started" for belt scales</b> Sample software shows beginners how to program the scales in STEP 7 for belt scale mode Free download on the Internet at: <a href="http://www.siemens.com/weighing-technology">http://www.siemens.com/weighing-technology</a>		<b>S7 DIN rail</b> <ul style="list-style-type: none"> <li>• 160 mm (6.30 in)</li> <li>• 480 mm (18.90 in)</li> <li>• 530 mm (20.87 in)</li> <li>• 830 mm (32.68 in)</li> <li>• 2 000 mm (78.74 in)</li> </ul>
<b>SIWAREX FTC "Getting started" for solid flow meters</b> Sample software shows beginners how to program the scales in STEP 7 for solid flow meter mode Free download on the Internet at: <a href="http://www.siemens.com/weighing-technology">http://www.siemens.com/weighing-technology</a>		<b>MMC memory</b> For data recording up to 16 MB
<b>SIWAREX FTC "Getting started" for loss-in-weight feeders</b> Sample software shows beginners how to program scales in STEP 7 for loss-in-weight feeder mode Free download on the Internet at: <a href="http://www.siemens.com/weighing-technology">http://www.siemens.com/weighing-technology</a>		<b>Remote display (optional)</b> The Siebert S102 and S302 remote digital displays can be directly connected to the SIWAREX FTC via an RS 485 interface. (not suitable for belt scale mode) Siebert Industrieelektronik GmbH Postfach 1180 D-66565 Eppelborn, Germany Tel.: +49 6806/980-0 Fax: +49 6806/980-999 Internet: <a href="http://www.siebert.de">http://www.siebert.de</a> Detailed information is available from the manufacturer.
<b>SIWATOOL V4 &amp; V7</b> Service and commissioning software for SIWAREX weighing modules	7MH4900-1AK01	<b>SIWAREX JB junction box, aluminum housing</b> For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.
<b>SIWAREX PCS7 AddOn Library for PCS7 V8.x and V9.0</b> <ul style="list-style-type: none"> <li>• Supports PROFINET</li> </ul> APL faceplates and function blocks for: <ul style="list-style-type: none"> <li>• SIWAREX U</li> <li>• SIWAREX FTA</li> <li>• SIWAREX FTC_B (belt scales)</li> <li>• SIWAREX WP321</li> </ul> Classic faceplate and function block for: <ul style="list-style-type: none"> <li>• SIWAREX FTC_L (loss in weight)</li> </ul>	7MH4900-1AK61	<b>SIWAREX JB junction box, stainless steel housing</b> For connecting up to 4 load cells in parallel.
<b>SIWATOOL connection cable</b> from SIWAREX FTC with serial PC interface, for 9-pin PC interfaces (RS 232) <ul style="list-style-type: none"> <li>• 2 m long (6.56 ft)</li> <li>• 5 m long (16.40 ft)</li> </ul>	7MH4702-8CA 7MH4702-8CB	<b>SIWAREX JB junction box, stainless steel housing (ATEX)</b> For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).
		<b>Ex interface SIWAREX IS</b> For intrinsically safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing system. Compatibility of load cells must be checked separately. <ul style="list-style-type: none"> <li>• With short-circuit current &lt; 199 mA DC</li> <li>• With short-circuit current &lt; 137 mA DC</li> </ul>
		<b>6ES7392-1AM00-0AA0</b> <b>6ES7392-1BM01-0AA0</b> <b>6ES7390-5AA00-0AA0</b> <b>6ES7390-5CA00-0AA0</b> <b>6ES7390-1AB60-0AA0</b> <b>6ES7390-1AE80-0AA0</b> <b>6ES7390-1AF30-0AA0</b> <b>6ES7390-1AJ30-0AA0</b> <b>6ES7390-1BC00-0AA0</b> <b>7MH4900-2AY20</b> <b>7MH5001-0AA20</b> <b>7MH5001-0AA00</b> <b>7MH4710-1EA01</b> <b>7MH4710-5BA</b> <b>7MH4710-5CA</b>

**SIMATIC S7-300 Advanced Controllers**

I/O modules

Function modules

**SIWAREX FTC****Ordering data****Article No.****Cable (optional)****Cable Li2Y 1 x 2 x 0.75 ST +  
2 x (2 x 0.34 ST) – CY**

For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two EBs. For permanent installation. Occasional bending is possible.

External diameter:  
approx. 10.8 mm (0.43 in)

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

Sold by the meter.

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

**7MH4702-8AG**  
**7MH4702-8AF**

**Commissioning****Commissioning charge for one  
belt scale with SIWAREX module**

(Travel and setup charge must be ordered separately)

Scope:

- Recording of data
- Checking of mechanical installation of the scale
- Checking of electrical wiring and function
- Dynamic adjustment of the scale

Requirements:

- Mechanical design functional
- Modules electrically wired and tested
- Calibration weights available
- Free access to scale

**Flat charge for travel and setup in  
Germany****Article No.**

**9LA1110-8SM50-0AA0**

**9LA1110-8RA10-0AA0**

## 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, FCS200 and FC300.

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## Technical specifications

<b>Measurement of</b>	Mass flow, volume flow, density, sensor temperature, fraction A flow, fraction B flow, fraction A in %
<b>Measurement functions</b>	
• 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.
<b>Digital input</b>	
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	<ul style="list-style-type: none"> <li>• Nominal voltage: 24 V DC</li> <li>• Lower limit: 15 V DC</li> <li>• Upper limit: 30 V DC</li> <li>• Current: 2 ... 15 mA</li> </ul>
Low signal	<ul style="list-style-type: none"> <li>• Nominal voltage: 0 V DC</li> <li>• Lower limit: -3 V DC</li> <li>• Upper limit: 5 V DC</li> <li>• Current: -15 ... +15 mA</li> </ul>
Input	Approx. 10 kΩ
Switching	Max. 100 Hz

**Digital output 1 and 2**

Functions

- Output 1:  
Pulse, frequency, redundancy pulse, redundancy frequency  
2-stage batch, batch
- Output 2:  
Redundancy pulse, redundancy frequency, 2-stage batch

Voltage supply	3 ... 30 V DC (passive output)
Switching current	Max. 30 mA at 30 V DC
Voltage drop	≤ 3 V DC at max. current
Leakage current	≤ 0.4 mA at max. voltage 30 V DC
Load resistance	1 ... 10 kΩ
Switching frequency	0 ... 12 kHz 50 % duty cycle

Functions

- Pulse, frequency, redundancy pulse, redundancy frequency  
2-stage batch, batch

**Communication**

Modbus RS 232C

- Max. baud rate: 115 200 baud
- Max. line length:  
15 m at 115 200 baud
- Signal level: according to EIA-RS 232C

Modbus RS 485

- Max. baud rate: 115 200 baud
- Max. line length:  
1200 m at 115 200 baud
- Signal level: according to EIA-RS 485
- Bus termination: Integrated.  
Can be enabled by inserting wire jumpers.

**Galvanic isolation**

All inputs, outputs and communication interfaces are galvanically isolated. Isolation voltage: 500 V.

**SIMATIC S7-300 Advanced Controllers**

I/O modules

Function modules

**SIFLOW FC070****Technical specifications** (continued)

<b>Power</b>	
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
<b>Environment</b>	
Ambient temperature	<ul style="list-style-type: none"> <li>Storage -40 °C ... +70 °C (-40 °F ... +158 °F)</li> </ul>
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	<ul style="list-style-type: none"> <li>Operation: -1000 ... 2000 m (pressure 795 ... 1080 hPa)</li> </ul>
<b>Enclosure</b>	
Material	Noryl, color: anthracite
Rating	IP20/NEMA 2 according to IEC 60529
Mechanical load	According to SIMATIC standards (S7-300 devices)
<b>Ex approvals</b>	
SIFLOW FC070 Standard	ATEX: II 3G Ex nA II T4
SIFLOW FC070 Ex CT	ATEX, IECEx, EAC Ex, FM, CSA, INMETRO: <ul style="list-style-type: none"> <li>Zone 2: Ex nA [ia] IIC T4</li> </ul> FM: <ul style="list-style-type: none"> <li>Class I, Div. 2: Grp. A, B, C, D (interface to Class I+II+III, Div. 1)</li> </ul>

<b>Custody transfer approvals</b>	
SIFLOW FC070 Ex CT	Compressed gaseous fuel measuring systems for vehicles NTEP for USA and Canada, approval no: 97-111A3
<b>EMC performance</b>	
Emission	EN 55011/CISPR-11
Immunity	EN/IEC 61326-1
<b>Certification</b>	
CE mark	Low voltage directive RoHS
<b>NAMUR</b>	
	Within the limits according to "General recommendations" with error criteria A in accordance with NE 21
<b>Programming tools</b>	
SIMATIC S7	Configuration through backplane P-BUS, PLC program and WinCC flexible
SIMATIC PCS7	Configuration through backplane P-BUS and PLC/WinCC faceplates, certified driver
SIMATIC PDM	Through Modbus port RS 232C and RS 485, certified driver

Ordering data	Article No.	Article No.	
<b>SIFLOW FC070 flow transmitter</b> Remember to order 40 pin front connector.	7ME4120-2DH20-0EA0		
<b>40 pin front connector</b> with screw contacts	6ES7392-1AM00-0AA0		
<b>40 pin front connector</b> with spring contacts	6ES7392-1BM01-0AA0		
<b>SIFLOW FC070 Ex flow transmitter</b> Remember to order 20 pin front connector.	7ME4120-2DH21-0EA0		
<b>20 pin front connector</b> with screw contacts	6ES7392-1AJ00-0AA0		
<b>20 pin front connector</b> with spring contacts	6ES7392-1BJ00-0AA0		
<b>Operating instructions for SITRANS F C SIFLOW FC070</b>			
<b>SIFLOW FC070 System Manual</b> • English • German	A5E00924779 A5E00924776		
<b>SIFLOW FC070 with S7</b> • English • German	A5E02254228 A5E02665536		
<b>SIFLOW FC070 with PCS 7</b> • English  All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>	A5E03694109		
		<b>Accessories</b>	
		<b>Cable with multiplug</b> for connecting MASS 2100, FCS200 and FC300 sensors, 5 x 2 x 0.34 mm <sup>2</sup> twisted and screened in pairs. Temperature range -20 °C ... +110 °C (-4 °F ... +230 °F) • 5 m (16.4 ft) • 10 m (32.8 ft) • 25 m (82 ft) • 50 m (164 ft) • 75 m (246 ft) • 150 m (492 ft)	FDK:083H3015 FDK:083H3016 FDK:083H3017 FDK:083H3018 FDK:083H3054 FDK:083H3055
		<b>Cable without multiplug</b> for connecting MC2 sensors, 5 x 2 x 0.34 mm <sup>2</sup> twisted and screened in pairs. Temperature range -20 °C ... +110 °C (-4 °F ... +230 °F) • 10 m (32.8 ft) • 25 m (82 ft) • 75 m (246 ft) • 150 m (492 ft)	FDK:083H3001 FDK:083H3002 FDK:083H3003 FDK:083H3004
		<b>SIMATIC S7-300 rail</b> The mechanical mounting rack of the SIMATIC S7-300 • 160 mm (6.3") • 482 mm (18.9") • 530 mm (20.8") • 830 mm (32.7") • 2000 mm (78.7")	6ES7390-1AB60-0AA0 6ES7390-1AE80-0AA0 6ES7390-1AF30-0AA0 6ES7390-1AJ30-0AA0 6ES7390-1BC00-0AA0
		<b>SIMATIC S7-300, stabilized power supply PS307</b> Input: 120/230 V AC Output: 24 V DC/2 A	6ES7307-1BA01-0AA0

## SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 function modules

### SIPLUS S7-300 FM 350-1

#### Overview



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

#### Note:

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

#### Technical specifications

Article number	6AG1350-1AH03-2AE0	6AG1350-1AH03-2AY0
Based on	6ES7350-1AH03-0AE0 SIPLUS S7-300 FM350-1	6ES7350-1AH03-0AE0 SIPLUS S7-300 FM350-1 EN50155
<b>Ambient conditions</b>		
<b>Ambient temperature during operation</b>		
• min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155
<b>Altitude during operation relating to sea level</b>		
• Installation altitude above sea level, max.	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>		
<b>Use in stationary industrial systems</b>		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>		
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *

## Technical specifications (continued)

Article number	<b>6AG1350-1AH03-2AE0</b>	<b>6AG1350-1AH03-2AY0</b>
Based on	<b>6ES7350-1AH03-0AE0</b> SIPLUS S7-300 FM350-1	<b>6ES7350-1AH03-0AE0</b> SIPLUS S7-300 FM350-1 EN50155
<b>Use on ships/at sea</b>		
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	
<b>Remark</b>		
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

## Ordering data

## Article No.

## Article No.

<b>SIPLUS S7-300 FM 350-1 counter module</b>		<b>Label cover</b>	<b>6ES7392-2XY00-0AA0</b>
With 1 channel, max. 500 kHz; for incremental encoder		10 units (spare part), for modules with 20-pin front connector	
<i>For industrial applications with extended ambient conditions</i>		<b>Labeling strips</b>	<b>6ES7392-2XX00-0AA0</b>
<u>Extended temperature range and exposure to media</u>	<b>6AG1350-1AH03-2AE0</b>	10 units (spare part), for modules with 20-pin front connector	
<i>For rolling stock railway applications</i>		<b>Slot number plates</b>	<b>6ES7912-0AA00-0AA0</b>
Conforms to EN 50155	<b>6AG1350-1AH03-2AY0</b>	<b>Documentation</b>	
<b>Accessories</b>		<b>SIMATIC Manual Collection</b>	<b>6ES7998-8XC01-8YE0</b>
<i>Mandatory</i>		Electronic manuals on DVD, multi-language: 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	
<b>Front connector</b>		<b>SIMATIC Manual Collection update service for 1 year</b>	<b>6ES7998-8XC01-8YE2</b>
20-pin, with spring-loaded contacts		Current "Manual Collection" DVD and the three subsequent updates	
• 1 unit	<b>6ES7392-1BJ00-0AA0</b>		
• 100 units	<b>6ES7392-1BJ00-1AB0</b>		
<i>Consumables</i>			
<b>Bus connectors</b>	<b>6ES7390-0AA00-0AA0</b>		
1 unit (spare part)			
<b>Shield connection element</b>	<b>6ES7390-5AA00-0AA0</b>		
80 mm wide, with 2 rows for 4 shield connection clamps each			
<b>Shield connection clamps</b>			
2 units			
For 1 cable, diameter 3 mm to 8 mm	<b>6ES7390-5BA00-0AA0</b>		
For 1 cable, diameter 4 mm to 13 mm	<b>6ES7390-5CA00-0AA0</b>		

**SIMATIC S7-300 Advanced Controllers**

I/O modules

SIPLUS S7-300 function modules

**SIPLUS S7-300 FM 350-2****Overview**

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

**Note:**

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

**Technical specifications**

Article number	<b>6AG1350-2AH01-4AE0</b>
Based on	<b>6ES7350-2AH01-0AE0</b> SIPLUS S7-300 FM350-2
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• min.	0 °C; = Tmin
• max.	60 °C; = Tmax
<b>Altitude during operation relating to sea level</b>	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>	
<b>Use in stationary industrial systems</b>	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *
<b>Use on ships/at sea</b>	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!



Ordering data	Article No.		Article No.
<b>SIPLUS S7-300 FM 350-2 counter module</b> With 8 channels, max. 20 kHz; for 24 V incremental encoders and NAMUR encoders; includes configuration package and electronic documentation on CD Exposure to media	<b>6AG1350-2AH01-4AE0</b>		
<b>Accessories</b>			
<i>Mandatory</i>			
<b>Front connector</b> 40-pin, with spring-loaded contacts <ul style="list-style-type: none"> <li>• 1 unit</li> <li>• 100 units</li> </ul>	<b>6ES7392-1BM01-0AA0</b> <b>6ES7392-1BM01-1AB0</b>		
<i>Consumables</i>			
<b>Bus connectors</b> 1 unit (spare part)	<b>6ES7390-0AA00-0AA0</b>		
<b>Shield connection clamps</b> 2 units For 2 cables, diameter 2 mm to 6 mm For 1 cable, diameter 3 mm to 8 mm For 1 cable, diameter 4 mm to 13 mm	<b>6ES7390-5AB00-0AA0</b> <b>6ES7390-5BA00-0AA0</b> <b>6ES7390-5CA00-0AA0</b>		
		<b>Label cover</b> 10 units (spare part), for modules with 40-pin front connector	<b>6ES7392-2XY10-0AA0</b>
		<b>Labeling strips</b> 10 units (spare part), for modules with 40-pin front connector	<b>6ES7392-2XX10-0AA0</b>
		<b>Slot number plates</b> <i>Documentation</i>	<b>6ES7912-0AA00-0AA0</b>
		<b>SIMATIC Manual Collection</b> Electronic manuals on DVD, multi-language: 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	<b>6ES7998-8XC01-8YE0</b>
		<b>SIMATIC Manual Collection update service for 1 year</b> Current "Manual Collection" DVD and the three subsequent updates	<b>6ES7998-8XC01-8YE2</b>

**SIMATIC S7-300 Advanced Controllers**

I/O modules

SIPLUS S7-300 function modules

**SIPLUS SIWAREX U****Overview****SIPLUS SIWAREX U electronic weighing system**

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

Note:

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

**SIPLUS SIWAREX U  
electronic weighing system**

<b>Article No.</b>	<b>6AG1 950-2AA01-4AA0</b>
<b>Article No. based on</b>	<b>7MH4 950-2AA01</b>
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.
<b>Ambient conditions</b>	
Relative humidity	100%, condensation/frost permissible. No commissioning in bedewed state.

For technical documentation on SIPLUS, see:

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

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**Ordering data****Article No.****SIPLUS SIWAREX U**

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

Exposure to media

**6AG1950-2AA01-4AA0**

**Accessories***Mandatory***Front connector**

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

*Consumables***Bus connectors**

1 unit (spare part)

**6ES7390-0AA00-0AA0**

**Shield connection clamps**

2 units

For 2 cables, diameter 2 mm to 6 mm

**6ES7390-5AB00-0AA0**

For 1 cable, diameter 3 mm to 8 mm

**6ES7390-5BA00-0AA0**

For 1 cable, diameter 4 mm to 13 mm

**6ES7390-5CA00-0AA0**

**Article No.****Labeling strips**

10 units; spare part

**6ES7392-2XX00-0AA0**

**Label cover**

10 units; spare part

**6ES7392-2XY00-0AA0**

**Slot number plates**

**6ES7912-0AA00-0AA0**

**SIWAREX JB junction box, aluminum housing**

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

**7MH4710-1BA**

**Ex interface, type SIWAREX IS**

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

Incl. Equipment Manual  
Suitable for SIWAREX U, CS, MS, FTA, FTC and CF weighing modules

Approved for use in the EU

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

**7MH4710-5BA**

**7MH4710-5CA**

Ordering data	Article No.	Ordering data	Article No.
<p><i>Cables (optional)</i></p> <p><b>Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, orange sheath</b></p> <p>For connecting SIWAREX U, CS, MS, FTA, FTC and CF to the junction box (JB), extension box (EB) or Ex interface (Ex-I) or between two JB's; for fixed laying, occasional bending permitted, 10.8 mm (0.43 inch) outer diameter, for ambient temperature -40 ... +80 °C (-40 ... +176 °F)</p>	7MH4702-8AG	<p><b>SIWAREX U configuration package for PCS7, version 8.0</b></p> <p>Suitable for 7MH4950-xAA01</p> <ul style="list-style-type: none"> <li>• Function block for the CFC</li> <li>• Faceplate</li> <li>• SIWATOOL U commissioning software</li> <li>• Manual</li> </ul>	7MH4950-3AK62
<p><b>Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, blue sheath</b></p> <p>For connecting the junction box (JB) or extension box (EB) in a potentially explosive atmosphere to the Ex interface (Ex I), for fixed laying, occasional bending permitted, blue PVC insulating sheath, approx. 10.8 mm (0.43 inch) outer diameter, for ambient temperature -40 ... +80 °C (-40 ... +176 °F)</p>	7MH4702-8AF	<p><b>SIWAREX U APL configuration package for PCS7, version 8.0, Update 1</b></p> <p>Suitable for 7MH4950-xAA01</p> <ul style="list-style-type: none"> <li>• Function block for the CFC</li> <li>• APL-style faceplate</li> <li>• SIWATOOL U commissioning software</li> <li>• Manual</li> </ul>	7MH4950-3AK65
<p><i>Configuration software</i></p> <p><b>SIWAREX U configuration package for PCS7 S7, version 7.0 and V7.1</b></p> <p>Suitable for 7MH4950-1AA01 and 7MH4950-2AA01</p> <p>On CD-ROM</p> <ul style="list-style-type: none"> <li>• Function block for the CFC</li> <li>• Faceplate</li> <li>• SIWATOOL U commissioning software</li> <li>• Manual</li> </ul>	7MH4950-3AK61	<p><i>Documentation</i></p> <p><b>SIMATIC Manual Collection</b></p> <p>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</p>	6ES7998-8XC01-8YE0
		<p><b>SIMATIC Manual Collection update service for 1 year</b></p> <p>Current "Manual Collection" DVD and the three subsequent updates</p>	6ES7998-8XC01-8YE2

## SIMATIC S7-300 Advanced Controllers

I/O modules  
Communication

### CP 340

#### Overview



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

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#### Technical specifications

Article number	6ES7340-1AH02-0AE0 CP340 w. RS232C interface(V.24)	6ES7340-1BH02-0AE0 CP340 w. 20MA interface(TTY)	6ES7340-1CH02-0AE0 CP340 w. RS422/485 interface
<b>General information</b>			
Product type designation	CP 340	CP 340	CP 340
<b>Supply voltage</b>			
Rated value (DC)	No; Power supply via backplane bus 5V	No; Power supply via backplane bus 5V	No; Power supply via backplane bus 5V
• 24 V DC			
<b>Input current</b>			
from backplane bus 5 V DC, max.	165 mA	190 mA	165 mA
<b>Power loss</b>			
Power loss, typ.	0.6 W	0.85 W	0.6 W
Power loss, max.	0.85 W	0.95 W	0.85 W
<b>Interfaces</b>			
Number of interfaces	1; Isolated	1; Isolated	1; Isolated
Interface physics, 20 mA (TTY)		Yes	
Interface physics, RS 232C (V.24)	Yes		
Interface (physical) RS 422/485 (X.27)			Yes
Transmission rate, min.	2.4 kbit/s	2.4 kbit/s	2.4 kbit/s
Transmission rate, max.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s
<b>Point-to-point connection</b>			
• Cable length, max.	15 m	1 000 m; 100 m active, 1 000 m passive	1 200 m
• supported printers	HP-Deskjet, HP-Laserjet, IBM-Proprinter, user-defined	HP-Deskjet, HP-Laserjet, IBM-Proprinter, user-defined	HP-Deskjet, HP-Laserjet, IBM-Proprinter, user-defined
• Connector type	9-pin sub D connector	9-pin sub D socket	15-pin sub D socket
<b>Integrated protocol driver</b>			
- 3964 (R)	Yes	Yes	Yes
- ASCII	Yes	Yes	Yes
- RK512	No	No	No
- customer-specific drivers reloadable	No	No	No
<b>Telegram length, max.</b>			
- 3964 (R)	1 024 byte	1 024 byte	1 024 byte
- ASCII	1 024 byte	1 024 byte	1 024 byte
<b>Transmission rate, 20 mA (TTY)</b>			
- 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	

## Technical specifications (continued)

Article number	6ES7340-1AH02-0AE0 CP340 w. RS232C interface(V.24)	6ES7340-1BH02-0AE0 CP340 w. 20MA interface(TTY)	6ES7340-1CH02-0AE0 CP340 w. RS422/485 interface
<b>Transmission rate, RS 422/485</b>			
- 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
<b>Transmission speed, RS 232</b>			
- 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		
<b>Ambient conditions</b>			
<b>Ambient temperature during operation</b>			
• min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C
<b>Ambient temperature during storage/transportation</b>			
• min.	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C
<b>Software</b>			
<b>Block</b>			
• 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
<b>Connection method</b>			
Design of electrical connection for supply voltage	Over backplane bus	Over backplane bus	Over backplane bus
<b>Dimensions</b>			
Width	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm
<b>Weights</b>			
Weight, approx.	300 g	300 g	300 g

## Ordering data

## Article No.

## Article No.

<b>CP 340 communications processor</b>	<b>6ES7340-1AH02-0AE0</b>	<b>CP 340 communications processor</b>	<b>6ES7340-1CH02-0AE0</b>
With one RS 232 C (V.24) interface		With one RS 422/485 (X.27) interface	
<b>RS 232 connecting cable</b>		<b>RS 422/485 connecting cable</b>	
For linking to SIMATIC S7		For linking to SIMATIC S7	
5 m	<b>6ES7902-1AB00-0AA0</b>	5 m	<b>6ES7902-3AB00-0AA0</b>
10 m	<b>6ES7902-1AC00-0AA0</b>	10 m	<b>6ES7902-3AC00-0AA0</b>
15 m	<b>6ES7902-1AD00-0AA0</b>	50 m	<b>6ES7902-3AG00-0AA0</b>
<b>CP 340 communications processor</b>	<b>6ES7340-1BH02-0AE0</b>		
With one 20 mA (TTY) interface			
<b>20 mA (TTY) connecting cable</b>			
For linking to SIMATIC S7			
5 m	<b>6ES7902-2AB00-0AA0</b>		
10 m	<b>6ES7902-2AC00-0AA0</b>		
50 m	<b>6ES7902-2AG00-0AA0</b>		

## SIMATIC S7-300 Advanced Controllers

I/O modules  
Communication

### CP 341

#### Overview



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

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#### Technical specifications

Article number	6ES7341-1AH02-0AE0 CP 341 RS232C (V.24)	6ES7341-1BH02-0AE0 CP341 20mA-Interface (TTY)	6ES7341-1CH02-0AE0 CP341 RS422/485-Interface
<b>General information</b>			
Product type designation	CP 341	CP 341	CP 341
<b>Supply voltage</b>			
Rated value (DC)			
• 24 V DC	Yes	Yes	Yes
<b>Input current</b>			
from supply voltage L+, max.	100 mA	100 mA	100 mA
from backplane bus 5 V DC, max.	70 mA	70 mA	70 mA
<b>Power loss</b>			
Power loss, typ.	1.6 W	1.6 W	1.6 W
Power loss, max.	2.4 W	2.4 W	2.4 W
<b>Interfaces</b>			
Number of interfaces	1; Isolated	1; Isolated	1; Isolated
Interface physics, 20 mA (TTY)		Yes	
Interface physics, RS 232C (V.24)	Yes		
Interface (physical) RS 422/485 (X.27)			Yes
Transmission rate, min.	0.3 kbit/s	0.3 kbit/s	0.3 kbit/s
Transmission rate, max.	115.2 kbit/s	19.2 kbit/s	115.2 kbit/s
<b>Point-to-point connection</b>			
• Cable length, max.	15 m	1 000 m	1 200 m
• supported printers	Serial printers	Serial printers	Serial printers
• Connector type	9-pin sub D connector	9-pin sub D socket	15-pin sub D socket
<b>Integrated protocol driver</b>			
- 3964 (R)	Yes	Yes	Yes; not with RS 485
- ASCII	Yes	Yes	Yes
- RK512	Yes	Yes	Yes; not with RS 485
<b>Telegram length, max.</b>			
- 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
<b>Transmission rate, 20 mA (TTY)</b>			
- 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	

**Technical specifications** (continued)

Article number	<b>6ES7341-1AH02-0AE0</b> CP 341 RS232C (V.24)	<b>6ES7341-1BH02-0AE0</b> CP341 20mA-Interface (TTY)	<b>6ES7341-1CH02-0AE0</b> CP341 RS422/485-Interface
<b>Transmission rate, RS 422/485</b>			
- 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
<b>Transmission speed, RS 232</b>			
- 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		
<b>Ambient conditions</b>			
<b>Ambient temperature during operation</b>			
• min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C
<b>Ambient temperature during storage/transportation</b>			
• min.	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C
<b>Software</b>			
<b>Block</b>			
• 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
<b>Connection method</b>			
Design of electrical connection for supply voltage	3 screw-type terminals: L+, M, GND	3 screw-type terminals: L+, M, GND	3 screw-type terminals: L+, M, GND
<b>Dimensions</b>			
Width	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm
<b>Weights</b>			
Weight, approx.	300 g	300 g	300 g

**Ordering data**
**Article No.**
**Article No.**

<b>CP 341 communications processor</b>	<b>6ES7341-1AH02-0AE0</b>	<b>CP 341 communications processor</b>	<b>6ES7341-1CH02-0AE0</b>
With one RS 232 C (V.24) interface		With one RS 422/485 (X.27) interface	
<b>RS 232 connecting cable</b>		<b>RS 422/485 connecting cable</b>	
For linking to SIMATIC S7		For linking to SIMATIC S7	
5 m	<b>6ES7902-1AB00-0AA0</b>	5 m	<b>6ES7902-3AB00-0AA0</b>
10 m	<b>6ES7902-1AC00-0AA0</b>	10 m	<b>6ES7902-3AC00-0AA0</b>
15 m	<b>6ES7902-1AD00-0AA0</b>	50 m	<b>6ES7902-3AG00-0AA0</b>
<b>CP 341 communications processor</b>	<b>6ES7341-1BH02-0AE0</b>	<b>Loadable drivers for CP 341</b>	
With one 20 mA (TTY) interface		Modbus master (RTU format)	
<b>20 mA (TTY) connecting cable</b>		• Single license	<b>6ES7870-1AA01-0YA0</b>
For linking to SIMATIC S7		• Single license, without software or documentation	<b>6ES7870-1AA01-0YA1</b>
5 m	<b>6ES7902-2AB00-0AA0</b>	Modbus slave (RTU format)	
10 m	<b>6ES7902-2AC00-0AA0</b>	• Single license	<b>6ES7870-1AB01-0YA0</b>
50 m	<b>6ES7902-2AG00-0AA0</b>	• Single license, without software or documentation	<b>6ES7870-1AB01-0YA1</b>

# SIMATIC S7-300 Advanced Controllers

I/O modules  
Communication

## Loadable drivers for CP 441-2 and CP 341

### Overview

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

### Technical specifications

Parameterization software	Loadable drivers for CP 441-2 and CP 341		Modbus slave
Type of license	Simple license, copy license		<ul style="list-style-type: none"> <li>• Modbus protocol with RTU format</li> <li>• Master/slave coupling: SIMATIC S7 is slave</li> <li>• Function codes implemented: 01, 02, 03, 04, 05, 06, 08, 15, 16</li> <li>• No V.24 control and signal line</li> <li>• CRC polynomial: <math>x^{16} + x^{15} + x^2 + 1</math></li> <li>• Interfaces: TTY (20 mA), V.24 (RS 232C), X.27 (RS 422/485) 2-wire or 4-wire</li> <li>• Communications FB 180, instance DB 180 (use of a multi-instance)</li> <li>• Conversion of the Modbus data address to S7 data areas. Data areas which can be processed: DB, bit memories, outputs, inputs, timers, counters</li> <li>• Character delay time 3.5 characters or multiple thereof</li> <li>• Transmission rate 300 bit/s up to 76800 bit/s (TTY up to 19200 bit/s)</li> <li>• Character frame</li> <li>• Slave address of CP (1 to 255)</li> <li>• With/without RS 485 operation for 2-wire connection</li> <li>• With/without modem operation (ignore smudge characters)</li> <li>• Factor for the character delay time 1-10</li> <li>• Number of work DB (for FB processing)</li> <li>• Enabling of memory areas for writing by the master</li> <li>• Default setting of receive line when using the X.27 interface module</li> <li>• Conversion of Modbus addresses to S7 data areas</li> </ul>
Target system	SIMATIC CP 341, SIMATIC CP 441-2		
Technical specifications	Modbus Master	Adjustable parameters	
Adjustable parameters	<ul style="list-style-type: none"> <li>• Modbus protocol with RTU format</li> <li>• Master/slave coupling: SIMATIC S7 is master</li> <li>• Function codes implemented: 01, 02, 03, 04, 05, 06, 07, 08, 11, 12, 15, 16</li> <li>• No V.24 control and signal lines</li> <li>• CRC polynomial: <math>x^{16} + x^{15} + x^2 + 1</math></li> <li>• Interfaces: TTY (20 mA); V.24 (RS 232 C); X.27 (RS 422/485) 2-wire or 4-wire</li> <li>• Receive mailbox specified on BRCV</li> <li>• Character delay time 3.5 characters or multiple thereof</li> <li>• Broadcast message possible</li> <li>• Transmission rate 300 bit/s up to 76800 bit/s (TTY up to 19200 bit/s)</li> <li>• Character frame</li> <li>• With/without RS 485 operation for 2-wire connections</li> <li>• With/without modem operation (ignore smudge characters)</li> <li>• Response monitoring time 100 ms to 25.5 s in steps of 100 ms</li> <li>• Factor for the character delay time 1-10</li> <li>• Default setting of receive line when using the X.27 interface module</li> </ul>		



Ordering data	Article No.	Ordering data	Article No.
<b>Modbus Master V3.1</b> 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	<b>6ES7870-1AA01-0YA0</b>  <b>6ES7870-1AA01-0YA1</b>	<b>SIMATIC Manual Collection</b> 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	<b>6ES7998-8XC01-8YE0</b>
Single license, without software and documentation <b>Modbus Slave V3.1</b> 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 Single license, without software and documentation	<b>6ES7870-1AB01-0YA0</b>  <b>6ES7870-1AB01-0YA1</b>	<b>SIMATIC Manual Collection update service for 1 year</b> Current "Manual Collection" DVD and the three subsequent updates	<b>6ES7998-8XC01-8YE2</b>

## SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

### CP 343-2P/CP 343-2

#### Overview



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

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

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

- As many as 62 AS-Interface slaves can be connected
- Integrated analog value transmission
- Supports all AS-Interface master functions according to the AS-Interface Specification V3.0
- Status displays of operating states and indication of the readiness for operation of connected slaves by means of LEDs in the front panel
- Fault indications (including AS-Interface voltage fault, configuration fault) by means of LEDs in the front panel.
- Compact enclosure in the design of the SIMATIC S7-300
- Suitable for AS-Interface with 30-V voltage and AS-i Power24V (from product version 2/firmware version 3.1)
- Additionally for CP 343-2P: 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 connecting the AS-Interface cable directly.
- LEDs in the front panel for indicating the operating state and functional readiness of all connected and active slaves
- Pushbuttons for switching over the master operating state and for adopting the existing ACTUAL configuration of the AS-i slave as the TARGET configuration

#### Function

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

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

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

For more information, see

<https://support.industry.siemens.com/cs/ww/en/view/51678777>.

#### Notes on security

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

For more information on Industrial Security, see

<http://www.siemens.com/industrialsecurity>.

#### Configuration

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

#### Additionally for CP 343-2P

The CP 343-2P also supports configuring of the AS-Interface network with STEP 7 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.

## Benefits

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

## Application

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

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

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

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

## Ordering data

## Article No.

### CP 343-2P communications processor

- Device version with expanded configuration options for connection of SIMATIC S7-300 and ET 200M to AS-Interface
- Configuration of the AS-i network using the SET key or STEP 7 (V5.2 and higher)
- Without front connector
- Corresponds to AS-Interface Specification V3.0
- Dimensions (W x H x D / mm): 40 x 125 x 120

6GK7343-2AH11-0XA0

### CP 343-2 communications processor

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

6GK7343-2AH01-0XA0

### Accessories

#### Front connector, 20-pin

- With screw-type terminals
- With spring-loaded terminals

6ES7392-1AJ00-0AA0  
6ES7392-1BJ00-0AA0

#### AS-Interface addressing unit V3.0

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

3RK1904-2AB02

## More information

### More information

Manuals, see <https://support.industry.siemens.com/cs/ww/en/ps/15754/man>

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

AS-Interface function block library for SIMATIC PCS 7 for easy connection of AS-Interface to PCS 7, see <https://mall.industry.siemens.com/mall/en/ww/Catalog/Products/10046725?tree=CatalogTree>.

**SIMATIC S7-300 Advanced Controllers**I/O modules  
Communication**CP 342-5****Overview**

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

5

**Technical specifications**

Article number	<b>6GK7342-5DA03-0XE0</b>
Product type designation	CP 342-5
<b>Transmission rate</b>	
Transfer rate	
• at the 1st interface acc. to PROFIBUS	9.6 kbit/s ... 12 Mbit/s
<b>Interfaces</b>	
Number of interfaces acc. to Industrial Ethernet	0
Number of electrical connections	
• at the 1st interface acc. to PROFIBUS	1
• for power supply	1
Type of electrical connection	
• at the 1st interface acc. to PROFIBUS	9-pin Sub-D socket (RS485)
• for power supply	4-pole terminal block
<b>Supply voltage, current consumption, power loss</b>	
Type of voltage of the supply voltage	DC
Supply voltage 1 from backplane bus	5 V
Supply voltage external	24 V
Supply voltage external at DC Rated value	24 V
Relative positive tolerance at DC at 24 V	20 %
Relative negative tolerance at DC at 24 V	15 %
Consumed current	
• from backplane bus at DC at 5 V typical	0.15 A
• from external supply voltage at DC at 24 V typical	0.25 A
Power loss [W]	6.75 W

Article number	<b>6GK7342-5DA03-0XE0</b>
Product type designation	CP 342-5
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
<b>Design, dimensions and weight</b>	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.3 kg
<b>Product properties, functions, components general</b>	
Number of units	
• per CPU maximum	4
<b>Performance data open communication</b>	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	16
Amount of data	
• as user data per connection for open communication by means of SEND/RECEIVE blocks maximum	240 byte

#### Technical specifications (continued)

Article number	<b>6GK7342-5DA03-0XE0</b>
Product type designation	CP 342-5
<b>Performance data PROFIBUS DP</b>	
Service as DP master	
• DPV0	Yes
Number of DP slaves on DP master usable	124
Amount of data	
• of the address area of the inputs as DP master total	2 160 byte
• of the address area of the outputs as DP master total	2 160 byte
• of the address area of the inputs per DP slave	244 byte
• of the address area of the outputs per DP slave	244 byte
• of the address area of the diagnostic data per DP slave	240 byte
Service as DP slave	
• DPV0	Yes
Amount of data	
• of the address area of the inputs as DP slave total	240 byte
• of the address area of the outputs as DP slave total	240 byte

Article number	<b>6GK7342-5DA03-0XE0</b>
Product type designation	CP 342-5
<b>Performance data S7 communication</b>	
Number of possible connections for S7 communication	
• maximum	16
<b>Performance data multi-protocol mode</b>	
Number of active connections with multi-protocol mode	
• without DP maximum	32
• with DP maximum	28
<b>Performance data telecontrol</b>	
Protocol is supported	
• TCP/IP	No
<b>Product functions management, configuration</b>	
Configuration software	
• required	STEP 7 V5.1 SP2 or higher / STEP 7 Professional V12 (TIA Portal) or higher

#### Ordering data

#### Article No.

<b>CP 342-5 communications processor</b>	<b>6GK7342-5DA03-0XE0</b>
Communications processor for electrical connection of SIMATIC S7-300 to PROFIBUS at up to 12 Mbps, with electronic manual on CD-ROM	
<b>Accessories</b>	
<b>PROFIBUS FastConnect RS 485 connection plug</b>	
With 90° cable outlet; insulation displacement technology, max. transmission rate 12 Mbps	
• Without PG interface	<b>6ES7972-0BA52-0XA0</b>
• With PG interface	<b>6ES7972-0BB52-0XA0</b>
<b>PROFIBUS bus connector IP20</b>	
With connection to PPI, MPI, PROFIBUS	
• Without PG interface	<b>6ES7972-0BA12-0XA0</b>
• With PG interface	<b>6ES7972-0BB12-0XA0</b>

#### Article No.

<b>PROFIBUS FC Standard Cable</b>	<b>6XV1830-0EH10</b>
2-wire bus cable, shielded, special design for fast mounting, delivery unit: max. 1000 m, minimum order quantity 20 m, sold by the meter	
<b>PROFIBUS bus terminal 12M</b>	<b>6GK1500-0AA10</b>
Bus terminal for connection of PROFIBUS nodes at up to 12 Mbps with connecting cable	
<b>SIMATIC S7-300 DM 370</b>	<b>6ES7370-0AA01-0AA0</b>
Dummy module; used for module replacement	

## SIMATIC S7-300 Advanced Controllers

I/O modules  
Communication

### CP 342-5 FO

#### 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 Mbps (including 45.45 Kbps)
- Direct connection to the optical PROFIBUS network via 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

#### Technical specifications

Article number	<b>6GK7342-5DF00-0XE0</b>
Product type designation	CP 342-5 FO
<b>Transmission rate</b>	
Transfer rate	
• at the 1st interface acc. to PROFIBUS	9.6 kbit/s ... 12 Mbit/s
<b>Interfaces</b>	
Number of interfaces acc. to Industrial Ethernet	0
Number of electrical connections	
• for power supply	1
Number of optical interfaces at the 1st interface acc. to PROFIBUS	2
Design of the optical interface at the 1st interface acc. to PROFIBUS	Duplex socket
Type of electrical connection	
• for power supply	4-pole terminal block
<b>Supply voltage, current consumption, power loss</b>	
Type of voltage of the supply voltage	DC
Supply voltage 1 from backplane bus	5 V
Supply voltage	24 V
Supply voltage external	24 V
Supply voltage external at DC Rated value	24 V
Relative positive tolerance at DC at 24 V	20 %
Relative negative tolerance at DC at 24 V	15 %
Consumed current	
• from backplane bus at DC at 5 V typical	0.15 A
• from external supply voltage at DC at 24 V typical	0.25 A
Power loss [W]	6 W

Article number	<b>6GK7342-5DF00-0XE0</b>
Product type designation	CP 342-5 FO
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
<b>Design, dimensions and weight</b>	
Module format	Compact module
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.3 kg
Mounting type	
• S7-300 rail mounting	Yes
<b>Product properties, functions, components general</b>	
Number of units	
• per CPU maximum	4
Wire length	
• for PCF FOC maximum	300 m
• for POF FOC maximum	50 m
<b>Performance data open communication</b>	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	16
Amount of data	
• as user data per connection for open communication by means of SEND/RECEIVE blocks maximum	240 byte

**Technical specifications** (continued)

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

Article number	<b>6GK7342-5DF00-0XE0</b>
Product type designation	CP 342-5 FO
<b>Performance data S7 communication</b>	
Number of possible connections for S7 communication	
• maximum	16
<b>Performance data multi-protocol mode</b>	
Number of active connections with multi-protocol mode	
• without DP maximum	32
• with DP maximum	28
<b>Performance data telecontrol</b>	
Protocol is supported	
• TCP/IP	No
<b>Product functions management, configuration</b>	
Configuration software	
• required	STEP 7 V5.1 SP2 or higher / STEP 7 Professional V12 (TIA Portal) or higher

**Ordering data****Article No.****Article No.****CP 342-5 FO communications processor****6GK7342-5DF00-0XE0**

Communication processor for optical connection of SIMATIC S7-300 to PROFIBUS to 12 Mbps with electronic manual on CD-ROM

**Accessories****PROFIBUS Plastic Fiber Optic, Simplex Connector/Polishing Set****6GK1901-0FB00-0AA0**

100 simplex connectors and 5 polishing sets for assembling PROFIBUS plastic fiber optic cables for the optical PROFIBUS DP

**PROFIBUS Plastic Fiber Optic, stripping tool set****6GK1905-6PA10**

Tools for removing the outer sheath or core sheath of plastic fiber optic cables

# SIMATIC S7-300 Advanced Controllers

I/O modules  
Communication

## CP 343-5

### Overview



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

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

DP-M	DP-S	FMS	PG/OP	S7/S5	
		●	●	●	

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### Technical specifications

Article number	<b>6GK7343-5FA01-0XE0</b>
Product type designation	CP 343-5
<b>Transmission rate</b>	
Transfer rate	
• at the 1st interface acc. to PROFIBUS	9.6 kbit/s ... 12 Mbit/s
<b>Interfaces</b>	
Number of interfaces acc. to Industrial Ethernet	0
Number of electrical connections	
• at the 1st interface acc. to PROFIBUS	1
• for power supply	1
Type of electrical connection	
• at the 1st interface acc. to PROFIBUS	9-pin Sub-D socket (RS485)
• for power supply	4-pole terminal block
<b>Supply voltage, current consumption, power loss</b>	
Type of voltage of the supply voltage	DC
Supply voltage 1 from backplane bus	5 V
Supply voltage	24 V
Supply voltage external	24 V
Supply voltage external at DC Rated value	24 V
Relative positive tolerance at DC at 24 V	20 %
Relative negative tolerance at DC at 24 V	15 %
Consumed current	
• from backplane bus at DC at 5 V typical	0.15 A
• from external supply voltage at DC at 24 V typical	0.25 A
Power loss [W]	5 W

Article number	<b>6GK7343-5FA01-0XE0</b>
Product type designation	CP 343-5
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
<b>Design, dimensions and weight</b>	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.3 kg
Mounting type	
• S7-300 rail mounting	Yes
<b>Product properties, functions, components general</b>	
Number of units	
• per CPU maximum	4
<b>Performance data open communication</b>	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	16
Amount of data	
• as user data per connection for open communication by means of SEND/RECEIVE blocks maximum	240 byte



#### Technical specifications (continued)

Article number	<b>6GK7343-5FA01-0XE0</b>
Product type designation	CP 343-5
<b>Performance data FMS functions</b>	
Number of possible connections for FMS connection maximum	16
Amount of data of the variables	
• for READ job maximum	237 byte
• for WRITE and REPORT job maximum	233 byte
Number of variables	
• Configurable from server to FMS partner	256
• Loadable from server to FMS partner	256

Article number	<b>6GK7343-5FA01-0XE0</b>
Product type designation	CP 343-5
<b>Performance data S7 communication</b>	
Number of possible connections for S7 communication	
• maximum	16
<b>Performance data multi-protocol mode</b>	
Number of active connections with multi-protocol mode	48
<b>Performance data telecontrol</b>	
Protocol is supported	
• TCP/IP	No
<b>Product functions management, configuration</b>	
Configuration software	
• required	STEP 7 V5.1 SP3 or higher and NCM S7 for PROFIBUS

#### Ordering data

#### Article No.

#### Article No.

<b>CP 343-5 communications processor</b>	<b>6GK7343-5FA01-0XE0</b>
Communications processor for connection of S7-300 to PROFIBUS, FMS, open communication, PG/OP and S7 communication; with electronic manual on CD-ROM	
<b>Accessories</b>	
<b>STEP 7 Version 5.6</b>	
Target system: SIMATIC S7-300/-400, SIMATIC C7, SIMATIC WinAC	
Requirements: Windows Server 2008 R2 SP1 Windows Server 2012 R2 Windows Server 2016 Windows 7 SP1 Windows 10 Professional Windows 10 Enterprise	
Type of delivery: English, German, French, Spanish, Italian Including license key on USB flash drive, with electronic documentation	
• Floating license on DVD	<b>6ES7810-4CC11-0YA5</b>
• Rental license for 50 hours	<b>6ES7810-4CC11-0YA6</b>
• Software Update Service on DVD (requires current software version)	<b>6ES7810-4BC01-0YX2</b>
• Floating license upgrade 3.x/4.x/5.x to V5.6; on DVD	<b>6ES7810-4CC11-0YE5</b>
• STEP 7 V5.6 trial license; on DVD, operational for 14 days	<b>6ES7810-4CC11-0YA7</b>

<b>PROFIBUS FastConnect RS485 bus connection plug</b>	
With 90° cable outlet; insulation displacement technology, max. transfer rate 12 Mbps (1 unit)	
• Without PG interface	<b>6ES7972-0BA52-0XA0</b>
• With PG interface	<b>6ES7972-0BB52-0XA0</b>
<b>PROFIBUS bus connector IP20</b>	
With connection to PPI, MPI, PROFIBUS	
• Without PG interface	<b>6ES7972-0BA12-0XA0</b>
• With PG interface	<b>6ES7972-0BB12-0XA0</b>
<b>PROFIBUS bus terminal 12M</b>	<b>6GK1500-0AA10</b>
Bus terminal for connection of PROFIBUS nodes at up to 12 Mbps with connecting cable	
<b>SIMATIC S7-300 DM 370</b>	<b>6ES7370-0AA01-0AA0</b>
Dummy module; used for module replacement	

# SIMATIC S7-300 Advanced Controllers

I/O modules  
Communication

## CP 343-1 Lean

### Overview



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

### Technical specifications

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

Article number	<b>6GK7343-1CX10-0XE0</b>
Product type designation	CP 343-1 Lean
<b>Permitted ambient conditions</b>	
Ambient temperature	
• for vertical installation during operation	0 ... 40 °C
• for horizontally arranged busbars during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
<b>Design, dimensions and weight</b>	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.22 kg
Mounting type	
• S7-300 rail mounting	Yes

#### Technical specifications (continued)

Article number	<b>6GK7343-1CX10-0XE0</b>
Product type designation	CP 343-1 Lean
<b>Performance data open communication</b>	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	8
Amount of data	
• as user data per ISO on TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks maximum	2 Kibyte
Number of Multicast stations	8
<b>Performance data S7 communication</b>	
Number of possible connections for S7 communication	
• maximum	4
Service	
• of SIMATIC communication as server	Yes
<b>Performance data multi-protocol mode</b>	
Number of active connections with multi-protocol mode	12
<b>Performance data PROFINET communication as PN IO-Controller</b>	
Product function PROFINET IO controller	No
<b>Performance data PROFINET communication as PN IO-Device</b>	
Product function PROFINET IO device	Yes
Amount of data	
• as user data for input variables as PROFINET IO device maximum	512 byte
• as user data for input variables as PROFINET IO device maximum	512 byte
• as user data for input variables for each sub-module as PROFINET IO device	240 byte
• as user data for input variables for each sub-module as PROFINET IO device	240 byte
• as user data for the consistency area for each sub-module	240 byte
Number of submodules per PROFINET IO-Device	32
<b>Performance data telecontrol</b>	
Protocol is supported	
• TCP/IP	Yes

Article number	<b>6GK7343-1CX10-0XE0</b>
Product type designation	CP 343-1 Lean
<b>Product functions management, configuration</b>	
Product function MIB support	Yes
Protocol is supported	
• SNMP v1	Yes
• DCP	Yes
• LLDP	Yes
Configuration software	
• required	STEP 7 V5.4 or higher / STEP 7 Professional V11 (TIA Portal) or higher
Identification & maintenance function	
• I&M0 - device-specific information	Yes
• I&M1 – higher-level designation/ location designation	Yes
<b>Product functions Diagnosis</b>	
Product function Web-based diagnostics	Yes
<b>Product functions switch</b>	
Product feature Switch	Yes
Product function	
• switch-managed	No
• with IRT PROFINET IO switch	No
• Configuration with STEP 7	Yes
<b>Product functions Redundancy</b>	
Product function	
• Ring redundancy	Yes
• Redundancy manager	No
Protocol is supported Media Redundancy Protocol (MRP)	Yes
<b>Product functions Security</b>	
Product function	
• password protection for Web applications	No
• ACL - IP-based	Yes
• ACL - IP-based for PLC/routing	No
• switch-off of non-required services	Yes
• Blocking of communication via physical ports	Yes
• log file for unauthorized access	No
<b>Product functions Time</b>	
Product function SICLOCK support	Yes
Product function pass on time synchronization	Yes
Protocol is supported	
• NTP	Yes

**SIMATIC S7-300 Advanced Controllers**

I/O modules

Communication

**CP 343-1 Lean****Ordering data****Article No.****Article No.****CP 343-1 Lean communications processor**

For connecting SIMATIC S7-300 to Industrial Ethernet through TCP/IP and UDP, Multicast, S7 communication, open communication (SEND/RECEIVE), FETCH/WRITE, PROFINET IO Device, MRP, integrated 2-port switch ERTEC, comprehensive diagnostics facilities, module replacement without PG, SNMP, initial commissioning over LAN; with electronic manual on CD-ROM

**6GK7343-1CX10-0XE0****IE FC TP Standard Cable GP 2 x 2 (Type A)**

4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. length 1000 m, minimum order quantity 20 m

**6XV1840-2AH10****Accessories****IE FC RJ45 plug 145**

RJ45 plug connector 2 x 2 for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 145° cable outlet

- 1 pack = 1 unit
- 1 pack = 10 units
- 1 pack = 50 units

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

**IE FC Stripping Tool**

Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables

**6GK1901-1GA00****Compact Switch Module CSM 377**

Unmanaged switch for connection of a SIMATIC S7-300 CPU, ET 200M, and up to three further nodes to Industrial Ethernet operating at 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module including electronic manual on CD-ROM

**6GK7377-1AA00-0AA0****5**

## Overview



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

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

## Technical specifications

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

Article number	<b>6GK7343-1EX30-0XE0</b>
Product type designation	CP 343-1
<b>Permitted ambient conditions</b>	
Ambient temperature	
• for vertical installation during operation	0 ... 40 °C
• for horizontally arranged busbars during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
<b>Design, dimensions and weight</b>	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.22 kg
Mounting type	
• S7-300 rail mounting	Yes
<b>Performance data open communication</b>	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	16
Amount of data	
• as user data per ISO connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per ISO on TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks maximum	2 Kibyte
Number of Multicast stations	16

# SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 343-1

## Technical specifications (continued)

Article number	<b>6GK7343-1EX30-0XE0</b>
Product type designation	CP 343-1
<b>Performance data S7 communication</b>	
Number of possible connections for S7 communication	
• maximum	16
<b>Performance data multi-protocol mode</b>	
Number of active connections with multi-protocol mode	32
<b>Performance data PROFINET communication as PN IO-Controller</b>	
Number of PN IO devices on PROFINET IO controller usable total	32
Number of external PN IO lines with PROFINET per rack	1
Amount of data	
• as user data for input variables as PROFINET IO controller maximum	1 Kibyte
• as user data for input variables as PROFINET IO controller maximum	1 Kibyte
• as user data for input variables per PN IO device as PROFINET IO controller maximum	1 433 byte
• as user data for output variables per PN IO device as PROFINET IO controller maximum	1 433 byte
• as user data for input variables per PN IO device for each sub-module as PROFINET IO controller maximum	240 byte
• as user data for output variables per PN IO device for each sub-module as PROFINET IO controller maximum	240 byte
<b>Performance data PROFINET communication as PN IO-Device</b>	
Product function PROFINET IO device	Yes
Amount of data	
• as user data for input variables as PROFINET IO device maximum	512 byte
• as user data for input variables as PROFINET IO device maximum	512 byte
• as user data for input variables for each sub-module as PROFINET IO device	240 byte
• as user data for input variables for each sub-module as PROFINET IO device	240 byte
• as user data for the consistency area for each sub-module	240 byte
Number of submodules per PROFINET IO-Device	32
<b>Performance data telecontrol</b>	
Protocol is supported	
• TCP/IP	Yes

Article number	<b>6GK7343-1EX30-0XE0</b>
Product type designation	CP 343-1
<b>Product functions management, configuration</b>	
Product function MIB support	Yes
Protocol is supported	
• SNMP v1	Yes
• DCP	Yes
• LLDP	Yes
Configuration software	
• required	STEP 7 V5.4 SP2 or higher / STEP 7 Professional V11 (TIA Portal) or higher
Identification & maintenance function	
• I&M0 - device-specific information	Yes
• I&M1 - higher-level designation/ location designation	Yes
<b>Product functions Diagnosis</b>	
Product function Web-based diagnostics	Yes
<b>Product functions switch</b>	
Product feature Switch	Yes
Product function	
• switch-managed	No
• with IRT PROFINET IO switch	Yes
• Configuration with STEP 7	Yes
<b>Product functions Redundancy</b>	
Product function	
• Ring redundancy	Yes
• Redundancy manager	No
Protocol is supported Media Redundancy Protocol (MRP)	Yes
<b>Product functions Security</b>	
Product function	
• password protection for Web applications	No
• ACL - IP-based	Yes
• ACL - IP-based for PLC/routing	No
• switch-off of non-required services	Yes
• Blocking of communication via physical ports	Yes
• log file for unauthorized access	No
<b>Product functions Time</b>	
Product function SICLOCK support	Yes
Product function pass on time synchronization	Yes
Protocol is supported	
• NTP	Yes

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Ordering data	Article No.	Ordering data	Article No.
<p><b>CP 343-1 communications processor</b></p> <p>For connection of SIMATIC S7-300 to Industrial Ethernet over ISO and TCP/IP; PROFINET IO controller or PROFINET IO Device, MRP, integrated 2-port switch ERTEC; S7 communication, open communication (SEND/RECEIVE), FETCH/WRITE, with and without RFC 1006, multicast, DHCP, CPU clock synchronization via SIMATIC procedure and NTP, diagnostics, SNMP, access protection through IP access list, initialization over LAN 10/100 Mbps; with electronic manual on DVD</p>	6GK7343-1EX30-0XE0	<p><b>IE FC TP Standard Cable GP 2 x 2 (Type A)</b></p> <p>4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m</p>	6XV1840-2AH10
<p><b>Accessories</b></p> <p><b>IE FC RJ45 plug 180 2 x 2</b></p> <p>RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface</p> <ul style="list-style-type: none"> <li>• 1 pack = 1 unit</li> <li>• 1 pack = 10 units</li> <li>• 1 pack = 50 units</li> </ul>	<p>6GK1901-1BB10-2AA0</p> <p>6GK1901-1BB10-2AB0</p> <p>6GK1901-1BB10-2AE0</p>	<p><b>IE FC Stripping Tool</b></p> <p>Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables</p>	6GK1901-1GA00
<p><b>IE FC RJ45 plug 145</b></p> <p>RJ45 plug connector 2 x 2 for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 145° cable outlet</p> <ul style="list-style-type: none"> <li>• 1 pack = 1 unit</li> <li>• 1 pack = 10 units</li> <li>• 1 pack = 50 units</li> </ul>	<p>6GK1901-1BB30-0AA0</p> <p>6GK1901-1BB30-0AB0</p> <p>6GK1901-1BB30-0AE0</p>	<p><b>Compact Switch Module CSM 377</b></p> <p>Unmanaged switch for connection of a SIMATIC S7-300 CPU, ET 200M, and up to three additional nodes to Industrial Ethernet operating at 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module including electronic manual on CD-ROM</p>	6GK7377-1AA00-0AA0

# SIMATIC S7-300 Advanced Controllers

I/O modules  
Communication

## CP 343-1 Advanced

### Overview



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

Communications processor for connecting the SIMATIC S7-300/SINUMERIK 840D powerline to Industrial Ethernet networks, also as PROFINET IO controller and IO device.

The CP supports:

- PG/OP communication
- S7 communication
- Open communication (SEND/RECEIVE)
- PROFINET communication
- IT communication
- Security functionality, firewall and VPN

In addition, the CP 343-1 Advanced provides email functions and allows users to create their own Web pages - ideal support for maintenance and quality assurance. The Internet functions such as FTP even allow connection to the most diverse PC-based systems. This CP is therefore the bridge between the field level and the management level for the S7-300. The CP 343-1 Advanced connects seamlessly to the security structures of the office and IT world.

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### Technical specifications

Article number	<b>6GK7343-1GX31-0XE0</b>
Product type designation	CP 343-1 Advanced
<b>Transmission rate</b>	
Transfer rate	
• at the 1st interface	10 ... 1 000 Mbit/s
• at the 2nd interface	10 ... 100 Mbit/s
<b>Interfaces</b>	
Number of interfaces acc. to Industrial Ethernet	3
Number of electrical connections	
• at the 1st interface acc. to Industrial Ethernet	1
• at the 2nd interface acc. to Industrial Ethernet	2
• for power supply	1
Type of electrical connection	
• at the 1st interface acc. to Industrial Ethernet	RJ45 port
• at the 2nd interface acc. to Industrial Ethernet	RJ45 port
• for power supply	2-pole plugable terminal block
design of the removable storage C-PLUG	Yes
<b>Supply voltage, current consumption, power loss</b>	
Type of voltage of the supply voltage	DC
Supply voltage 1 from backplane bus	5 V
Supply voltage external	24 V
Supply voltage external at DC Rated value	24 V
Relative positive tolerance at DC at 24 V	20 %
Relative negative tolerance at DC at 24 V	15 %
Consumed current	
• from backplane bus at DC at 5 V typical	0.14 A
• from external supply voltage at DC at 24 V typical	0.48 A
• from external supply voltage at DC at 24 V maximum	0.62 A
Power loss [W]	14.7 W

Article number	<b>6GK7343-1GX31-0XE0</b>
Product type designation	CP 343-1 Advanced
<b>Permitted ambient conditions</b>	
Ambient temperature	
• for vertical installation during operation	0 ... 40 °C
• for horizontally arranged busbars during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
<b>Design, dimensions and weight</b>	
Module format	Compact module
Width	80 mm
Height	125 mm
Depth	120 mm
Net weight	0.8 kg
Mounting type	
• S7-300 rail mounting	Yes
<b>Performance data open communication</b>	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	16
Amount of data	
• as user data per ISO connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per ISO on TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks maximum	2 Kibyte
Number of Multicast stations	16



#### Technical specifications (continued)

Article number	<b>6GK7343-1GX31-0XE0</b>
Product type designation	CP 343-1 Advanced
<b>Performance data S7 communication</b>	
Number of possible connections for S7 communication	
• maximum	16
<b>Performance data multi-protocol mode</b>	
Number of active connections with multi-protocol mode	48
<b>Performance data IT functions</b>	
Number of possible connections	
• as client by means of FTP maximum	10
• as server by means of FTP maximum	2
Number of possible connections	
• as server by means of HTTP maximum	4
• as e-mail client maximum	1
Amount of data as user data for email maximum	8 Kibyte
Storage capacity of the user memory	
• as flash memory file system	28 Miabyte
• as RAM	30 Miabyte
Number of possible write cycles of the flash memory cells	100 000
<b>Performance data PROFINET communication as PN IO-Controller</b>	
Product function PROFINET IO controller	Yes
Number of PN IO devices on PROFINET IO controller usable total	128
Number of PN IO IRT devices on PROFINET IO controller usable	128
Number of external PN IO lines with PROFINET per rack	1
Amount of data	
• as user data for input variables as PROFINET IO controller maximum	4 Kibyte
• as user data for input variables as PROFINET IO controller maximum	4 Kibyte
• as user data for input variables per PN IO device as PROFINET IO controller maximum	1 433 byte
• as user data for output variables per PN IO device as PROFINET IO controller maximum	1 433 byte
• as user data for input variables per PN IO device for each sub-module as PROFINET IO controller maximum	240 byte
• as user data for output variables per PN IO device for each sub-module as PROFINET IO controller maximum	240 byte

Article number	<b>6GK7343-1GX31-0XE0</b>
Product type designation	CP 343-1 Advanced
<b>Performance data PROFINET communication as PN IO-Device</b>	
Product function PROFINET IO device	Yes
Amount of data	
• as user data for input variables as PROFINET IO device maximum	1 024 byte
• as user data for input variables as PROFINET IO device maximum	1 024 byte
• as user data for input variables for each sub-module as PROFINET IO device	240 byte
• as user data for input variables for each sub-module as PROFINET IO device	240 byte
• as user data for the consistency area for each sub-module	240 byte
Number of submodules per PROFINET IO-Device	32
<b>Performance data PROFINET CBA</b>	
Number of remote connection partners with PROFINET CBA	64
Number of connections with PROFINET CBA total	1 000
Amount of data	
• as user data for digital inputs with PROFINET CBA maximum	8 Kibyte
• as user data for digital outputs with PROFINET CBA maximum	8 Kibyte
• as user data for arrays and data types in the case of acyclic transmission with PROFINET CBA maximum	8 Kibyte
• as user data for arrays and data types with PROFINET CBA with cyclical transfer maximum	250 byte
• as user data for arrays and data types with PROFINET CBA in the case of local interconnection maximum	2 400 byte
<b>Performance data PROFINET CBA remote connection with acyclic transmission</b>	
Refresh time of the remote interconnections in the case of acyclic transmission with PROFINET CBA	100 ms
Number of remote connections to input variables in the case of acyclic transmission with PROFINET CBA maximum	128
Number of remote connections to output variables in the case of acyclic transmission with PROFINET CBA maximum	128
Amount of data	
• as user data for remote interconnections with input variables in the case of acyclic transmission with PROFINET CBA	8 Kibyte
• as user data for remote interconnections with output variables in the case of acyclic transmission with PROFINET CBA	8 Kibyte

# SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

## CP 343-1 Advanced

### Technical specifications (continued)

Article number	<b>6GK7343-1GX31-0XE0</b>
Product type designation	CP 343-1 Advanced
<b>Performance data PROFINET CBA remote connection with cyclic transmission</b>	
Refresh time of the remote interconnections with PROFINET CBA with cyclical transfer	8 ms
Number of remote connections to input variables with PROFINET CBA with cyclical transfer maximum	200
Number of remote connections to output variables with PROFINET CBA with cyclical transfer maximum	200
Amount of data	
• as user data for remote interconnections with input variables with PROFINET CBA with cyclical transfer maximum	2 000 byte
• as user data for remote interconnections with output variables with PROFINET CBA with cyclical transfer maximum	2 000 byte
<b>Performance data PROFINET CBA HMI variables via PROFINET acyclic</b>	
Number of connectable HMI stations for HMI variables in the case of acyclic transmission with PROFINET CBA	3
Refresh time of the HMI variables in the case of acyclic transmission with PROFINET CBA	500 ms
Number of HMI variables in the case of acyclic transmission with PROFINET CBA maximum	200
Amount of data as user data for HMI variables in the case of acyclic transmission with PROFINET CBA maximum	8 Kibyte
<b>Performance data PROFINET CBA device-internal connections</b>	
Number of internal connections with PROFINET CBA maximum	256
Amount of data of the internal connections with PROFINET CBA maximum	2 400 byte
<b>Performance data PROFINET CBA connections to constants</b>	
Number of connections with constants with PROFINET CBA maximum	200
Amount of data as user data for interconnections with constants with PROFINET CBA maximum	4 096 byte
<b>Performance data PROFINET CBA PROFIBUS proxy functionality</b>	
Product function with PROFINET CBA PROFIBUS proxy functionality	No
<b>Performance data telecontrol</b>	
Protocol is supported	
• TCP/IP	Yes

Article number	<b>6GK7343-1GX31-0XE0</b>
Product type designation	CP 343-1 Advanced
<b>Product functions management, configuration</b>	
Product function MIB support	Yes
Protocol is supported	
• SNMP v1	Yes
• SNMP v3	Yes
• DCP	Yes
• LLDP	Yes
Configuration software	
• required	STEP7 V5.5 SP2 HF1 or higher / STEP 7 Professional V12 (TIA Portal) or higher
• for PROFINET CBA required	SIMATIC iMap V3.0 SP4 and higher
<b>Identification &amp; maintenance function</b>	
• I&M0 - device-specific information	Yes
• I&M1 - higher-level designation/location designation	Yes
<b>Product functions Diagnosis</b>	
Product function Web-based diagnostics	Yes
<b>Product functions switch</b>	
Product feature Switch	Yes
Product function	
• switch-managed	No
• with IRT PROFINET IO switch	Yes
• Configuration with STEP 7	Yes
<b>Product functions Redundancy</b>	
Product function	
• Ring redundancy	Yes
• Redundancy manager	Yes
Protocol is supported Media Redundancy Protocol (MRP)	Yes
<b>Product functions Security</b>	
Firewall version	stateful inspection
Product function with VPN connection	IPSec
Type of encryption algorithms with VPN connection	AES-256, AES-192, AES-128, 3DES-168, DES-56
Type of authentication procedure with VPN connection	Preshared key (PSK), X.509v3 certificates
Type of hashing algorithms with VPN connection	MD5, SHA-1
Number of possible connections with VPN connection	32
Product function	
• password protection for Web applications	Yes
• ACL - IP-based	Yes
• ACL - IP-based for PLC/routing	Yes
• switch-off of non-required services	Yes
• Blocking of communication via physical ports	Yes
• log file for unauthorized access	No
<b>Product functions Time</b>	
Product function SICLOCK support	Yes
Product function pass on time synchronization	Yes
Protocol is supported	
• NTP	Yes

Ordering data	Article No.	Article No.	
<p><b>CP 343-1 Advanced communications processor</b></p> <p>For connecting the SIMATIC S7-300 CPU to Industrial Ethernet; 1 x 10/100/1000 Mbps; 2 x 10/100 Mbps (IE SWITCH); RJ 45 ports; TCP; UDP; ISO; PROFINET IO-Controller and Device, S7 communication (client + server); open communication (SEND/RECEIVE); S7 routing; IP configuration via DHCP/block; extended web diagnostics; time synchronization; IP Access Control List; IP routing; FTP; email; PROFINET CBA; C-PLUG</p> <ul style="list-style-type: none"> <li>• With Security (Firewall + VPN) and PROFinergy (Controller + Device)</li> </ul>	<b>6GK7343-1GX31-0XE0</b>	<p><b>IE FC TP Standard Cable GP 2 x 2 (Type A)</b></p> <p>4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m</p> <p><b>IE FC TP Standard Cable GP 4 x 2</b></p> <p>8-wire, shielded TP installation cable for connecting to IE FC RJ45 Modular Outlet for universal applications; with UL approval; sold by the meter; max. quantity 1000 m, minimum order quantity 20 m</p> <ul style="list-style-type: none"> <li>• AWG22, for connecting to IE FC RJ45 Modular Outlet</li> <li>• AWG24, for connecting to IE FC RJ45 plug 4 x 2</li> </ul>	<p><b>6XV1840-2AH10</b></p> <p><b>6XV1870-2E</b></p> <p><b>6XV1878-2A</b></p>
<p><b>Accessories</b></p> <p><b>IE FC RJ45 plug 180 2 x 2</b></p> <p>RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface</p> <ul style="list-style-type: none"> <li>• 1 pack = 1 unit</li> <li>• 1 pack = 10 units</li> <li>• 1 pack = 50 units</li> </ul>	<p><b>6GK1901-1BB10-2AA0</b></p> <p><b>6GK1901-1BB10-2AB0</b></p> <p><b>6GK1901-1BB10-2AE0</b></p>	<p><b>IE FC Stripping Tool</b></p> <p>Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables</p> <p><b>Compact Switch Module CSM 377</b></p> <p>Unmanaged switch for connection of a SIMATIC S7-300 CPU, ET 200M, and up to three further nodes to Industrial Ethernet operating at 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply; LED diagnostics; S7-300 module including electronic manual on CD-ROM</p>	<p><b>6GK1901-1GA00</b></p> <p><b>6GK7377-1AA00-0AA0</b></p>
<p><b>IE FC RJ45 plug 145</b></p> <p>RJ45 plug connector 2 x 2 for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 145° cable outlet</p> <ul style="list-style-type: none"> <li>• 1 pack = 1 unit</li> <li>• 1 pack = 10 units</li> <li>• 1 pack = 50 units</li> </ul>	<p><b>6GK1901-1BB30-0AA0</b></p> <p><b>6GK1901-1BB30-0AB0</b></p> <p><b>6GK1901-1BB30-0AE0</b></p>		
<p><b>IE FC RJ45 plug 4 x 2</b></p> <p>RJ45 plug connector for Industrial Ethernet (10/100/1000 Mbps) with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface</p> <ul style="list-style-type: none"> <li>• 1 pack = 1 unit</li> <li>• 1 pack = 10 units</li> <li>• 1 pack = 50 units</li> </ul>	<p><b>6GK1901-1BB11-2AA0</b></p> <p><b>6GK1901-1BB11-2AB0</b></p> <p><b>6GK1901-1BB11-2AE0</b></p>		

# SIMATIC S7-300 Advanced Controllers

I/O modules  
Communication

## CP 343-1 ERPC

### Overview



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 to be ordered separately.

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

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### Technical specifications

Article number	<b>6GK7343-1FX00-0XE0</b>
Product type designation	CP 343-1 ERPC
<b>Transmission rate</b>	
Transfer rate	
• at the 1st interface	10 ... 1 000 Mbit/s
<b>Interfaces</b>	
Number of interfaces acc. to Industrial Ethernet	1
Number of electrical connections	
• at the 1st interface acc. to Industrial Ethernet	1
• for power supply	1
Type of electrical connection	
• at the 1st interface acc. to Industrial Ethernet	RJ45 port
• for power supply	2-pole plugable terminal block
design of the removable storage C-PLUG	Yes
<b>Supply voltage, current consumption, power loss</b>	
Type of voltage of the supply voltage	DC
Supply voltage 1 from backplane bus	5 V
Supply voltage external	24 V
Supply voltage external at DC Rated value	24 V
Relative positive tolerance at DC at 24 V	20 %
Relative negative tolerance at DC at 24 V	15 %
Consumed current	
• from backplane bus at DC at 5 V typical	0.3 A
• from external supply voltage at DC at 24 V typical	0.16 A
• from external supply voltage at DC at 24 V maximum	0.6 A
Power loss [W]	14.7 W

Article number	<b>6GK7343-1FX00-0XE0</b>
Product type designation	CP 343-1 ERPC
<b>Permitted ambient conditions</b>	
Ambient temperature	
• for vertical installation during operation	0 ... 40 °C
• for horizontally arranged busbars during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
<b>Design, dimensions and weight</b>	
Module format	Compact module S7-300 double width
Width	80 mm
Height	125 mm
Depth	120 mm
Net weight	0.8 kg
Mounting type	
• S7-300 rail mounting	Yes
<b>Performance data open communication</b>	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	8
Amount of data	
• as user data per ISO on TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks maximum	2 Kibyte
Number of Multicast stations	8

**Technical specifications** (continued)

Article number	<b>6GK7343-1FX00-0XE0</b>
Product type designation	CP 343-1 ERPC
<b>Performance data S7 communication</b>	
Number of possible connections for S7 communication	
• maximum	8
• Note	also 2 PG/OP connections and 1 diagnostics connection
<b>Performance data multi-protocol mode</b>	
Number of active connections with multi-protocol mode	32
<b>Performance data IT functions</b>	
Number of possible connections	
• as server by means of HTTP maximum	4
Number of possible write cycles of the flash memory cells	100 000
<b>Performance data ERPC functions</b>	
Number of possible connections for communication with ERP or MES stations maximum	8
Number of possible logical triggers per CP maximum	8
Number of configurable ERPC symbols for database access	
• per CPU maximum	2 000
• per logical trigger maximum	255
Amount of data as user data and header information per logical trigger	8 Kibyte
<b>Performance data telecontrol</b>	
Protocol is supported	
• TCP/IP	Yes
<b>Product functions management, configuration</b>	
Product function MIB support	Yes
Protocol is supported	
• SNMP v1	Yes
• DCP	Yes
• LLDP	Yes
Configuration software	
• required	STEP 7 V5.4 SP5 + HSP or higher
Identification & maintenance function	
• I&M0 - device-specific information	Yes
• I&M1 – higher-level designation/location designation	Yes

Article number	<b>6GK7343-1FX00-0XE0</b>
Product type designation	CP 343-1 ERPC
<b>Product functions Diagnosis</b>	
Product function Web-based diagnostics	Yes
<b>Product functions switch</b>	
Product feature Switch	No
<b>Product functions Redundancy</b>	
Product function	
• Ring redundancy	No
<b>Product functions Security</b>	
Product function	
• password protection for Web applications	No
• ACL - IP-based	Yes
• ACL - IP-based for PLC/routing	No
• switch-off of non-required services	Yes
• Blocking of communication via physical ports	Yes
• log file for unauthorized access	No
<b>Product functions Time</b>	
Product function SICLOCK support	Yes
Product function pass on time synchronization	Yes
Protocol is supported	
• NTP	Yes

**SIMATIC S7-300 Advanced Controllers**

I/O modules

Communication

**CP 343-1 ERPC**

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**Ordering data****Article No.****CP 343-1 ERPC  
(Enterprise Connect)  
communications processor**

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 Mbps; with electronic manual on DVD, C-PLUG included in scope of supply

**deviceWISE Embedded Edition  
for SIMATIC S7**

Firmware expansion for database connection of the SIMATIC S7-300 complete with CP 343-1 ERPC to various ERP or MES systems

**6GK7343-1FX00-0XE0**

See Catalog IK PI 2015,  
Partner solutions/deviceWISE  
Embedded Edition for SIMATIC S7

**Article No.****Accessories****IE FC RJ45 plug 4 x 2**

RJ45 plug connector for Industrial Ethernet (10/100/1000 Mbps) with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPs/CPU's with Industrial Ethernet interface

- 1 pack = 1 unit
- 1 pack = 10 units
- 1 pack = 50 units

**6GK1901-1BB11-2AA0**  
**6GK1901-1BB11-2AB0**  
**6GK1901-1BB11-2AE0**

**IE FC TP Standard Cable GP 4 x 2**

8-wire, shielded TP installation cable for connecting to IE FC RJ45 Modular Outlet for universal applications; with UL approval; sold by the meter;

- max. delivery unit 1000 m, minimum order quantity 20 m
- AWG22, for connecting to IE FC RJ45 Modular Outlet
  - AWG24, for connecting to IE FC RJ45 plug 4 x 2

**6XV1870-2E****6XV1878-2A****IE FC Stripping Tool**

Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables

**6GK1901-1GA00**

## Overview



- Unmanaged switch for connecting a SIMATIC S7-300 with integral PROFINET interface or an Industrial Ethernet CP or SIMATIC ET 200M to an Industrial Ethernet in an electrical line, tree or star structure
- As many as three additional nodes can be connected
- As an unmanaged switch, the CSM 377 is used for integrating small machines into existing automation networks or for the stand-alone operation of the machines
- Simple, space-saving attachment to SIMATIC S7-300 DIN rail due to design as single-width module in SIMATIC S7-300 format
- Low-cost solution for implementing small, local Ethernet networks
- Rugged, industry-standard node connections with PROFINET-compliant RJ45 plug connectors that latch onto the enclosure to offer additional strain and bending relief

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## Technical specifications

Article number	<b>6GK7377-1AA00-0AA0</b>
Product type designation	SCALANCE CSM 377
<b>Transmission rate</b>	
Transfer rate	10 Mbit/s, 100 Mbit/s
<b>Interfaces for communication integrated</b>	
Number of electrical connections	
• for network components or terminal equipment	4
Number of 100 Mbit/s SC ports	
• for multimode	0
Number of 1000 Mbit/s LC ports	
• for multimode	0
• for single mode (LD)	0
<b>Interfaces others</b>	
Number of electrical connections	
• for power supply	1
Type of electrical connection	
• for power supply	2-pole terminal block
<b>Supply voltage, current consumption, power loss</b>	
Type of voltage of the supply voltage	DC
Supply voltage	
• external	24 V
• external minimum	19.2 V
• external maximum	28.8 V
Product component fusing at power supply input	Yes
Fuse protection type at input for supply voltage	0.5 A / 60 V
Consumed current maximum	0.07 A
Power loss [W]	
• at DC at 24 V	1.6 W
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity	
• at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20

Article number	<b>6GK7377-1AA00-0AA0</b>
Product type designation	SCALANCE CSM 377
<b>Design, dimensions and weight</b>	
Design	SIMATIC S7-300 device design
Width	40 mm
Height	125 mm
Depth	118 mm
Net weight	0.2 kg
Mounting type	
• 35 mm DIN rail mounting	No
• wall mounting	No
• S7-300 rail mounting	Yes
• S7-1500 rail mounting	No
<b>Product functions management, configuration</b>	
Product function	
• multiport mirroring	No
Product function switch-managed	No
<b>Product functions Redundancy</b>	
Product function	
• Parallel Redundancy Protocol (PRP) operation in the PRP-network	Yes
• Parallel Redundancy Protocol (PRP) / Redundant Network Access (RNA)	No
<b>Standards, specifications, approvals</b>	
Standard	
• for 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 from CSA and UL	UL 508, CSA C22.2 No. 142
• for hazardous zone from CSA and UL	UL 1604 and UL 2279-15 (Hazardous Location)
• for emitted interference	EN 61000-6-4:2001
• for interference immunity	EN 61000-6-2:2001
<b>Standards, specifications, approvals CE</b>	
Certificate of suitability CE marking	Yes

**SIMATIC S7-300 Advanced Controllers**

I/O modules

Communication

**CSM 377 unmanaged****Technical specifications** (continued)

Article number	<b>6GK7377-1AA00-0AA0</b>
Product type designation	SCALANCE CSM 377
<b>Standards, specifications, approvals miscellaneous</b>	
Certificate of suitability	EN 61000-6-2:2001, EN 61000-6-4:2001
• C-Tick	Yes
• KC approval	No
<b>Standards, specifications, approvals ship classification</b>	
Marine classification association	
• American Bureau of Shipping Europe Ltd. (ABS)	Yes
• Bureau Veritas (BV)	Yes
• Det Norske Veritas (DNV)	Yes
• Germanische Lloyd (GL)	No
• Lloyds Register of Shipping (LRS)	Yes
• Nippon Kaiji Kyokai (NK)	Yes
• Polski Rejestr Statkow (PRS)	No
• Royal Institution of Naval Architects (RINA)	No
<b>Standards, specifications, approvals product conformity</b>	
MTBF	144 y

**Ordering data****Article No.****Compact Switch Module CSM 377**

Unmanaged switch for connecting a SIMATIC S7-300, ET200 M and up to three further nodes to Industrial Ethernet with 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, diagnostics on LEDs, S7-300 module including electronic manual on CD-ROM

**6GK7377-1AA00-0AA0****Accessories****IE FC TP Standard Cable GP 2 x 2 (Type A)**

4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

**6XV1840-2AH10****IE FC RJ45 plug 180 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/CPU with Industrial Ethernet interface

- 1 pack = 1 unit
- 1 pack = 10 units
- 1 pack = 50 units

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

**IE FC Stripping Tool**

Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables

**6GK1901-1GA00**



## 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 seamless recording of data
- Simple configuration and operation without specialist IT knowledge

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## Technical specifications

Article number	<b>6NH7800-3BA00</b>
Product type designation	TIM 3V-IE
<b>Transmission rate</b>	
Transfer rate	
• for Industrial Ethernet	10 ... 100 Mbit/s
• acc. to RS 232	50 ... 38 400 bit/s
<b>Interfaces</b>	
Number of interfaces acc. to Industrial Ethernet	1
Number of electrical connections	
• for external data transmission acc. to RS 232	1
• for power supply	1
Type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
• at interface 1 for external data transmission	9 pin Sub-D-connector (RS232)
• for power supply	2-pole plugable terminal block
design of the removable storage C-PLUG	No
<b>Supply voltage, current consumption, power loss</b>	
Type of voltage of the supply voltage	DC
Supply voltage	24 V
Supply voltage	20.4 ... 28.8 V
Supply voltage external at DC Rated value	24 V
Supply voltage external at DC rated value	20.4 ... 28.8 V
Relative symmetrical tolerance at DC	
• at 5 V	5 %
Relative positive tolerance at DC at 24 V	5 %
Relative negative tolerance at DC at 24 V	5 %
Consumed current	
• from backplane bus at DC at 24 V maximum	0.2 A
• from external supply voltage at DC at 24 V maximum	0.2 A
Power loss [W]	5.8 W
Product extension optional Backup battery	No

Article number	<b>6NH7800-3BA00</b>
Product type designation	TIM 3V-IE
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
<b>Design, dimensions and weight</b>	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.25 kg
<b>Product properties, functions, components general</b>	
Number of units	
• per CPU maximum	1
• Note	Number of TIM per S7-300
Wire length	
• with RS 232 interface maximum	6 m
<b>Performance data S7 communication</b>	
Number of possible connections for S7 communication	
• maximum	8
• with PG connections maximum	2
• with OP connections maximum	8
Service	
• SINAUT ST7 via S7 communication	Yes
• PG/OP communication	Yes
<b>Performance data multi-protocol mode</b>	
Number of active connections with multi-protocol mode	12

# SIMATIC S7-300 Advanced Controllers

I/O modules  
Communication

## TIM 3V-IE (for S7-300)

### Technical specifications (continued)

Article number	<b>6NH7800-3BA00</b>
Product type designation	TIM 3V-IE
<b>Performance data telecontrol</b>	
Suitability for use	
• Node station	No
• substation	Yes
• TIM control center	No
• Note	RS232 and Industrial Ethernet can not be operated in parallel
Protocol is supported	
• DNP3	No
• SINAUT ST1 protocol	Yes
• SINAUT ST7 protocol	Yes
Product function data buffering if connection is aborted	Yes; 16,000 data messages
Storage capacity	
• of S7 CPU RAM for TD7onCPU mode data blocks on CPU required	20 Kibyte
• of S7 CPU RAM for TD7onTIM mode data blocks on TIM required	0 Kibyte
• Note	TD7onCPU: at least 20 KB, actual requirement determined by data volume and functional scope TD7onTIM: 0 bytes in most favorable case
Product feature Buffered message frame memory	No
Transmission format	
• for SINAUT ST1 protocol with polling 11 bit	Yes
• for SINAUT ST1 protocol with spontaneous 10-bit or 11-bit	Yes
• for SINAUT ST7 protocol with multi-master polling 10-bit	Yes
• for SINAUT ST7 protocol with polling or spontaneous 10-bit or 11-bit	Yes
Operating mode for scanning of data transmission	
• with dedicated line/radio link with SINAUT ST1 protocol	Polling, polling with time slot procedure
• with dedicated line/radio link with SINAUT ST7 protocol	Polling, polling with time slot procedure, multi-master polling with time slot procedure
• with dial-up network with SINAUT ST1 protocol	spontaneous
• with dial-up network with SINAUT ST7 protocol	spontaneous
Hamming distance	
• for SINAUT ST1 protocol	4
• for SINAUT ST7 protocol	4

Article number	<b>6NH7800-3BA00</b>
Product type designation	TIM 3V-IE
<b>Product functions management, configuration</b>	
Configuration software	
• required	SINAUT ST7 ES
• for CPU configuring required SINAUT TD7 block library for CPU	Yes
• for PG configuring required SINAUT ST7 configuration software for PG	Yes
Storage location of TIM configuration data	on the TIM
<b>Product functions Security</b>	
Suitability for operation Virtual Private Network	Yes
Operating mode Virtual Private Network note	VPN operation as MSC client with MSC protocol and password protection only possible in conjunction with GPRS modem with MSC capability
Type of authentication with Virtual Private Network PSK	Yes
Product function	
• password protection for VPN	Yes
• MSC client via GPRS modem with MSC capability	Yes
Protocol	
• is supported MSC protocol	No
Key length for MSC with Virtual Private Network	128 bit
Number of possible connections	
• as MSC client with VPN connection	1
• as MSC server with VPN connection	0

Ordering data	Article No.		Article No.
<b>TIM 3V-IE communications module</b> With an RS 232 interface for SINAUT communication via a conventional WAN or an IP-based network (WAN or LAN)	<b>6NH7800-3BA00</b>		
<b>SINAUT Engineering Software V5.5 + SP3</b> On DVD, comprising • SINAUT Engineering Software V5.5 for the PG • SINAUT TD7 block library • Electronic manual in German and English	<b>6NH7997-0CA55-0AA0</b>		
<b>Accessories</b>			
<b>IE FC TP Standard Cable GP 2 x 2 (Type A)</b> 4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval Sold by the meter; Max. delivery unit 1 000 m, minimum order quantity 20 m	<b>6XV1840-2AH10</b>		
<b>IE FC RJ45 plug 180</b> RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface • 1 pack = 1 unit • 1 pack = 10 units • 1 pack = 50 units	<b>6GK1901-1BB10-2AA0</b> <b>6GK1901-1BB10-2AB0</b> <b>6GK1901-1BB10-2AE0</b>		
		<b>IE FC Stripping Tool</b> Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	<b>6GK1901-1GA00</b>
		<b>Connecting cable</b> For connecting a TIM (RS 232) with a SINAUT ST7 MD2, MD3 or MD4 (RS 232) modem Cable length 1.5 m	<b>6NH7701-4AL</b>
		<b>Connecting cable</b> For connecting a TIM (RS 232) with the GSM modem MD720-3; also suitable for third-party modems or radio unit with standard RS 232 interface; cable length 2.5 m	<b>6NH7701-5AN</b>
		<b>Connecting cable</b> With one end open for connecting a TIM (RS 232) to a third-party modem or radio unit (RS 232) Cable length 2.5 m	<b>6NH7701-4BN</b>
		<b>Connecting cable</b> For connecting two TIM modules via their RS 232 interface without modems ("null modem"); cable length 6 m	<b>6NH7701-0AR</b>

## SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

### TIM 3V-IE Advanced (for S7-300)

#### Overview



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

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#### Technical specifications

Article number	<b>6NH7800-3CA00</b>
Product type designation	TIM 3V-IE Advanced
<b>Transmission rate</b>	
Transfer rate	
• for Industrial Ethernet	10 ... 100 Mbit/s
• acc. to RS 232	50 ... 38 400 bit/s
<b>Interfaces</b>	
Number of interfaces acc. to Industrial Ethernet	1
Number of electrical connections	
• for external data transmission acc. to RS 232	1
• for power supply	1
Type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
• at interface 1 for external data transmission	9 pin Sub-D-connector (RS232)
• for power supply	2-pole plugable terminal block
design of the removable storage C-PLUG	No
<b>Supply voltage, current consumption, power loss</b>	
Type of voltage of the supply voltage	DC
Supply voltage	24 V
Supply voltage	20.4 ... 28.8 V
Supply voltage external at DC Rated value	24 V
Supply voltage external at DC rated value	20.4 ... 28.8 V
Relative symmetrical tolerance at DC	
• at 5 V	5 %
Relative positive tolerance at DC at 24 V	5 %
Relative negative tolerance at DC at 24 V	5 %
Consumed current	
• from backplane bus at DC at 24 V maximum	0.2 A
• from external supply voltage at DC at 24 V maximum	0.2 A
Power loss [W]	5.8 W
Product extension optional Backup battery	No

Article number	<b>6NH7800-3CA00</b>
Product type designation	TIM 3V-IE Advanced
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
<b>Design, dimensions and weight</b>	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.25 kg
<b>Product properties, functions, components general</b>	
Number of units	
• Note	Number of TIMs per S7-300: multiple, number depends on the connection resources of the S7-300 CPU
Wire length	
• with RS 232 interface maximum	6 m
<b>Performance data S7 communication</b>	
Number of possible connections for S7 communication	
• maximum	24
• with PG connections maximum	4
• with OP connections maximum	20
Service	
• SINAUT ST7 via S7 communication	Yes
• PG/OP communication	Yes
<b>Performance data multi-protocol mode</b>	
Number of active connections with multi-protocol mode	24

## Technical specifications (continued)

Article number	<b>6NH7800-3CA00</b>
Product type designation	TIM 3V-IE Advanced
<b>Performance data telecontrol</b>	
Suitability for use	
• Node station	Yes
• substation	Yes
• TIM control center	Yes
• Note	RS232 and Industrial Ethernet can be operated in parallel
Protocol is supported	
• DNP3	No
• SINAUT ST1 protocol	Yes
• SINAUT ST7 protocol	Yes
Product function data buffering if connection is aborted	Yes; 32,000 data messages
Storage capacity	
• of S7 CPU RAM for TD7onCPU mode data blocks on CPU required	20 Kibyte
• of S7 CPU RAM for TD7onTIM mode data blocks on TIM required	0 Kibyte
• Note	TD7onCPU: at least 20 KB, actual requirement determined by data volume and functional scope TD7onTIM: 0 bytes in most favorable case
Product feature Buffered message frame memory	No
Transmission format	
• for SINAUT ST1 protocol with polling 11 bit	Yes
• for SINAUT ST1 protocol with spontaneous 10-bit or 11-bit	Yes
• for SINAUT ST7 protocol with multi-master polling 10-bit	Yes
• for SINAUT ST7 protocol with polling or spontaneous 10-bit or 11-bit	Yes
Operating mode for scanning of data transmission	
• with dedicated line/radio link with SINAUT ST1 protocol	Polling, polling with time slot procedure
• with dedicated line/radio link with SINAUT ST7 protocol	Polling, polling with time slot procedure, multi-master polling with time slot procedure
• with dial-up network with SINAUT ST1 protocol	spontaneous
• with dial-up network with SINAUT ST7 protocol	spontaneous
Hamming distance	
• for SINAUT ST1 protocol	4
• for SINAUT ST7 protocol	4

Article number	<b>6NH7800-3CA00</b>
Product type designation	TIM 3V-IE Advanced
<b>Product functions management, configuration</b>	
Configuration software	
• required	SINAUT ST7 ES
• for CPU configuring required SINAUT TD7 block library for CPU	Yes
• for PG configuring required SINAUT ST7 configuration software for PG	Yes
Storage location of TIM configuration data	on the TIM
<b>Product functions Security</b>	
Suitability for operation Virtual Private Network	Yes
Type of authentication with Virtual Private Network PSK	Yes
Product function	
• password protection for VPN	Yes
• MSC client via GPRS modem with MSC capability	Yes
Protocol	
• is supported MSC protocol	Yes
• with Virtual Private Network MSC is supported	TCP/IP
Key length for MSC with Virtual Private Network	128 bit
Number of possible connections	
• as MSC client with VPN connection	1
• as MSC server with VPN connection	0

# SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

## TIM 3V-IE Advanced (for S7-300)

### Ordering data

### Article No.

#### TIM 3V-IE Advanced communications module

With an RS 232 interface and an RJ45 interface for SINAUT communication via a conventional WAN and an IP-based network (WAN or LAN)

6NH7800-3CA00

#### Accessories

#### SINAUT Engineering Software V5.5 + SP3

On DVD, comprising

- SINAUT ST7 Engineering Software V5.5 + SP3 for the PG
- SINAUT TD7 block library
- Electronic manual in German and English

6NH7997-0CA55-0AA0

#### SINAUT ST7 Engineering Software Update from Version V5.0x to V5.5

SINAUT Engineering Software V5.5 upgrade; for owners of SINAUT Engineering Software Version V5.0 or higher

6NH7997-0CA55-0GA0

#### IE FC TP Standard Cable GP 2 x 2 (Type A)

4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval  
Sold by the meter;  
Max. delivery unit 1 000 m, minimum order quantity 20 m

6XV1840-2AH10

#### IE FC RJ45 plug 180

RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPUs/ CPUs with Industrial Ethernet interface

- 1 pack = 1 unit
- 1 pack = 10 units
- 1 pack = 50 units

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

### Article No.

#### IE FC Stripping Tool

Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables

6GK1901-1GA00

#### Connecting cable

For connecting a TIM (RS 232) with a SINAUT ST7 MD2, MD3 or MD4 (RS 232) modem  
Cable length 1.5 m

6NH7701-4AL

#### Connecting cable

For connecting a TIM (RS 232) with the GSM modem MD720-3; also suitable for third-party modems or radio units with standard RS 232 interface  
Cable length 2.5 m

6NH7701-5AN

#### Connecting cable

With one end open for connecting a TIM (RS 232) to a third-party modem or radio unit (RS 232)  
Cable length 2.5 m

6NH7701-4BN

#### Connecting cable

For connecting two TIM modules via their RS 232 interface without modems ("null modem")  
Cable length 6 m

6NH7701-0AR

## Overview



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

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## Technical specifications

Article number	<b>6NH7800-4BA00</b>
Product type designation	TIM 4R-IE
<b>Transmission rate</b>	
Transfer rate	
• for Industrial Ethernet	10 ... 100 Mbit/s
• acc. to RS 232	50 ... 38 400 bit/s
<b>Interfaces</b>	
Number of interfaces acc. to Industrial Ethernet	2
Number of electrical connections	
• for external data transmission acc. to RS 232	2
• for power supply	1
Type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
• at interface 1 for external data transmission	9 pin Sub-D-connector, RS232 switchable to RS485
• at interface 2 for external data transmission	9-pole D-sub connector, RS232 can be switched to RS485
• for power supply	2-pole plugable terminal block
design of the removable storage C-PLUG	Yes
<b>Supply voltage, current consumption, power loss</b>	
Type of voltage of the supply voltage	DC
Supply voltage	24 V
Supply voltage	20.4 ... 28.8 V
Supply voltage external at DC Rated value	24 V
Supply voltage external at DC rated value	20.4 ... 28.8 V
Consumed current	
• from backplane bus at DC at 24 V maximum	0.2 A
• from external supply voltage at DC at 24 V maximum	0.17 A
Power loss [W]	4.6 W
Product extension optional Backup battery	Yes
Type of battery	Lithium AA / 3.6 V / 2.3 Ah
Backup current	
• typical	100 µA
• maximum	160 µA

Article number	<b>6NH7800-4BA00</b>
Product type designation	TIM 4R-IE
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
<b>Design, dimensions and weight</b>	
Module format	Compact module S7-300 double width
Width	80 mm
Height	125 mm
Depth	120 mm
Net weight	0.4 kg
<b>Product properties, functions, components general</b>	
Number of units	
• Note	Number of TIM 4R-IE per S7-300/S7-400: multiple, number depends on the connection resources of the CPU
Wire length	
• with RS 232 interface maximum	6 m
• with RS 485 interface maximum	30 m
<b>Performance data S7 communication</b>	
Number of possible connections for S7 communication	
• maximum	64
• with PG connections maximum	2
• with OP connections maximum	62
Service	
• SINAUT ST7 via S7 communication	Yes
• PG/OP communication	Yes

# SIMATIC S7-300 Advanced Controllers

I/O modules  
Communication

## TIM 4R-IE (for S7-300/-400/PC)

### Technical specifications (continued)

Article number	<b>6NH7800-4BA00</b>
Product type designation	TIM 4R-IE
<b>Performance data multi-protocol mode</b>	
Number of active connections with multi-protocol mode	128
<b>Performance data telecontrol</b>	
Suitability for use	
• Node station	Yes
• substation	Yes
• TIM control center	Yes
Protocol is supported	
• DNP3	No
• SINAUT ST1 protocol	Yes
• SINAUT ST7 protocol	Yes
Product function data buffering if connection is aborted	Yes; 56,000 data messages
Storage capacity	
• of S7 CPU RAM for TD7onCPU mode data blocks on CPU required	20 Kibyte
• of S7 CPU RAM for TD7onTIM mode data blocks on TIM required	0 Kibyte
• Note	TD7onCPU: at least 20 KB, actual requirement determined by data volume and functional scope TD7onTIM: 0 bytes in most favorable case
Product feature Buffered message frame memory	Yes
Transmission format	
• for SINAUT ST1 protocol with polling 11 bit	Yes
• for SINAUT ST1 protocol with spontaneous 10-bit or 11-bit	Yes
• for SINAUT ST7 protocol with multi-master polling 10-bit	Yes
• for SINAUT ST7 protocol with polling or spontaneous 10-bit or 11-bit	Yes
Operating mode for scanning of data transmission	
• with dedicated line/radio link with SINAUT ST1 protocol	Polling, polling with time slot procedure
• with dedicated line/radio link with SINAUT ST7 protocol	Polling, polling with time slot procedure, multi-master polling with time slot procedure
• with dial-up network with SINAUT ST1 protocol	spontaneous
• with dial-up network with SINAUT ST7 protocol	spontaneous
Hamming distance	
• for SINAUT ST1 protocol	4
• for SINAUT ST7 protocol	4

Article number	<b>6NH7800-4BA00</b>
Product type designation	TIM 4R-IE
<b>Product functions management, configuration</b>	
Configuration software	
• required	SINAUT ST7 ES
• for CPU configuring required SINAUT TD7 block library for CPU	Yes
• for PG configuring required SINAUT ST7 configuration software for PG	Yes
Storage location of TIM configuration data	on internal TIM flash memory, or on TIM in optional C-PLUG, or on MMC of the S7-300 CPU if TIM installed in S7-300 controller
<b>Product functions Security</b>	
Suitability for operation Virtual Private Network	Yes
Type of authentication with Virtual Private Network PSK	Yes
Product function	
• password protection for VPN	Yes
• MSC client via GPRS modem with MSC capability	Yes
Protocol	
• is supported MSC protocol	Yes
• with Virtual Private Network MSC is supported	TCP/IP
Key length for MSC with Virtual Private Network	128 bit
Number of possible connections	
• as MSC client with VPN connection	1
• as MSC server with VPN connection	128
<b>Product functions Time</b>	
Product component Hardware real-time clock	Yes
Product feature Hardware real-time clock w. battery backup	Yes
Accuracy of the hardware real-time clock per day maximum	4 s
time synchronization	
• from NTP-server	Yes

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Ordering data	Article No.		Article No.
<b>TIM 4R-IE communications module</b> With two combined RS 232/RS 485 interfaces for SINAUT communication via conventional WANs and two RJ45 interfaces for SINAUT communication via IP-based networks (WAN or LAN)	6NH7800-4BA00		
<b>Accessories</b> <b>SINAUT Engineering Software V5.5 + SP3</b> On DVD, comprising <ul style="list-style-type: none"> <li>• SINAUT ST7 Engineering Software V5.5 + SP3 for the PG</li> <li>• SINAUT TD7 block library</li> <li>• Electronic manual in German and English</li> </ul>	6NH7997-0CA55-0AA0		
<b>SINAUT ST7 Engineering Software Update from Version V5.0x to V5.5</b> SINAUT Engineering Software V5.5 upgrade; for owners of SINAUT Engineering Software Version V5.0 or higher	6NH7997-0CA55-0GA0		
<b>Backup battery</b> 3.6 V/2.3 Ah for TIM 4R-IE	6ES7971-0BA00		
<b>IE FC TP Standard Cable GP 2 x 2 (Type A)</b> 4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval Sold by the meter; Max. delivery unit 1 000 m, minimum order quantity 20 m	6XV1840-2AH10		
<b>IE FC RJ45 plug 180</b> RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface <ul style="list-style-type: none"> <li>• 1 pack = 1 unit</li> <li>• 1 pack = 10 units</li> <li>• 1 pack = 50 units</li> </ul>	6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0		
		<b>IE FC Stripping Tool</b> Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	6GK1901-1GA00
		<b>Connecting cable</b> For connecting a TIM (RS 232) with a SINAUT ST7 MD2, MD3 or MD4 (RS 232) modem; cable length 1.5 m	6NH7701-4AL
		<b>Connecting cable</b> For connecting a TIM (RS 232) with the GSM modem MD720-3; also suitable for third-party modems or radio units with standard RS 232 interface Cable length 2.5 m	6NH7701-5AN
		<b>Connecting cable</b> With one end open for connecting a TIM (RS 232) to a third-party modem or radio unit (RS 232); cable length 2.5 m	6NH7701-4BN
		<b>Connecting cable</b> For connecting two TIM modules via their RS 232 interface without modems ("null modem") Cable length 6 m	6NH7701-0AR
		<b>SITOP compact 24 V/0.6 A</b> 1-phase power supply with wide-range input 85 ... 264 V AC/110 ... 300 V DC, stabilized output voltage 24 V, rated output current value 0.6 A, slim design	6EP1331-5BA00

## SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

### TIM 3V-IE DNP3 (for S7-300)

#### Overview



In a station for the S7-CPU, the new communication module TIM 3V-IE DNP3 V3.0 (TeleControl Interface Module) handles the data exchange with the assigned master system SIMATIC PCS 7 TeleControl V8.0 using the open DNP3 protocol. In addition, the V3.0 module now also supports master and node functionality.

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

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#### Technical specifications

Article number	<b>6NH7803-3BA00-0AA0</b>
Product type designation	TIM 3V-IE DNP3
<b>Transmission rate</b>	
Transfer rate	
• for Industrial Ethernet	10 ... 100 Mbit/s
• acc. to RS 232	9 600 ... 38 400 bit/s
<b>Interfaces</b>	
Number of interfaces acc. to Industrial Ethernet	1
Number of electrical connections	
• for external data transmission acc. to RS 232	1
• for power supply	1
Type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
• at interface 1 for external data transmission	9 pin Sub-D-connector (RS232)
• for power supply	2-pole plugable terminal block
design of the removable storage C-PLUG	No
<b>Supply voltage, current consumption, power loss</b>	
Type of voltage of the supply voltage	DC
Supply voltage	24 V
Supply voltage	20.4 ... 28.8 V
Supply voltage external at DC Rated value	24 V
Supply voltage external at DC rated value	20.4 ... 28.8 V
Consumed current	
• from backplane bus at DC at 24 V maximum	0.2 A
• from external supply voltage at DC at 24 V maximum	0.2 A
Power loss [W]	5.8 W
Product extension optional Backup battery	No

Article number	<b>6NH7803-3BA00-0AA0</b>
Product type designation	TIM 3V-IE DNP3
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
<b>Design, dimensions and weight</b>	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.25 kg
<b>Product properties, functions, components general</b>	
Number of units	
• Note	Number of TIMs per S7-300: 1
Wire length	
• with RS 232 interface maximum	6 m
<b>Performance data S7 communication</b>	
Number of possible connections for S7 communication	
• maximum	3
• with PG connections maximum	2
• with OP connections maximum	1
• Note	only via LAN
Service	
• PG/OP communication	Yes

#### Technical specifications (continued)

Article number	<b>6NH7803-3BA00-0AA0</b>
Product type designation	TIM 3V-IE DNP3
<b>Performance data telecontrol</b>	
Suitability for use	
• Node station	Yes
• substation	Yes
• TIM control center	Yes
Protocol is supported	
• DNP3	Yes
• SINAUT ST1 protocol	No
• SINAUT ST7 protocol	No
• Modbus RTU	Yes
Product function data buffering if connection is aborted	Yes; 64,000 data points with one master
Number of DNP3 masters	
• for Ethernet maximum	8
• with RS 232 interface maximum	1
Number of Modbus RTU slaves maximum	1

Article number	<b>6NH7803-3BA00-0AA0</b>
Product type designation	TIM 3V-IE DNP3
<b>Product functions management, configuration</b>	
Configuration software	
• required	SINAUT ST7 ES
Storage location of TIM configuration data	on the CPU or TIM

#### Ordering data

#### Article No.

#### Article No.

<b>TIM 3V-IE DNP3 communications module</b>	<b>6NH7803-3BA00-0AA0</b>
With an RS 232 interface for SINAUT communication via a conventional WAN and an IP-based network (WAN or LAN)	
<b>SINAUT Engineering Software V5.5 + SP3</b>	<b>6NH7997-0CA55-0AA0</b>
On DVD, comprising	
• SINAUT ST7 Engineering Software V5.5 for the PG	
• SINAUT TD7 block library	
• Electronic manual in German and English	
<b>SINAUT ST7 Engineering Software Update from Version V5.0x to V5.5</b>	<b>6NH7997-0CA55-0GA0</b>
SINAUT Engineering Software V5.5 upgrade; for owners of SINAUT Engineering Software Version V5.0 or higher	
<b>Accessories</b>	
<b>IE FC TP Standard Cable GP 2 x 2 (Type A)</b>	<b>6XV1840-2AH10</b>
4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval Sold by the meter; Max. delivery unit 1 000 m, minimum order quantity 20 m	

<b>IE FC RJ45 plug 180</b>	
RJ45 plug connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface	
• 1 pack = 1 unit	<b>6GK1901-1BB10-2AA0</b>
• 1 pack = 10 units	<b>6GK1901-1BB10-2AB0</b>
• 1 pack = 50 units	<b>6GK1901-1BB10-2AE0</b>
<b>IE FC Stripping Tool</b>	<b>6GK1901-1GA00</b>
Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	
<b>Connecting cable</b>	<b>6NH7701-4AL</b>
For connecting a TIM (RS 232) with a SINAUT ST7 MD2, MD3 or MD4 (RS 232) modem Cable length 1.5 m	
<b>Connecting cable</b>	<b>6NH7701-5AN</b>
For connecting a TIM (RS 232) with the GSM modem MD720-3; also suitable for third-party modems or radio units with standard RS 232 interface Cable length 2.5 m	
<b>Connecting cable</b>	<b>6NH7701-4BN</b>
With one end open for connecting a TIM (RS 232) to a third-party modem or radio unit (RS 232) Cable length 2.5 m	
<b>Connecting cable</b>	<b>6NH7701-0AR</b>
For connecting two TIM modules via their RS 232 interface without modems ("null modem") Cable length 6 m	

## SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

### TIM 4R-IE DNP3 (for S7-300/-400)

#### Overview



In a station for the S7-CPU, the communication module TIM 4R-IE DNP3 (TeleControl Interface Modul) handles the data exchange with the assigned SIMATIC PCS7 TeleControl V8.0 master system using the open DNP3 protocol. In addition, the V3.0 module now also supports master and node functionality.

- With the double-width S7-300 housing, the module can be fully integrated into the S7-300 system
- Can be connected as a stand-alone module to a SIMATIC S7-400 and SIMATIC S7-400 H System
- Two RS 232/RS 485 interfaces support connection of an external modem for data transmission via a conventional WAN or of a Modbus RTU slave to an S7-300 system
- The module has two RJ45 interfaces for data transmission via IP-based networks
- By using physically separate connection paths, the module permits media redundancy without loss of data during the switchover

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#### Technical specifications

Article number	<b>6NH7803-4BA00-0AA0</b>
Product type designation	TIM 4R-IE DNP3
<b>Transmission rate</b>	
Transfer rate	
• for Industrial Ethernet	10 ... 100 Mbit/s
• acc. to RS 232	9 600 ... 115 200 bit/s
<b>Interfaces</b>	
Number of interfaces acc. to Industrial Ethernet	2
Number of electrical connections	
• for external data transmission acc. to RS 232	2
• for power supply	1
Type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
• at interface 1 for external data transmission	9 pin Sub-D-connector, RS232 switchable to RS485
• at interface 2 for external data transmission	9-pole D-sub connector, RS232 can be switched to RS485
• for power supply	2-pole plugable terminal block
design of the removable storage C-PLUG	Yes
<b>Supply voltage, current consumption, power loss</b>	
Type of voltage of the supply voltage	DC
Supply voltage	24 V
Supply voltage	20.4 ... 28.8 V
Supply voltage external at DC Rated value	24 V
Supply voltage external at DC rated value	20.4 ... 28.8 V
Consumed current	
• from backplane bus at DC at 24 V maximum	0.2 A
• from external supply voltage at DC at 24 V maximum	0.17 A
Power loss [W]	4.6 W
Product extension optional Backup battery	Yes
Type of battery	Lithium AA / 3.6 V / 2.3 Ah
Backup current	
• typical	100 µA
• maximum	160 µA

Article number	<b>6NH7803-4BA00-0AA0</b>
Product type designation	TIM 4R-IE DNP3
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
<b>Design, dimensions and weight</b>	
Module format	Compact module S7-300 double width
Width	80 mm
Height	125 mm
Depth	120 mm
Net weight	0.4 kg
<b>Product properties, functions, components general</b>	
Number of units	
• Note	Number of TIMs per S7-300 / S7-400: 1
Wire length	
• with RS 232 interface maximum	6 m
• with RS 485 interface maximum	30 m
<b>Performance data S7 communication</b>	
Number of possible connections for S7 communication	
• maximum	5
• with PG connections maximum	2
• with OP connections maximum	1
• Note	only via LAN
Service	
• PG/OP communication	Yes

#### Technical specifications (continued)

Article number	<b>6NH7803-4BA00-0AA0</b>
Product type designation	TIM 4R-IE DNP3
<b>Performance data telecontrol</b>	
Suitability for use	
• Node station	Yes
• substation	Yes
• TIM control center	Yes
Protocol is supported	
• DNP3	Yes
• SINAUT ST1 protocol	No
• SINAUT ST7 protocol	No
• Modbus RTU	Yes
Product function data buffering if connection is aborted	Yes; 200,000 data points with one master
Number of DNP3 masters	
• for Ethernet maximum	8
• with RS 232 interface maximum	1
Number of Modbus RTU slaves maximum	1

Article number	<b>6NH7803-4BA00-0AA0</b>
Product type designation	TIM 4R-IE DNP3
<b>Product functions management, configuration</b>	
Configuration software	
• required	SINAUT ST7 ES
Storage location of TIM configuration data	on the CPU or TIM
<b>Product functions Time</b>	
Product component Hardware real-time clock	Yes
Product feature Hardware real-time clock w. battery backup	Yes
Accuracy of the hardware real-time clock per day maximum time synchronization	4 s
• from NTP-server	Yes

#### Ordering data

#### Article No.

#### Article No.

<b>TIM 4R-IE DNP3 communications module</b>	<b>6NH7803-4BA00-0AA0</b>
With two combined RS 232/RS 485 interfaces for SINAUT communication via conventional WANs and two RJ45 interfaces for SINAUT communication via IP-based networks (WAN or LAN)	
<b>Accessories</b>	
<b>SINAUT Engineering Software V5.5 + SP3</b>	<b>6NH7997-0CA55-0AA0</b>
On DVD, comprising	
• SINAUT ST7 Engineering Software V5.5 + SP3 for the PG	
• SINAUT TD7 block library	
• Electronic manual in German and English	
<b>SINAUT ST7 Engineering Software Update from Version V5.0x to V5.5</b>	<b>6NH7997-0CA55-0GA0</b>
SINAUT Engineering Software V5.5 upgrade; for owners of SINAUT Engineering Software Version V5.0 or higher	
<b>Backup battery</b>	<b>6ES7971-0BA00</b>
3.6 V/2.3 Ah for TIM 4R-IE DNP3	
<b>IE FC TP Standard Cable GP 2 x 2 (Type A)</b>	<b>6XV1840-2AH10</b>
4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; Max. delivery unit 1 000 m, minimum order quantity 20 m	
<b>IE FC RJ45 plug 180</b>	
RJ45 plug connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface	
• 1 pack = 1 unit	<b>6GK1901-1BB10-2AA0</b>
• 1 pack = 10 units	<b>6GK1901-1BB10-2AB0</b>
• 1 pack = 50 units	<b>6GK1901-1BB10-2AE0</b>

<b>IE FC Stripping Tool</b>	<b>6GK1901-1GA00</b>
Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	
<b>Connecting cable</b>	<b>6NH7701-4AL</b>
For connecting a TIM (RS 232) with a SINAUT ST7 MD2, MD3 or MD4 (RS 232) modem Cable length 1.5 m	
<b>Connecting cable</b>	<b>6NH7701-5AN</b>
For connecting a TIM (RS 232) with the GSM modem MD720-3; also suitable for third-party modems or radio units with standard RS 232 interface Cable length 2.5 m	
<b>Connecting cable</b>	<b>6NH7701-4BN</b>
With one end open for connecting a TIM (RS 232) to a third-party modem or radio unit (RS 232) Cable length 2.5 m	
<b>Connecting cable</b>	<b>6NH7701-0AR</b>
For connecting two TIM modules via their RS 232 interface without modems ("null modem") Cable length 6 m	
<b>SITOP compact 24 V/0.6 A</b>	<b>6EP1331-5BA00</b>
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	

**SIMATIC S7-300 Advanced Controllers**I/O modules  
Communication**ASM 475****Overview**

The ASM 475 is a powerful communication module for connecting the SIMATIC RF200, RF300, SIMATIC MV400 and SIMATIC MV500 identification systems to the S7-300 and ET 200M.

**5****Technical specifications**

Article number	<b>6GT2002-0GA10</b>
Product type designation	ASM 475 communication module
Suitability for operation	SIMATIC S7-300, ET200M together with RF200/300/600, MV400, MOBY D/E/I/U
<b>Transmission rate</b>	
Transfer rate at the point-to-point connection serial maximum	115.2 kbit/s
<b>Interfaces</b>	
Design of the interface for point-to-point connection	RS422
Number of readers connectable	2
Type of electrical connection	
<ul style="list-style-type: none"> <li>of the backplane bus</li> <li>of the PROFIBUS interface</li> <li>of Industrial Ethernet interface</li> <li>of supply voltage</li> </ul>	S7-300 backplane bus (according to the head module) (according to the head module) Screw-type or spring-loaded terminals
Design of the interface to the reader for communication	Screw-type or spring-loaded terminals
<b>Mechanical data</b>	
Material	Noryl
Color	anthracite
<b>Supply voltage, current consumption, power loss</b>	
Supply voltage	
<ul style="list-style-type: none"> <li>at DC Rated value</li> <li>at DC</li> </ul>	24 V 20 ... 30 V
Consumed current at DC at 24 V	
<ul style="list-style-type: none"> <li>without connected devices typical</li> <li>with connected devices maximum</li> </ul>	0.1 A 1 A

Article number	<b>6GT2002-0GA10</b>
Product type designation	ASM 475 communication module
<b>Permitted ambient conditions</b>	
Ambient temperature	
<ul style="list-style-type: none"> <li>during operation</li> <li>during storage</li> <li>during transport</li> </ul>	0 ... 60 °C -40 ... +70 °C -40 ... +70 °C
Protection class IP	IP20
Shock resistance	According to IEC 61131-2
Shock acceleration	150 m/s <sup>2</sup>
Vibrational acceleration	10 m/s <sup>2</sup>
<b>Design, dimensions and weight</b>	
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.2 kg
Mounting type	S7-300 rack
Wire length for RS 422 interface maximum	1 000 m
<b>Product properties, functions, components general</b>	
Display version	4 LEDs per reader connection, 2 LEDs for device status
Product function transponder file handler can be addressed	Yes
Protocol is supported	
<ul style="list-style-type: none"> <li>S7 communication</li> </ul>	Yes
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
<b>Standards, specifications, approvals</b>	
Certificate of suitability	CE, FCC, UL/CSA
<b>Accessories</b>	
accessories	Front connector with screw-type or spring-loaded terminals

Ordering data	Article No.		Article No.
<b>ASM 475 communication module</b> For SIMATIC S7-300 and ET 200M, parameterizable	6GT2002-0GA10		
<b>Accessories</b>			
<b>Front connector (1 x per ASM 475)</b> • with screw terminals • with spring-loaded terminals	6ES7392-1AJ00-0AA0 6ES7392-1BJ00-0AA0		
<b>Shield connecting element (80 mm wide for 2 x ASM 475)</b>	6ES7390-5AA00-0AA0		
<b>Shield connection clamp (1 x per reader cable)</b>	6ES7390-5BA00-0AA0		
		<b>Extension cable</b> SIMATIC RF200 / RF300 / RF600 / MV400, PUR material, suitable for cable carriers, straight connector	
		2 m	6GT2891-4FH20
		5 m	6GT2891-4FH50
		10 m	6GT2891-4FN10
		20 m	6GT2891-4FN20
		50 m	6GT2891-4FN50
		<b>SIMATIC RF200 / RF300 / RF600 / MV400 connecting cable</b> Pre-assembled, between the ASM 475 and RF200 / RF300 / RF600 / MV400, IP65, straight connector, PUR material, suitable for cable carriers, in the following lengths <sup>1)</sup> :	
		2 m	6GT2891-4EH20
		5 m	6GT2891-4EH50
		<b>DVD "RFID Systems Software &amp; Documentation"</b>	6GT2080-2AA20

<sup>1)</sup> 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.

## SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

### SIPLUS S7-300 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 SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

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#### Technical specifications

Article number	6AG1340-1AH02-2AE0	6AG1340-1AH02-2AY0	6AG1340-1CH02-2AE0
Based on	6ES7340-1AH02-0AE0 SIPLUS S7-300 CP340 RS232	6ES7340-1AH02-0AE0 SIPLUS S7-300 CP340 RS232 EN50155	6ES7340-1CH02-0AE0 SIPLUS S7-300 CP340 RS422/485
<b>Ambient conditions</b>			
<b>Ambient temperature during operation</b>			
• min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	60 °C; = Tmax
<b>Ambient temperature during storage/transportation</b>			
• min.	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C
<b>Altitude during operation relating to sea level</b>			
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>			
<b>Use in stationary industrial systems</b>			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *



**Technical specifications** (continued)

Article number	6AG1340-1AH02-2AE0	6AG1340-1AH02-2AY0	6AG1340-1CH02-2AE0
Based on	6ES7340-1AH02-0AE0 SIPLUS S7-300 CP340 RS232	6ES7340-1AH02-0AE0 SIPLUS S7-300 CP340 RS232 EN50155	6ES7340-1CH02-0AE0 SIPLUS S7-300 CP340 RS422/485
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>			
- to biologically active substances according to EN 60721-3-5		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	
- to chemically active substances according to EN 60721-3-5		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	
- to mechanically active substances according to EN 60721-3-5		Yes; Class 5S3 incl. sand, dust; *	
<b>Use on ships/at sea</b>			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *		Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>			
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

**Ordering data****Article No.****SIPLUS S7-300 CP 340 communications processor**

*For industrial applications with extended ambient conditions*

**Extended temperature range and exposure to media**

with 1 RS 232C interface (V.24)

**6AG1340-1AH02-2AE0**

with 1 RS 422/485 (X.27) interface

**6AG1340-1CH02-2AE0**

*For rolling stock railway applications*

**Conforms to EN 50155**

with 1 RS 232C interface (V.24)

**6AG1340-1AH02-2AY0**

## SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

### SIPLUS S7-300 CP 341

#### Overview



- For fast, high-performance serial data exchange via point-to-point coupling
- Two versions with different physical transmission characteristics:
  - RS 232C (V.24),
  - RS 422/RS 485 (X.27)
- Implemented protocols: ASCII, 3964 (R), RK 512, customized protocols (can be reloaded)
- Simple parameter assignment using tool integrated in STEP 7

#### Note:

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

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#### Technical specifications

Article number	6AG1341-1AH02-7AE0	6AG1341-1CH02-7AE0
Based on	6ES7341-1AH02-0AE0 SIPLUS S7-300 CP341 RS232C	6ES7341-1CH02-0AE0 SIPLUS S7-300 CP341 RS422/485
<b>Ambient conditions</b>		
<b>Ambient temperature during operation</b>		
• min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
<b>Ambient temperature during storage/transportation</b>		
• min.	-40 °C	-40 °C
• max.	70 °C	70 °C
<b>Altitude during operation relating to sea level</b>		
• Installation altitude above sea level, max.	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>		
<b>Use in stationary industrial systems</b>		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
<b>Use on ships/at sea</b>		
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>		
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data	Article No.	Ordering data	Article No.
<b>SIPLUS S7-300 CP 341 communications processor</b> <i>For industrial applications with extended ambient conditions</i> <u>Extended temperature range and exposure to media</u> with RS 232C interface (V.24) with RS 422/485 (X.27) interface	<b>6AG1341-1AH02-7AE0</b> <b>6AG1341-1CH02-7AE0</b>	<b>Modbus Slave V3.1</b> 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 Single license, without software and documentation	<b>6ES7870-1AB01-0YA0</b> <b>6ES7870-1AB01-0YA1</b>
<b>Accessories</b> <b>Modbus Master V3.1</b> 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 Single license, without software and documentation	<b>6ES7870-1AA01-0YA0</b> <b>6ES7870-1AA01-0YA1</b>		

## SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

### SIPLUS S7-300 CP 343-1 Lean

#### Overview



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

- Connection for the SIMATIC S7-300 to Industrial Ethernet (not for SINUMERIK)
  - 2 x RJ45 interface for 10/100 Mbps full/half duplex connection (with autosensing for automatic switchover and autocrossover function)
  - Integral 2-port real-time switch ERTEC
  - Multi-protocol operation with TCP and UDP transport protocol and PROFINET IO
  - Keep Alive function
- Communications services:
  - Open communication (TCP/IP and UDP)
  - PG/OP communication
  - S7 communication (server)
  - PROFINET IO device
- Multicast for UDP
- Remote programming and initial commissioning is possible over Industrial Ethernet
- IT communication
  - Web function
- Integration into network management through SNMP
- Configuration with STEP 7
- Cross-network PG/OP communication by means of S7 routing
- Diagnostics possibilities in STEP 7 and via web browser

#### Note:

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

#### SIPLUS S7-300 CP 343-1 Lean

<b>Article No.</b>	<b>6AG1343-1CX10-2XE0</b>	<b>6AG1343-1CX10-4XE0</b>
<b>BasedOn article no.</b>	<b>6GK7343-1CX10-0XE0</b>	<b>6GK7343-1CX10-0XE0</b>
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.	
<b>Ambient conditions</b>		
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.	
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!	
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!	
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!	
Air pressure (depending on the highest positive temperature range specified)	1 080 ... 795 hPa (-1 000 ... +2 000 m) see ambient temperature range 795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K 658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K	

For technical documentation on SIPLUS, see:

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

Ordering data	Article No.	Ordering data	Article No.
<p><b>SIPLUS CP 343-1 Lean communications processor</b></p> <p>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</p> <p><i>For industrial applications with extended ambient conditions</i></p> <p>Extended temperature range and exposure to environmental substances</p>	<b>6AG1343-1CX10-2XE0</b>	<p><b>IE FC TP Standard Cable GP 2 x 2 (Type A)</b></p> <p>4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m</p>	<b>6XV1840-2AH10</b>
<p><b>Accessories</b></p> <p><i>Consumables</i></p>		<p><b>IE FC stripping tool</b></p> <p>Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables</p> <p><i>Programming tools</i></p>	<b>6GK1901-1GA00</b>
<p><b>IE FC RJ45 plug 180</b></p> <p>(Extended temperature range and exposure to environmental substances)</p> <p>180° cable outlet</p> <ul style="list-style-type: none"> <li>• 1 unit</li> </ul>	<b>6AG1901-1BB10-7AA0</b>	<p><b>STEP 7 Version 5.6</b></p> <p>See Chapter 11</p>	
		<p><b>STEP 7 Professional V15</b></p> <p>See Chapter 11</p>	
		<p><b>SOFTNET S7 for Industrial Ethernet</b></p> <p>Software for S7 and open communication, incl. OPC server, PG/OP communication, and NCM PC/STEP 7 Professional V12, runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A</p>	See Catalog IK PI

**SIMATIC S7-300 Advanced Controllers**

I/O modules

SIPLUS S7-300 communication

**SIPLUS S7-300 CP 343-1****Overview**

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

- The connection of SIMATIC S7-300/SINUMERIK 840D powerline to Industrial Ethernet
  - 2 x RJ45 interface for 10/100 Mbps full/half-duplex connection with autosensing/autonegotiation and autocrossover function
  - Integrated 2-port real-time switch ERTEC
  - Multi-protocol operation with ISO, TCP, UDP transport protocol and PROFINET IO
  - Adjustable keep-alive function
- Communications services:
  - Open communication (ISO, TCP/IP, and UDP)
  - PROFINET IO controller or PROFINET IO device
  - PG/OP communication: Cross-network by means of S7 routing
  - S7 communication (client, server, multiplexing)
- Media redundancy (MRP); within an Ethernet network with ring topology, the CP supports the media redundancy procedure MRP (V2.2 or higher).
- Multicast for UDP
- IP address assignment via DHCP, simple PC tool or via the user program (e.g. HMI)
- Access protection via configurable access list
- Remote programming and commissioning via Industrial Ethernet
- Configuration with STEP 7
- Automatic setting of CPU clock setting over Ethernet with NTP or SIMATIC procedure
- Web diagnostics
- Integration in network management systems via SNMP (MIB2 diagnostics information)
- Diagnostics possibilities in STEP 7 and via web browser

**Note:**

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

**SIPLUS CP 343-1**

<b>Article No.</b>	<b>6AG1343-1EX30-7XE0</b>
<b>BasedOn Article No.</b>	<b>6GK7343-1EX30-0XE0</b>
Ambient temperature range	-25 ... +70 °C; 60 °C @ UL/cUL, ATEX and FM use
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.
<b>Ambient conditions</b>	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Air pressure (depending on the highest positive temperature range specified)	1 080 ... 795 hPa (-1 000 ... +2 000 m) see ambient temperature range 795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K 658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K

For further technical documentation on SIPLUS, see:

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

Ordering data	Article No.	Article No.
<p><b>SIPLUS S7-300 CP 343-1 communications processor</b></p> <p>For connection of SIMATIC S7-300 to Industrial Ethernet over ISO and TCP/IP; PROFINET IO controller or PROFINET IO device, MRP, integrated 2-port switch ERTEC; S7 communication, open communication (SEND/RECEIVE), FETCH/WRITE, with and without RFC 1006, multicast, DHCP, CPU clock synchronization via SIMATIC procedure and NTP, diagnostics, SNMP, access protection through IP access list, initialization over LAN 10/100 Mbps; with electronic manual on DVD</p> <p><i>For industrial applications with extended ambient conditions</i></p> <p>Extended temperature range and exposure to environmental substances</p>	<b>6AG1343-1EX30-7XE0</b>	<p><i>Communication within the application</i></p> <p><b>SIPLUS SCALANCE X-200 Industrial Ethernet Switches</b></p> <p>Industrial Ethernet switches with integral SNMP access, online diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager (exception: SCALANCE X208PRO); incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM</p> <ul style="list-style-type: none"> <li>• With electrical and optical ports for glass multimode FOC up to 3 km</li> <li>• Extended temperature range and exposure to media</li> <li>• <b>SIPLUS SCALANCE X204-2</b> with four 10/100 Mbps RJ45 ports and two FO ports</li> </ul>
<p><b>Accessories</b></p> <p><i>Consumables</i></p> <p><b>IE FC RJ45 plug 180</b></p> <p>(Extended temperature range and exposure to environmental substances)</p> <p>180° cable outlet</p> <ul style="list-style-type: none"> <li>• 1 unit</li> </ul>	<b>6AG1901-1BB10-7AA0</b>	<p><i>Programming tools</i></p> <p><b>STEP 7 Version 5.6</b> See Chapter 11</p> <p><b>STEP 7 Professional V15.1</b> See Chapter 11</p>
<p><b>C-PLUG</b></p> <p>Swap medium for simple replacement of devices in the event of a fault; for storing configuration or engineering and application data; can be used for SIMATIC NET products with C-PLUG slot, -40 ... +70 °C, medial exposure</p>	<b>6AG1900-0AB00-7AA0</b>	<p><b>SOFTNET S7 for Industrial Ethernet</b></p> <p>Software for S7 and open communication, incl. OPC server, PG/OP communication, and NCM PC/STEP 7 Professional V12, runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A</p>
<p><b>IE FC TP Standard Cable GP 2 x 2 (Type A)</b></p> <p>4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m</p>	<b>6XV1840-2AH10</b>	
<p><b>IE FC stripping tool</b></p> <p>Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables</p>	<b>6GK1901-1GA00</b>	

## SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

### SIPLUS S7-300 CP 343-1 Advanced

#### Overview



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

- The connection of SIMATIC S7-300/SINUMERIK 840D powerline to Industrial Ethernet
  - Multi-protocol operation with TCP and UDP transport protocol
  - Adjustable keep-alive function
- Two separate interfaces (integrated network separation):
  - Gigabit interface with one RJ45 port with 10/100/1 000 Mbps, full/half-duplex with auto-sensing capability
  - PROFINET interface with two RJ45 ports with 10/100 Mbps full/half-duplex with auto-sensing and auto-crossover functionality via integrated 2-port switch
- Communications services via both interfaces:
  - Open communication (TCP/IP and UDP): Multicast with UDP, including routing between both interfaces
  - PG/OP communication:
    - Cross-network by means of S7 routing
    - S7 communication (client, server, multiplexing) including routing between both interfaces
    - IT communication:
      - HTTP communication supports access to process data via own web pages;
      - e-mail client function, sending of e-mails directly from user program;
      - FTP communication supports program-controlled FTP client communication;
      - access to data blocks through FTP server
- Communications services via PROFINET interfaces:
  - PROFINET IO controller and IO device with real-time properties (RT and IRT)<sup>1)</sup>
  - 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

#### Note:

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

#### SIPLUS S7-300 CP 343-1 Advanced

**Article No.** 6AG1343-1GX31-4XE0

**BasedOn Article No.** 6GK7343-1GX31-0XE0

Ambient temperature range	0 ... +60 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies, except for the ambient conditions.

#### Ambient conditions

Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1 000 ... +2 000 m) see ambient temperature range 795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K 658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K

For technical documentation on SIPLUS, see:

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

<sup>1)</sup> Possible combinations in parallel operation:  
 - IO controller with IRT and IO device with RT  
 - IO controller with RT and IO device with IRT



Ordering data	Article No.	Article No.
<p><b>SIPLUS S7-300 CP 343-1 Advanced communications processor</b></p> <p>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 Mbps; with electronic manual on DVD; C-PLUG included</p> <p><i>For industrial applications with extended ambient conditions</i></p> <p>Exposure to media</p>	<b>6AG1343-1GX31-4XE0</b>	<p><b>IE FC TP Standard Cable GP 4 x 2</b></p> <p>8-wire, shielded TP installation cable for universal applications; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m</p> <ul style="list-style-type: none"> <li>• AWG22, for connecting to IE FC RJ45 Modular Outlet</li> <li>• AWG24, for connecting to IE FC RJ45 plug 4 x 2, IE FC M12 plug PRO 4 x 2</li> </ul> <p><b>6XV1870-2E</b></p> <p><b>6XV1878-2A</b></p>
<p><b>Accessories</b></p> <p><i>Consumables</i></p> <p><b>IE FC RJ45 plug 180</b></p> <p>(Extended temperature range and exposure to environmental substances)</p> <p>180° cable outlet</p> <ul style="list-style-type: none"> <li>• 1 unit</li> </ul>	<b>6AG1901-1BB10-7AA0</b>	<p><b>IE FC stripping tool</b></p> <p>Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables</p> <p><i>Communication within the application</i></p> <p><b>SIPLUS SCALANCE X-200 Industrial Ethernet Switches</b></p> <p>Industrial Ethernet switches with integral SNMP access, online diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager (exception: SCALANCE X208PRO); incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM</p> <ul style="list-style-type: none"> <li>• With electrical and optical ports for glass multimode FOC up to 3 km</li> <li>• Extended temperature range and exposure to media</li> <li>• SIPLUS SCALANCE X204-2 with four 10/100 Mbps RJ45 ports and two FO ports</li> </ul> <p><b>6GK1901-1GA00</b></p> <p><b>6AG1204-2BB10-4AA3</b></p>
<p><b>C-PLUG</b></p> <p>Swap medium for simple replacement of devices in the event of a fault; for storing configuration or engineering and application data; can be used for SIMATIC NET products with C-PLUG slot, -40 ... +70 °C, medial exposure</p>	<b>6AG1900-0AB00-7AA0</b>	<p><i>Programming tools</i></p> <p><b>STEP 7 Version 5.6</b></p> <p>See Chapter 11</p> <p><b>STEP 7 Professional V15.1</b></p> <p>See Chapter 11</p> <p><b>SOFTNET S7 for Industrial Ethernet</b></p> <p>Software for S7 and open communication, incl. OPC server, PG/OP communication, and NCM PC/STEP 7 Professional V12, runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A</p> <p>See Catalog IK PI</p>
<p><b>IE FC TP Standard Cable GP 2 x 2 (Type A)</b></p> <p>4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compliant; with UL approval; <u>sold by the meter</u>; max. delivery unit 1000 m, minimum order quantity 20 m</p>	<b>6XV1840-2AH10</b>	<p><b>SIMATIC iMap</b></p> <p>See Chapter 11</p>

**SIMATIC S7-300 Advanced Controllers**

I/O modules

SIPLUS S7-300 communication

**SIPLUS TIM 3V-IE for WAN and Ethernet****Overview**

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

Note:

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

**SIPLUS TIM 3V-IE**

<b>Article No.</b>	<b>6AG1800-3BA00-7AA0</b>
<b>Article No. based on</b>	<b>6NH7800-3BA00</b>
Ambient temperature range	-25 ... +70 °C; 60 °C @ UL/cUL, ATEX and FM use
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical specifications	The technical data of the standard product applies except for the ambient conditions.

**Ambient conditions**

Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-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:  
<http://www.siemens.com/siplus-extreme>

**Ordering data****Article No.****SIPLUS ST7 TIM 3V-IE communication module**

With an RS 232 interface for SINAUT communication via a conventional WAN or an IP-based network (WAN or LAN)

**Accessories***Consumables***IE FC TP Standard Cable GP 2 x 2 (Type A)**

4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. length 1000 m, minimum order quantity 20 m

**6AG1800-3BA00-7AA0****6XV1840-2AH10****Article No.****IE FC RJ45 plug 180**

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

- 1 pack = 1 unit, -40 ... +70 °C, exposure to media

**IE FC Stripping Tool**

Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables

**6AG1901-1BB10-7AA0****6GK1901-1GA00**

## Overview



- SINAUT communication module SIPLUS TIM with four interfaces for SIMATIC S7-300 or as a self-contained device for S7-400 for use in a wide area network (WAN)
- For universal use in a SINAUT station, node station and control center
- Internet communication via integrated MSC-VPN tunnel with direct connection to DSL router or operation via IPsec VPN with additional SIMATIC NET components
- Wireless communication via GPRS router, GPRS modem, or radio devices
- Wired communication via Ethernet, DSL, dialup modems or dedicated line modem
- Complete migration of existing wireless, dedicated line and dial-up technology to IP-based network
- Message frame memory for seamless recording of data and support of redundant communication paths
- Simple configuration and operation without specialist IT knowledge

### Note:

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

### SIPLUS TIM 4R-IE

<b>Article No.</b>	<b>6AG1800-4BA00-7AA0</b>
<b>Article No. based on</b>	<b>6NH7800-4BA00</b>
Ambient temperature range	-25 ... +70 °C; 60 °C @ UL/cUL, ATEX and FM use
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical specifications	The technical data of the standard product applies except for the ambient conditions.
<b>Ambient conditions</b>	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

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

## Ordering data

### SIPLUS ST7 TIM 4R-IE communication module

With two combined RS 232/RS 485 interfaces for SINAUT communication via conventional WANs and two RJ45 interfaces for SINAUT communication via IP-based networks (WAN or LAN)

### Accessories

#### Consumables

### IE FC TP Standard Cable GP 2 x 2 (Type A)

4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

### Article No.

**6AG1800-4BA00-7AA0**

**6XV1840-2AH10**

### Article No.

### IE FC RJ45 plug 180

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

- 1 pack = 1 unit;  
-40 ... +70 °C, exposure to media

### IE FC Stripping Tool

Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables

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

**6GK1901-1GA00**

**SIMATIC S7-300 Advanced Controllers**

I/O modules

SIPLUS S7-300 communication

**SIPLUS TIM 3V-IE DNP3****Overview**

In a station for the S7-CPU, the new SIPLUS communication module TIM 3V-IE DNP3 V3.0 (TeleControl Interface Module) handles the data exchange with the assigned master system SIMATIC PCS 7 TeleControl V8.0 using the open DNP3 protocol. In addition, the V3.0 module now also supports master and node functionality.

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

Note:

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

**SIPLUS TIM 3V-IE****Article No.** 6AG1803-3BA00-7AA0**Article No. based on** 6NH7803-3BA00**Ambient temperature range** -25 ... +70 °C

Conformal coating Coating of the printed circuit boards and the electronic components

Technical specifications The technical specifications of the standard product apply except for the ambient conditions.

**Ambient conditions**

Relative humidity 100%, condensation/frost permissible. No commissioning if condensation present.

Biologically active substances, compliance with EN 60721-3-3 Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation.

Chemically active substances, compliance with EN 60721-3-3 Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation.

Mechanically active substances, compliance with EN 60721-3-3 Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.

Air pressure (depending on the highest positive temperature range specified) 1 080 ... 795 hPa (-1 000 ... +2 000 m) see ambient temperature range  
795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K  
658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K

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

**Ordering data****Article No.****SIPLUS TIM 3V-IE DNP3 communication module****6AG1803-3BA00-7AA0**

With an RS232 interface for SINAUT communication via a conventional WAN and an IP-based network (WAN or LAN)

**Accessories***Consumables***IE FC TP Standard Cable GP 2 x 2 (Type A)****6XV1840-2AH10**

4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

**Article 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/CPU's with Industrial Ethernet interface

- 1 pack = 1 unit
- 40 ... +70 °C, medial exposure

**6AG1901-1BB10-7AA0****IE FC Stripping Tool****6GK1901-1GA00**

Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables

## Overview



In a station for the S7-CPU, the SIPLUS communication module TIM 4R-IE DNP3 (TeleControl Interface Module) handles the data exchange with the assigned SIMATIC PCS7 TeleControl V8.0 master system using the open DNP3 protocol. In addition, the V3.0 module now also supports master and node functionality.

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

### Note:

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

### SIPLUS TIM 4R-IE DNP3

<b>Article No.</b>	<b>6AG1803-4BA00-7AA0</b>
<b>Article No. based on</b>	<b>6NH7803-4BA00-0AA0</b>
Ambient temperature range	-25 ... +70 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical specifications	The technical specifications of the standard product apply except for the ambient conditions.
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation.
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation.
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
Air pressure (depending on the highest positive temperature range specified)	1 080 ... 795 hPa (-1 000 ... +2 000 m) see ambient temperature range 795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K 658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K

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

## Ordering data

### SIPLUS TIM 4R-IE DNP3 communication module

With two combined RS 232/RS 485 interfaces for SINAUT communication via conventional WANs and two RJ45 interfaces for SINAUT communication via IP-based networks (WAN or LAN)

### Accessories

#### Consumables

### IE FC TP Standard Cable GP 2 x 2 (Type A)

4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

## Article No.

**6AG1803-4BA00-7AA0**

**6XV1840-2AH10**

## Article 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/CPU's with Industrial Ethernet interface

- 1 pack = 1 unit  
-40 ... +70 °C, medial exposure

### IE FC Stripping Tool

Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables

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

**6GK1901-1GA00**

**SIMATIC S7-300 Advanced Controllers**

I/O modules

Special modules

**SM 374 simulator****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

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**Technical specifications**

Article number	<b>6ES7374-2XH01-0AA0</b> SM 374 Simulation unit 16I/16O
<b>General information</b>	
Product type designation	SM 374
<b>Input current</b>	
from backplane bus 5 V DC, max.	80 mA
<b>Power loss</b>	
Power loss, typ.	0.35 W
<b>Digital inputs</b>	
Number of digital inputs	16; Switch
<b>Digital outputs</b>	
Number of digital outputs	16; LEDs

Article number	<b>6ES7374-2XH01-0AA0</b> SM 374 Simulation unit 16I/16O
<b>Potential separation</b>	
<b>Potential separation digital inputs</b>	
• between the channels and backplane bus	No
<b>Potential separation digital outputs</b>	
• between the channels and backplane bus	No
<b>Dimensions</b>	
Width	40 mm
Height	125 mm
Depth	120 mm
<b>Weights</b>	
Weight, approx.	190 g

**Ordering data****Article No.**

<b>SM 374 simulator module</b> incl. bus connectors, labeling strips	<b>6ES7374-2XH01-0AA0</b>
<b>Bus connectors</b> 1 unit, spare part	<b>6ES7390-0AA00-0AA0</b>
<b>Labeling strips</b> 10 units (spare part)	<b>6ES7392-2XX00-0AA0</b>
<b>Label cover</b> 10 units (spare part)	<b>6ES7392-2XY00-0AA0</b>

**Article No.**

<b>Labeling sheets for machine inscription</b> for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
Petrol	<b>6ES7392-2AX00-0AA0</b>
Light beige	<b>6ES7392-2BX00-0AA0</b>
Yellow	<b>6ES7392-2CX00-0AA0</b>
Red	<b>6ES7392-2DX00-0AA0</b>

## Overview



- Dummy module for reserving slots for non-parameterized signal modules
- Structure and address allocation is retained when replaced with a signal module

## Technical specifications

Article number	<b>6ES7370-0AA01-0AA0</b> DM 370 DUMMY module
<b>General information</b>	
Product type designation	DM 370
<b>Input current</b>	
from backplane bus 5 V DC, max.	5 mA
<b>Power loss</b>	
Power loss, max.	0.03 W

Article number	<b>6ES7370-0AA01-0AA0</b> DM 370 DUMMY module
<b>Digital inputs</b>	
Number of digital inputs	0
<b>Digital outputs</b>	
Number of digital outputs	0
<b>Dimensions</b>	
Width	40 mm
Height	125 mm
Depth	120 mm
<b>Weights</b>	
Weight, approx.	180 g

## Ordering data

Ordering data	Article No.
<b>DM 370 dummy module</b> incl. bus connectors, labeling strips	<b>6ES7370-0AA01-0AA0</b>
<b>Bus connectors</b> 1 unit, spare part	<b>6ES7390-0AA00-0AA0</b>
<b>Labeling strips</b> 10 units (spare part)	<b>6ES7392-2XX00-0AA0</b>
<b>Label cover</b> 10 units (spare part)	<b>6ES7392-2XY00-0AA0</b>

Ordering data	Article No.
<b>Labeling sheets for machine inscription</b> for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
Petrol	<b>6ES7392-2AX00-0AA0</b>
Light beige	<b>6ES7392-2BX00-0AA0</b>
Yellow	<b>6ES7392-2CX00-0AA0</b>
Red	<b>6ES7392-2DX00-0AA0</b>

**SIMATIC S7-300 Advanced Controllers**

I/O modules

SIPLUS S7-300 special modules

**SIPLUS S7-300 DM 370****Overview**

- Dummy module for reserving slots for unconfigured signal modules
- Retention of design and address assignment when replacing with a signal module

Note:

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

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**Technical specifications**

Article number	<b>6AG1370-0AA01-7AA0</b>
Based on	<b>6ES7370-0AA01-0AA0</b> SIPLUS S7-300 Dummy-BG
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• min.	-40 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
<b>Altitude during operation relating to sea level</b>	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

Article number	<b>6AG1370-0AA01-7AA0</b>
Based on	<b>6ES7370-0AA01-0AA0</b> SIPLUS S7-300 Dummy-BG
<b>Resistance</b>	
<b>Use in stationary industrial systems</b>	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *
<b>Use on ships/at sea</b>	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!



<b>Ordering data</b>	<b>Article No.</b>		<b>Article No.</b>
<b>SIMATIC S7-300 DM 370 dummy module</b> for use when replacing modules Extended temperature range and exposure to media	<b>6AG1370-0AA01-7AA0</b>	<b>Label cover</b> 10 units (spare part) For modules with 20-pin front connector	<b>6ES7392-2XY00-0AA0</b>
<b>Accessories</b> <i>Consumables</i>		<b>Labeling sheets for machine printing</b> For modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
<b>Bus connectors</b> 1 unit (spare part)	<b>6ES7390-0AA00-0AA0</b>	Petrol Light beige Yellow Red	<b>6ES7392-2AX00-0AA0</b> <b>6ES7392-2BX00-0AA0</b> <b>6ES7392-2CX00-0AA0</b> <b>6ES7392-2DX00-0AA0</b>
<b>Labeling strips</b> 10 units (spare part) For modules with 20-pin front connector	<b>6ES7392-2XX00-0AA0</b>		

**SIMATIC S7-300 Advanced Controllers**

I/O modules

Connection system

**Front connectors****Overview**

- For the simple and user-friendly connection of sensors and actuators to the S7-300 I/O modules
- For maintaining the wiring when replacing modules ("permanent wiring")
- With mechanical coding to avoid errors when replacing modules

**Ordering data****Article No.****Front connectors**

20-pin, with screw contacts

- 1 unit
- 100 units

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

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

40-pin, with screw contacts

- 1 unit
- 100 units

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

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

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

**Front door, elevated design****6ES7328-0AA00-7AA0**

e.g. for 32 channel modules;  
 enables connection of  
 1.3 mm<sup>2</sup>/16 AWG wires

**Front door, higher version, for F-modules****6ES7328-7AA10-0AA0**

For F-modules; for connecting  
 1.3 mm<sup>2</sup>/16 AWG wires; wiring  
 diagram and labels in yellow

**Overview**

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

With SIMATIC TOP connect system cabling, it is simple and quick to establish a reliable connection for your SIMATIC S7-300 or ET 200M.

With the TIA Selection Tool, a mouse click is all that is required to configure the connection from the SIMATIC S7 module to the I/O. The program automatically checks for plausibility and generates a parts list for the selected connection components that can then be ordered in the Industry Mall.

More information can be found on the Internet at

<http://www.siemens.com/tia-selection-tool>

**Design**

Two cabling variants are available for a wide range of control cabinet concepts:

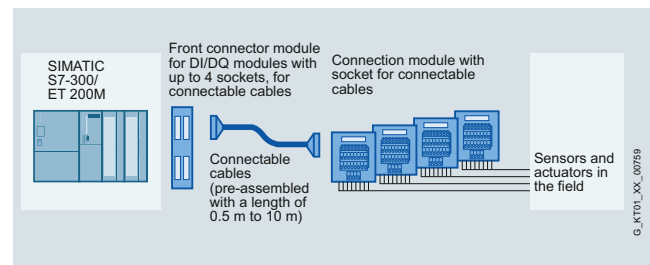
**Fully modular connection**

Each component is individually inserted.

The system consists of:

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

Connection errors are thus practically excluded and installation overhead is minimized. Systematic connection of the SIMATIC system. The assembly overhead for the connecting cables is drastically reduced thanks to the use of pre-assembled or easily assembled cables sold by the meter.



SIMATIC TOP connect for S7-300/ ET200M, fully modular connection

**Flexible connection**

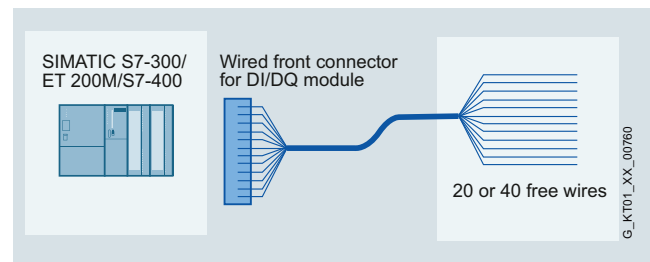
Consisting of:

- Front connector with screw-type or crimp connection
- Front connector with fixed single cores
- Single cores also available with UL/CSA-certified cores

The blue wires are numbered sequentially and can be routed direct to each element in the control cabinet. The numbering of the single cores corresponds to the coding of the front connector contacts.

In comparison to conventional single wiring, there is a cost saving of 50% for assembly, since the single cores that have already been checked on the connector are fixed.

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



SIMATIC TOP connect for S7-300/ET200M, flexible connection

## SIMATIC S7-300 Advanced Controllers

I/O modules

Connection system

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

#### Overview



The fully modular connection for connecting to the digital I/O modules of the SIMATIC S7-300 or ET 200M consists of modified front connectors, called front connector modules, preassembled connecting cables of various lengths, and terminal modules. Suitable components can be selected for the application in question and joined by means of simple plug-in connections. The terminal modules are used instead of conventional terminal blocks and act as the interface to the sensors and actuators.

#### Benefits

- Front connector module, connecting cable and terminal module are easy to plug in
- Fast, low-cost wiring
- For digital and analog signals, supply voltage can be connected to the front plug-in module or terminal module
- Reduction in wiring errors, clear control cabinet wiring
- Distribution of digital signals by byte or quadruple byte
- Each component can be replaced individually
- Cable lengths can be configured without cutting losses, 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. Many different front connector module versions, for digital I/O modules, 24 V 2-ampère modules or analog I/O modules. The connecting cables are plugged into these front connector modules.

##### Connecting cable

The connecting cable is available in two different versions.

As a pre-assembled 16-pin or 50-pin round cable (shielded or unshielded) up to a length of 10 m, or as a 16-pin round-sheath ribbon cable (with or without shield), which can be easily assembled by the user; or as 2 x 16-pin round-sheath ribbon cable (without shield).

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

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

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

##### Terminal module

The system has both digital and analog terminal modules for connecting the I/O signals. These are snapped onto the DIN rail. The terminal modules with basic or signal functionality are available in 1-byte or 4-byte versions.

Terminal modules are available for two different connection methods: with push-in or screw-type terminals. The potential can be fed in at the terminal module or at the front connector module.

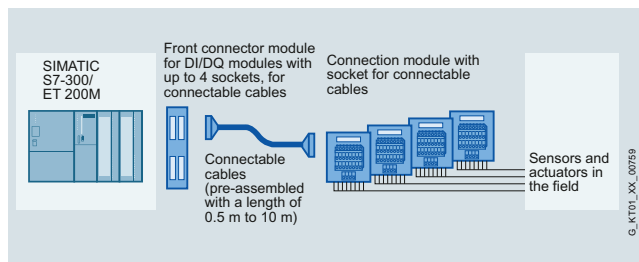
If other voltage or power levels are required in the field, the terminal module for TPRo or TPOo output signals is used. For the TPRo terminal module, relays are used for the implementation. For the TPOo terminal module, optocouplers are used for the implementation. This converts the 24 V DC output signal simply and reliably to another voltage or power level. If 230 V AC or 110 V AC input signals have to be transmitted to the controller in the field, a terminal module with relay TPri is available that simply converts the 230/110 V AC signal to 24 V DC. This means that there is always the same voltage level on the module side.

##### Use with optocouplers for the TPRo relay modules

If higher switching frequencies of the relay terminal module are required for the output signals, the relay can simply be replaced with an optocoupler (note technical specifications) in order to increase the switching frequency.

##### Shield plate

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



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

**Technical specifications front connector module****Technical data of front connector module**

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

**Wiring rules for front connector modules**

<b>Front connector module SIMATIC TOP connect, connection for potential infeed</b>	
Spring connection Screw connection	
<b>Modules up to 4 connections</b>	
Connectable cable cross-sections	
• solid cables	No
• flexible cables with/without wire end ferrule	0.25 to 1.5 mm <sup>2</sup>
Number of wires per connection	1 or a combination of 2 conductors up to 1.5 mm <sup>2</sup> (total) in a common wire end ferrule
Max. diameter of the cable insulation	3.1 mm
Stripping length of the cables	
• without insulating collar	6 mm
• with insulating collar	-
Wire-end ferrules in acc. with DIN 46228	
• without insulating collar	Form A; 5 to 7 mm long
• with insulating collar 0.25 to 1.0 mm <sup>2</sup>	-
• with insulating collar 1.5 mm <sup>2</sup>	-
Blade width of the screwdriver	3.5 mm (cylindrical shape)
Tightening torque for connecting the cables	- 0.4 to 0.7 Nm

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

**Technical specifications connecting cable****Technical specifications of connecting cable from SIMATIC S7 to connection module**

Operating voltage	60 V DC
Continuous current per signal conductor	1 A
Max. total current	4 A/byte
Operating temperature	0 to +60 °C
Outer diameter of pre-assembled round cable in mm unshielded/shielded (16-pole)	Approx. 6.5/7.0

# SIMATIC S7-300 Advanced Controllers

I/O modules

Connection system

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

### Ordering data

Article No.

Article No.

#### Front connector modules

##### Front connector module (compact CPU 312C)

Power supply via

- Screw terminals

6ES7921-3AK20-0AA0

##### Front connector module (compact CPU 313C/314C-2PtP/314C-2DP), slot X1

Power supply via

- Screw terminals

6ES7921-3AM20-0AA0

##### Front connector module (digital 2 x 8 I/O)

Power supply via

- Spring-loaded terminals
- Screw terminals

6ES7921-3AA00-0AA0

6ES7921-3AB00-0AA0

##### Front connector module (digital 4 x 8 I/O)

Power supply via

- Spring-loaded terminals
- Screw terminals

6ES7921-3AA20-0AA0

6ES7921-3AB20-0AA0

##### Front connector module (1 x 8 outputs) for 2-ampere digital outputs

Power supply via

- Spring-loaded terminals
- Screw terminals

6ES7921-3AC00-0AA0

6ES7921-3AD00-0AA0

##### Front connector module 20-pin (analog)

Power supply via

- Spring-loaded terminals
- Screw terminals

6ES7921-3AF00-0AA0

6ES7921-3AG00-0AA0

##### Front connector module 40-pin (analog)

Power supply via

- Spring-loaded terminals
- Screw terminals

6ES7921-3AF20-0AA0

6ES7921-3AG20-0AA0

#### Connecting cables

##### Connecting cables for SIMATIC S7-300

###### Pre-assembled round cable

16-pin, 0.14 mm<sup>2</sup>

Unshielded

- 0.5 m
- 1.0 m
- 1.5 m
- 2.0 m
- 2.5 m
- 3.0 m
- 4.0 m
- 5.0 m
- 6.5 m
- 8.0 m
- 10.0 m

6ES7923-0BA50-0CB0

6ES7923-0BB00-0CB0

6ES7923-0BB50-0CB0

6ES7923-0BC00-0CB0

6ES7923-0BC50-0CB0

6ES7923-0BD00-0CB0

6ES7923-0BE00-0CB0

6ES7923-0BF00-0CB0

6ES7923-0BG50-0CB0

6ES7923-0BJ00-0CB0

6ES7923-0CB00-0CB0

Shielded

- 1.0 m
- 2.0 m
- 2.5 m
- 3.0 m
- 4.0 m
- 5.0 m
- 6.5 m
- 8.0 m
- 10.0 m

6ES7923-0BB00-0DB0

6ES7923-0BC00-0DB0

6ES7923-0BC50-0DB0

6ES7923-0BD00-0DB0

6ES7923-0BE00-0DB0

6ES7923-0BF00-0DB0

6ES7923-0BG50-0DB0

6ES7923-0BJ00-0DB0

6ES7923-0CB00-0DB0

##### Version 4 x 16 to 1 x 50-pin, 0.14 mm<sup>2</sup>

Unshielded

- 0.5 m
- 1.0 m
- 1.5 m
- 2.0 m
- 2.5 m
- 3.0 m
- 4.0 m
- 5.0 m
- 6.5 m
- 8.0 m
- 10.0 m

6ES7923-5BA50-0EB0

6ES7923-5BB00-0EB0

6ES7923-5BB50-0EB0

6ES7923-5BC00-0EB0

6ES7923-5BC50-0EB0

6ES7923-5BD00-0EB0

6ES7923-5BE00-0EB0

6ES7923-5BF00-0EB0

6ES7923-5BG50-0EB0

6ES7923-5BJ00-0EB0

6ES7923-5CB00-0EB0

## Ordering data

## Terminal modules

## Terminal module TP1

For 1-wire connection, for 16-pin connecting cables

- Push-in terminals without LEDs
- Screw-type terminals without LEDs
- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0AA20-0AC0  
6ES7924-0AA20-0AA0  
6ES7924-0AA20-0BC0  
6ES7924-0AA20-0BA0

For 1-wire connection, for 50-pin connecting cables

- Push-in terminals without LEDs
- Screw-type terminals without LEDs
- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-2AA20-0AC0  
6ES7924-2AA20-0AA0  
6ES7924-2AA20-0BC0  
6ES7924-2AA20-0BA0

## Terminal module TP3

For 3-wire connection, for 16-pin connecting cables

- Push-in terminals without LEDs
- Screw-type terminals without LEDs
- Push-in terminals with LEDs
- Screw-type terminals with LEDs
- Push-in terminals with LEDs and one isolating terminal per channel
- Screw-type terminals with LEDs and one isolating terminal per channel
- Push-in terminals with LEDs and one fuse per channel
- Screw-type terminals with LEDs and one fuse per channel

6ES7924-0CA20-0AC0  
6ES7924-0CA20-0AA0  
6ES7924-0CA20-0BC0  
6ES7924-0CA20-0BA0  
6ES7924-0CH20-0BC0  
6ES7924-0CH20-0BA0  
6ES7924-0CL20-0BC0  
6ES7924-0CL20-0BA0

For 3-wire connection, for 50-pin connecting cables

- Push-in terminals without LEDs
- Screw-type terminals without LEDs
- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-2CA20-0AC0  
6ES7924-2CA20-0AA0  
6ES7924-2CA20-0BC0  
6ES7924-2CA20-0BA0

## Terminal module TPPro

Relay module for 8 outputs, relay as normally open contact

- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0BD20-0BC0  
6ES7924-0BD20-0BA0

## Terminal module TPri

Relay module for 8 outputs (110 V AC), relay as normally open contact

- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0BG20-0BC0  
6ES7924-0BG20-0BA0

## Terminal module TPri

Relay module for 8 outputs (230 V AC), relay as normally open contact

- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0BE20-0BC0  
6ES7924-0BE20-0BA0

## Terminal module TPOo

Optocoupler module for 8 outputs (max. 24 V DC/4 A)

- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0BF20-0BC0  
6ES7924-0BF20-0BA0

## Terminal module for digital output modules 2 A

Terminal module TP2

- Push-in terminals without LEDs
- Screw-type terminals without LEDs

6ES7924-0BB20-0AC0  
6ES7924-0BB20-0AA0

## Terminal module for analog modules

Terminal module TPA

- Push-in terminals without LEDs
- Screw-type terminals without LEDs

6ES7924-0CC21-0AC0  
6ES7924-0CC21-0AA0

## Accessories

## ID labels for terminal modules in S7-1500 design

ID labels, insertable  
P. unit = 340 units

3RT1900-1SB20

## Shield plate for analog terminal module

P. unit = 4 units (for connection of 15-pin connecting cable)

6ES7928-1AA20-4AA0

## Shield connection clamp

For shield plate at SIMATIC end,  
P. unit = 10 units

6ES7590-5BA00-0AA0

For shield plate at field end,  
2 x 2 ... 6 mm

6ES7390-5AB00-0AA0

For shield plate at field end,  
3 ... 8 mm

6ES7390-5BA00-0AA0

For shield plate at field end,  
4 ... 13 mm

6ES7390-5CA00-0AA0

**SIMATIC S7-300 Advanced Controllers**

I/O modules

Connection system &gt; System cabling for SIMATIC S7-300 and ET 200M

Flexible connection &gt; Front connector with single wires

**Overview**

Flexible connection enables fast, direct connection of the SIMATIC S7-300/ET 200 M input/output modules to the individual elements in the control cabinet.

Attached single cores reduce the wiring outlay.

Wire cross-sections of 0.5 mm<sup>2</sup> allow higher currents, too.

**Technical specifications**

<b>Front connector with single cores for 16 channels</b>	
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 <sup>2</sup> ; 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
<b>Front connector with single cores for 32 channels</b>	
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 <sup>2</sup> ; Cu
Bundle diameter in mm	approx. 17
Core color	Blue, RAL 5010
Designation of cores	Numbered from 1 to 40 (front connector contact = core number)
Assembly	Screw-type or crimp contacts

**Ordering data****Article No.****Front connector with single cores for 16-channel digital modules SIMATIC S7-300, 20 x 0.5 mm<sup>2</sup>****Core type H05V-K**Screw-type version

Packaging unit: 1 unit

Length:

- 2.5 m
- 3.2 m
- 5 m
- Custom lengths

**6ES7922-3BC50-0AB0**  
**6ES7922-3BD20-0AB0**  
**6ES7922-3BF00-0AB0**  
 On request

Packaging unit: 5 units

Length:

- 2.5 m
- 3.2 m
- 5.0 m

**6ES7922-3BC50-5AB0**  
**6ES7922-3BD20-5AB0**  
**6ES7922-3BF00-5AB0**

Crimp version

Packaging unit: 1 unit

Length:

- 2.5 m
- 3.2 m
- 5.0 m
- Custom lengths

**6ES7922-3BC50-0AF0**  
**6ES7922-3BD20-0AF0**  
**6ES7922-3BF00-0AF0**  
 On request

**Core type UL/CSA-certified**Screw-type version

Packaging unit: 1 unit

Length:

- 3.2 m
- 5.0 m

**6ES7922-3BD20-0UB0**  
**6ES7922-3BF00-0UB0**

**Front connector with single cores for 32-channel digital modules SIMATIC S7-300, 40 x 0.5 mm<sup>2</sup>****Core type H05V-K**Screw-type version

Packaging unit: 1 unit

Length:

- 2.5 m
- 3.2 m
- 5.0 m
- Custom lengths

**6ES7922-3BC50-0AC0**  
**6ES7922-3BD20-0AC0**  
**6ES7922-3BF00-0AC0**  
 On request

Packaging unit: 5 units

Length:

- 2.5 m
- 3.2 m
- 5.0 m

**6ES7922-3BC50-5AC0**  
**6ES7922-3BD20-5AC0**  
**6ES7922-3BF00-5AC0**

Crimp version

Packaging unit: 1 unit

Length:

- 2.5 m
- 3.2 m
- 5.0 m
- Custom lengths

**6ES7922-3BC50-0AG0**  
**6ES7922-3BD20-0AG0**  
**6ES7922-3BF00-0AG0**  
 On request

**Core type UL/CSA-certified**Screw version

Packaging unit: 1 unit

Length:

- 3.2 m
- 5.0 m

**6ES7922-3BD20-0UC0**  
**6ES7922-3BF00-0UC0**



**Design*****The front connector is available in two designs***The 20-pin front connector contains:

- 20 connections for crimp contacts for connecting the wiring
- Strain relief for the cables
- Unlatching key; for unlatching the front connector when replacing the module
- Holder for coding element attachment; there are two coding elements with attachments on the modules. The attachments latch in when inserting into the front connector for the first time.

The 40-pin front connector contains:

- 40 connections for crimp contacts for connecting the wiring
- Strain relief for the cables
- Locking screw; for fixing and detaching the front connector when the module is replaced
- Holder for coding element attachment; there is a coding element with an attachment on the modules. The attachment latches in when inserting into the front connector for the first time.

**Integration**Use of the 20-pin front connector with

- 16-channel signal modules
- Function modules
- CPU 312 IFM

Use of the 40-pin front connector with

- 32-channel signal modules
- Compact CPUs

**Ordering data****Article No.****Front connector 20-pin, crimp version without crimp contacts**

Packing unit 100 units

**6ES7921-3AH00-1AA0****Front connector 40-pin, crimp version without crimp contacts**

Packing unit 100 units

**6ES7921-3AH20-1AA0****Accessories****Crimp contacts for front connectors**

Packing unit 250 units

**6XX3070****Crimping tool**

For crimping the crimp contacts

**6XX3071****Unlocking tool for crimp contacts****6ES5497-4UC11**

## SIMATIC S7-300 Advanced Controllers

### Power supplies

#### 1-phase, 24 V DC (for S7-300 and ET200M)

#### Overview



The design and functionality of the SIMATIC PS 307 single-phase load power supply (system and load current supply) with automatic range switchover of the input voltage is an optimal match to the SIMATIC S7-300 PLC. By means of the connecting comb that is supplied with the system and load current supply, the supply to the CPU is quickly established. It is also possible to provide a 24 V supply to other S7-300 system components, input/output circuits of the input/output modules and, if necessary, the sensors and actuators. Comprehensive certifications, such as UL, ATEX or GL facilitate universal use (does not apply to outdoor use).

5

#### Technical specifications

Article number	6ES7307-1BA01-0AA0	6ES7305-1BA80-0AA0	6ES7307-1EA01-0AA0	6ES7307-1EA80-0AA0	6ES7307-1KA02-0AA0
Product	PS 307	PS 305 Outdoor	PS 307	PS 307 Outdoor	PS 307
Power supply, type	24 V/2 A	24 V/2 A	24 V/5 A	24 V/5 A	24 V/10 A
<b>Input</b>					
Input	1-phase AC	DC voltage	1-phase AC	1-phase AC	1-phase AC
• Note	Automatic range selection		Automatic range selection	Set by means of selector switch on the device	Automatic range selection
Supply voltage					
• 1 at AC Rated value	120 V		120 V	120 V	120 V
• 2 at AC Rated value	230 V		230 V	230 V	230 V
• at DC		24 ... 110 V			
Input voltage					
• 1 at AC	85 ... 132 V		85 ... 132 V	93 ... 132 V	85 ... 132 V
• 2 at AC	170 ... 264 V		170 ... 264 V	187 ... 264 V	170 ... 264 V
• at DC		16.8 ... 138 V			
Wide-range input	No	Yes	No	No	No
Overshoot resistance	$2.3 \times V_{in \text{ rated}}, 1.3 \text{ ms}$	154 V; 0.1 s	$2.3 \times V_{in \text{ rated}}, 1.3 \text{ ms}$	$2.3 \times V_{in \text{ rated}}, 1.3 \text{ ms}$	$2.3 \times V_{in \text{ rated}}, 1.3 \text{ ms}$
Mains buffering at $I_{out \text{ rated}}, \text{ min.}$	20 ms; at $V_{in} = 93/187 \text{ V}$	10 ms; at $V_{in \text{ rated}}$	20 ms; at $V_{in} = 93/187 \text{ V}$	20 ms; at $V_{in} = 93/187 \text{ V}$	20 ms; at $V_{in} = 93/187 \text{ V}$
Rated line frequency 1	50 Hz		50 Hz	50 Hz	50 Hz
Rated line frequency 2	60 Hz		60 Hz	60 Hz	60 Hz
Rated line range	47 ... 63 Hz		47 ... 63 Hz	47 ... 63 Hz	47 ... 63 Hz
Input current					
• at rated input voltage 120 V	0.9 A		2.3 A	2.1 A	4.2 A
• at rated input voltage 230 V	0.5 A		1.2 A	1.2 A	1.9 A
• at rated input voltage 24 V		2.4 A			
• at rated input voltage 110 V		0.6 A			
Switch-on current limiting (+25 °C), max.	22 A	20 A	20 A	45 A	55 A
Duration of inrush current limiting at 25 °C					
• maximum	3 ms	10 ms	3 ms	3 ms	3 ms
$I^2t, \text{ max.}$	1 A <sup>2</sup> ·s	5 A <sup>2</sup> ·s	1.2 A <sup>2</sup> ·s	1.8 A <sup>2</sup> ·s	3.3 A <sup>2</sup> ·s
Built-in incoming fuse	T 1.6 A/250 V (not accessible)	T 6.3 A/250 V (not accessible)	T 3,15 A/250 V (not accessible)	T 3,15 A/250 V (not accessible)	T 6.3 A/250 V (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: 3 A characteristic C	Recommended miniature circuit breaker: from 10 A characteristic C, suitable for DC	Recommended miniature circuit breaker: from 6 A characteristic C	Recommended miniature circuit breaker: from 10 A characteristic C or from 6 A characteristic D	Recommended miniature circuit breaker: from 10 A characteristic C

### Technical specifications (continued)

Article number	6ES7307-1BA01-0AA0	6ES7305-1BA80-0AA0	6ES7307-1EA01-0AA0	6ES7307-1EA80-0AA0	6ES7307-1KA02-0AA0
Product	PS 307	PS 305 Outdoor	PS 307	PS 307 Outdoor	PS 307
Power supply, type	24 V/2 A	24 V/2 A	24 V/5 A	24 V/5 A	24 V/10 A
<b>Output</b>					
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage $V_{out}$ DC	24 V	24 V	24 V	24 V	24 V
Total tolerance, static $\pm$	3 %	3 %	3 %	3 %	3 %
Static mains compensation, approx.	0.1 %	0.2 %	0.1 %	0.2 %	0.1 %
Static load balancing, approx.	0.2 %	0.4 %	0.5 %	0.4 %	0.5 %
Residual ripple peak-peak, max.	50 mV	150 mV	50 mV	150 mV	50 mV
Residual ripple peak-peak, typ.	5 mV	30 mV	10 mV	40 mV	15 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	150 mV	240 mV	150 mV	240 mV	150 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	20 mV	150 mV	20 mV	90 mV	60 mV
Product function Output voltage adjustable	No	No	No	No	No
Output voltage setting	-	-	-	-	-
Status display	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK
On/off behavior	No overshoot of $V_{out}$ (soft start)	No overshoot of $V_{out}$ (soft start)	No overshoot of $V_{out}$ (soft start)	No overshoot of $V_{out}$ (soft start)	No overshoot of $V_{out}$ (soft start)
Startup delay, max.	2 s	3 s	2 s	3 s	2 s
Voltage rise, typ.	10 ms	5 ms	10 ms	100 ms	10 ms
Rated current value $I_{out}$ rated	2 A	2 A	5 A	5 A	10 A
Current range	0 ... 2 A	0 ... 3 A	0 ... 5 A	0 ... 5 A	0 ... 10 A
• Note		3 A up to +60°C at $V_{in} > 24$ V			
Supplied active power typical	48 W	48 W	120 W	120 W	240 W
Short-term overload current					
• on short-circuiting during the start-up typical	9 A	9 A	20 A	20 A	38 A
• at short-circuit during operation typical	9 A	9 A	20 A	20 A	38 A
Duration of overloading capability for excess current					
• on short-circuiting during the start-up	90 ms	270 ms	100 ms	180 ms	80 ms
• at short-circuit during operation	90 ms	270 ms	100 ms	80 ms	80 ms
Parallel switching for enhanced performance	Yes	Yes	Yes	No	Yes
Numbers of parallel switchable units for enhanced performance	2	2			
<b>Efficiency</b>					
Efficiency at $V_{out}$ rated, $I_{out}$ rated, approx.	84 %	75 %	87 %	84 %	90 %
Power loss at $V_{out}$ rated, $I_{out}$ rated, approx.	9 W	16 W	18 W	23 W	27 W
<b>Closed-loop control</b>					
Dynamic mains compensation ( $V_{in}$ rated $\pm 15$ %), max.	0.1 %	0.3 %	0.1 %	0.3 %	0.1 %
Dynamic load smoothing ( $I_{out}$ : 50/100/50 %), $U_{out} \pm$ typ.	0.8 %	2.5 %	1 %	3 %	2 %
Load step setting time 50 to 100%, typ.	0.5 ms	2.5 ms	0.3 ms	0.2 ms	
Load step setting time 100 to 50%, typ.	0.5 ms	2.5 ms	0.3 ms	0.2 ms	
Setting time maximum	1 ms	5 ms		5 ms	0.1 ms

# SIMATIC S7-300 Advanced Controllers

## Power supplies

### 1-phase, 24 V DC (for S7-300 and ET200M)

#### Technical specifications (continued)

Article number	6ES7307-1BA01-0AA0	6ES7305-1BA80-0AA0	6ES7307-1EA01-0AA0	6ES7307-1EA80-0AA0	6ES7307-1KA02-0AA0
Product	PS 307	PS 305 Outdoor	PS 307	PS 307 Outdoor	PS 307
Power supply, type	24 V/2 A	24 V/2 A	24 V/5 A	24 V/5 A	24 V/10 A
<b>Protection and monitoring</b>					
Output overvoltage protection	Additional control loop, shutdown at < 28.8 V, automatic restart	Additional control loop, shutdown at approx. 30 V, automatic restart	Additional control loop, shutdown at < 28.8 V, automatic restart	Additional control loop, shutdown at approx. 30 V, automatic restart	Additional control loop, shutdown at < 28.8 V, automatic restart
Current limitation	2.2 ... 2.6 A	3.3 ... 3.9 A	5.5 ... 6.5 A	5.5 ... 6.5 A	11 ... 12 A
Property of the output Short-circuit proof	Yes	Yes	Yes	Yes	Yes
Short-circuit protection	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart
Enduring short circuit current RMS value					
• maximum	2 A	2 A	7 A	5 A	12 A
Overload/short-circuit indicator	-	-			-
<b>Safety</b>					
Primary/secondary isolation	Yes	Yes	Yes	Yes	Yes
Galvanic isolation	Safety extra-low output voltage $U_{out}$ acc. to EN 60950-1 and EN 50178	Safety extra low output voltage $V_{out}$ according to EN 60950-1 and EN 50178, creepage distances and clearances > 5 mm	Safety extra-low output voltage $U_{out}$ acc. to EN 60950-1 and EN 50178	Safety extra low output voltage $V_{out}$ according to EN 60950-1 and EN 50178, creepage distances and clearances > 5 mm	Safety extra-low output voltage $U_{out}$ acc. to EN 60950-1 and EN 50178
Protection class	Class I	Class I	Class I	Class I	Class I
Leakage current					
• maximum	3.5 mA		3.5 mA	3.5 mA	3.5 mA
• typical	0.5 mA		0.5 mA	0.3 mA	0.6 mA
CE mark	Yes	Yes	Yes	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289	UL-Listed (UL 508), File E143289, CSA (CSA C22.2 No. 142)	cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289	UL-Listed (UL 508), File E143289, CSA (CSA C22.2 No. 142)	cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289
Explosion protection	ATEX (EX) II 3G Ex nA II T4; cULus (ANSI/ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T4, File E330455	-	ATEX (EX) II 3G Ex nA II T4; cULus (ANSI/ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T4, File E330455	-	ATEX (EX) II 3G Ex nA II T4; cULus (ANSI/ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T4, File E330455
FM approval	Class I, Div. 2, Group ABCD, T4	-	Class I, Div. 2, Group ABCD, T4	-	Class I, Div. 2, Group ABCD, T4
CB approval	No	No	No	No	No
Marine approval	In S7-300 system	-	In S7-300 system	-	In S7-300 system
Degree of protection (EN 60529)	IP20	IP20	IP20	IP20	IP20
<b>EMC</b>					
Emitted interference	EN 55022 Class B	EN 55011 Class A	EN 55022 Class B	EN 55011 Class A	EN 55022 Class B
Supply harmonics limitation	not applicable	not applicable	EN 61000-3-2	-	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
<b>Operating data</b>					
Ambient temperature					
• during operation	0 ... 60 °C	-25 ... +70 °C	0 ... 60 °C	-25 ... +70 °C	0 ... 60 °C
- Note	with natural convection	with natural convection	with natural convection	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K5, transient condensation permitted	Climate class 3K3, no condensation	Climate class 3K5, transient condensation permitted	Climate class 3K3, no condensation

# SIMATIC S7-300 Advanced Controllers

## Power supplies

1-phase, 24 V DC (for S7-300 and ET200M)

**Technical specifications** (continued)

Article number	<b>6ES7307-1BA01-0AA0</b>	<b>6ES7305-1BA80-0AA0</b>	<b>6ES7307-1EA01-0AA0</b>	<b>6ES7307-1EA80-0AA0</b>	<b>6ES7307-1KA02-0AA0</b>
Product	PS 307	PS 305 Outdoor	PS 307	PS 307 Outdoor	PS 307
Power supply, type	24 V/2 A	24 V/2 A	24 V/5 A	24 V/5 A	24 V/10 A
<b>Mechanics</b>					
Connection technology	screw-type terminals	screw-type terminals	screw-type terminals	screw-type terminals	screw-type terminals
Connections					
• Supply input	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm <sup>2</sup> single-core/finely stranded	L+, M1, PE: 1 screw terminal each for 0.5 ... 2.5 mm <sup>2</sup> single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm <sup>2</sup> single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm <sup>2</sup> single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm <sup>2</sup> single-core/finely stranded
• Output	L+, M: 2 screw terminals each for 0.5 ... 2.5 mm <sup>2</sup>	L+, M: 3 screw terminals each for 0.5 ... 2.5 mm <sup>2</sup>	L+, M: 3 screw terminals each for 0.5 ... 2.5 mm <sup>2</sup>	L+, M: 3 screw terminals each for 0.5 ... 2.5 mm <sup>2</sup>	L+, M: 4 screw terminals each for 0.5 ... 2.5 mm <sup>2</sup>
• Auxiliary	-	-	-	-	-
Width of the enclosure	40 mm	80 mm	60 mm	80 mm	80 mm
Height of the enclosure	125 mm	125 mm	125 mm	125 mm	125 mm
Depth of the enclosure	120 mm	120 mm	120 mm	120 mm	120 mm
Required spacing					
• top	40 mm	50 mm	40 mm	50 mm	40 mm
• bottom	40 mm	50 mm	40 mm	50 mm	40 mm
• left	0 mm	0 mm	0 mm	0 mm	0 mm
• right	0 mm	0 mm	0 mm	0 mm	0 mm
Weight, approx.	0.4 kg	0.57 kg	0.6 kg	0.57 kg	0.8 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes	Yes	Yes	Yes
Installation	Can be mounted onto S7 rail	Can be mounted onto S7 rail	Can be mounted onto S7 rail	Can be mounted onto S7 rail	Can be mounted onto S7 rail
Mechanical accessories	Mounting adapter for standard mounting rail (6EP1971-1BA00)	Mounting adapter for standard mounting rail (6ES7390-6BA00-0AA0)	Mounting adapter for standard mounting rail (6EP1971-1BA00)	Mounting adapter for standard mounting rail (6ES7390-6BA00-0AA0)	Mounting adapter for standard mounting rail (6EP1971-1BA00)
MTBF at 40 °C	2 320 078 h	964 506 h	2 480 589 h	2 231 610 h	1 504 280 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

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

## SIMATIC S7-300 Advanced Controllers

### SIPLUS power supplies

1-phase, 24 V DC (for S7-300 and ET200M)

#### Overview



The design and functionality of the SIMATIC PS 305 and 307 1-phase load power supplies (system and load current supply) with automatic range switchover of the input voltage are an optimal match for the SIMATIC S7-300 PLC. By means of the connecting comb that is supplied with the system and load current supply, the supply to the CPU is quickly established. It is also possible to provide a 24 V supply to other S7-300 system components, input/output circuits of the input/output modules and, if necessary, the sensors and actuators. Comprehensive certifications, such as UL, ATEX or GL facilitate universal use (does not apply to outdoor use).

#### Note:

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

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#### Technical specifications

Article number	6AG1305-1BA80-2AA0	6AG1307-1EA01-7AA0	6AG1307-1KA02-7AA0
Based on	6ES7305-1BA80-0AA0 SIPLUS PS S7-300 PS305 (EN50155)	6ES7307-1EA01-0AA0 SIPLUS PS307 AC 120/230V / DC 24 V/5 A	6ES7307-1KA02-0AA0 SIPLUS_PS307_10A
<b>Ambient conditions</b>			
<b>Ambient temperature during operation</b>			
• min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; for use on railway vehicles according to EN 50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/UL hazardous use applies	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
<b>Altitude during operation relating to sea level</b>			
• Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m); above 2 000 m max. 75 V DC	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m); above 2 000 m max. 75 V DC	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m); above 2 000 m max. 75 V DC
<b>Relative humidity</b>			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>			
<b>Use in stationary industrial systems</b>			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

# SIMATIC S7-300 Advanced Controllers

## SIPLUS power supplies

1-phase, 24 V DC (for S7-300 and ET200M)

### Technical specifications (continued)

Article number	6AG1305-1BA80-2AA0	6AG1307-1EA01-7AA0	6AG1307-1KA02-7AA0
Based on	6ES7305-1BA80-0AA0 SIPLUS PS S7-300 PS305 (EN50155)	6ES7307-1EA01-0AA0 SIPLUS PS307 AC 120/230V / DC 24 V/5 A	6ES7307-1KA02-0AA0 SIPLUS_PS307_10A
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>			
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request		
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *		
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *		
<b>Use on ships/at sea</b>			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>			
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

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### Ordering data

#### SIPLUS power supplies

*For industrial applications with extended ambient conditions*

#### SIPLUS S7-300 PS 305

(Extended temperature range and exposure to media)

Input: 24 ... 110 V DC  
Output: 24 V DC/2 A

6AG1305-1BA80-2AA0

#### SIPLUS S7-300 PS 307 5 A

(Extended temperature range and exposure to media)

Incl. connection bracket  
120/230 V AC; 24 V DC  
Output current 5 A  
(dimensions 60 x 125 x 120)

6AG1307-1EA01-7AA0

#### SIPLUS S7-300 PS 307 10 A

(Extended temperature range and exposure to media)

Incl. connection bracket  
120/230 V AC; 24 V DC  
Output current 10 A  
(dimensions 80 x 125 x 120)

6AG1307-1KA02-7AA0

*For rolling stock railway applications*

#### SIPLUS S7-300 PS 305

(Extended temperature range and exposure to media)

Conforms to EN 50155

Input: 24 ... 110 V DC  
Output: 24 V DC/2 A

6AG1305-1BA80-2AA0

### Article No.

#### Accessories

#### SIMATIC S7-300 mounting adapter

For snapping the PS 307 onto a 35 mm DIN rail (EN 60715)

6EP1971-1BA00

#### Spare part

SIMATIC S7-300 mounting adapter; for snapping the PS 307 onto 35 mm standard rails

6ES7390-6BA00-0AA0

## SIMATIC S7-300 Advanced Controllers

### Interface modules

#### IM 360/361/365 interface modules

#### Overview



- For connection of the SIMATIC S7-300 rack in multi-tier configurations
- IM 365: For configuring central controllers and max. 1 expansion unit. Limited use of modules in the expansion unit (e.g. no CPs and FMs)
- IM 360/IM 361: For configuring central controllers and max. 3 expansion units. Unlimited selection of modules in the expansion unit

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#### Technical specifications

Article number	6ES7360-3AA01-0AA0	6ES7361-3CA01-0AA0	6ES7365-0BA01-0AA0
	IM360 interface module in CC, with K-BUS	IM361 interface module in EU, with K-Bus	IM365 interface module, w/o K-BUS
<b>Supply voltage</b>			
Rated value (DC)		Yes	
• 24 V DC			
<b>Input current</b>			
from supply voltage L+, max.		500 mA	
from backplane bus 5 V DC, max.	350 mA		100 mA
<b>Power loss</b>			
Power loss, typ.	2 W	5 W	0.5 W
<b>Hardware configuration</b>			
Number of interfaces per CPU, max.	1	3	1; 1 pair
<b>Dimensions</b>			
Width	40 mm	80 mm	40 mm
Height	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm
<b>Weights</b>			
Weight, approx.	225 g	505 g	580 g

#### Ordering data

	Article No.
<b>IM 360 interface module</b>	<b>6ES7360-3AA01-0AA0</b>
For expanding the S7-300 with max. 3 EUs; can be plugged into the CC	
<b>IM 361 interface module</b>	<b>6ES7361-3CA01-0AA0</b>
For expanding the S7-300 with max. 3 EUs; can be plugged into the EU	
<b>Connecting cable</b>	
Between IM 360 and IM 361 or IM 361 and IM 361	
1 m	<b>6ES7368-3BB01-0AA0</b>
2.5 m	<b>6ES7368-3BC51-0AA0</b>
5 m	<b>6ES7368-3BF01-0AA0</b>
10 m	<b>6ES7368-3CB01-0AA0</b>
<b>IM 365 interface module</b>	<b>6ES7365-0BA01-0AA0</b>
For expanding the S7-300 with max. 1 EU; 2 modules with permanent connecting cable (1 m)	

	Article No.
<b>SIMATIC Manual Collection</b>	<b>6ES7998-8XC01-8YE0</b>
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	
<b>SIMATIC Manual Collection update service for 1 year</b>	<b>6ES7998-8XC01-8YE2</b>
Current "Manual Collection" DVD and the three subsequent updates	



### Overview



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

#### Note:

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

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### Technical specifications

Article number	<b>6AG1365-0BA01-2AA0</b>
Based on	<b>6ES7365-0BA01-0AA0</b> SIPLUS S7-300 IM365
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• min.	-25 °C; = Tmin
• max.	60 °C; = Tmax
<b>Altitude during operation relating to sea level</b>	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

Article number	<b>6AG1365-0BA01-2AA0</b>
Based on	<b>6ES7365-0BA01-0AA0</b> SIPLUS S7-300 IM365
<b>Resistance</b>	
<b>Use in stationary industrial systems</b>	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
<b>Use on ships/at sea</b>	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
<b>Remark</b>	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!

### Ordering data

#### Article No.

#### SIPLUS S7-300 IM 365 interface module

For expansion of S7-300 with max. 1 EU; 2 modules with permanent connecting cable (1 m)

Extended temperature range and exposure to media

**6AG1365-0BA01-2AA0**

## SIMATIC S7-300 Advanced Controllers

### Accessories

#### DIN rail, labeling sheets

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##### Overview DIN rail



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

##### Ordering data

##### Article No.

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

##### Overview Labeling sheets

###### Labeling sheets

- Film sheets for the application-specific labeling of SIMATIC S7-300 I/O modules using standard laser printers
- Plain color films, tear-resistant, dirt-repellent
- Simple handling:
  - perforated 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 labeling sheets are available in the following colors: petrol, light beige, red, and yellow. Yellow is reserved for fail-safe systems.

###### Label cover

- Petrol-colored film
- For sealing and fixing of custom labeling strips on normal paper
- Accessories, 10 units

##### Technical specifications

###### Labeling sheets for S7-300

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

##### Ordering data

##### Article No.

###### Label sheets

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

Petrol	<b>6ES7392-2AX00-0AA0</b>
Light beige	<b>6ES7392-2BX00-0AA0</b>
Yellow	<b>6ES7392-2CX00-0AA0</b>
Red	<b>6ES7392-2DX00-0AA0</b>

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

Petrol	<b>6ES7392-2AX10-0AA0</b>
Light beige	<b>6ES7392-2BX10-0AA0</b>
Yellow	<b>6ES7392-2CX10-0AA0</b>
Red	<b>6ES7392-2DX10-0AA0</b>