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Overview

- Compact controllers for the low to mid-performance ranges
- Large-scale integration, space-saving, powerful
- With exceptional real-time performance and powerful communication options:
  - Controller with integrated PROFINET IO controller interface for communication between SIMATIC controllers, HMI, programming device or other automation components
- All CPUs can be used in stand-alone mode, in networks and within distributed structures
- Extremely simple installation, programming and operation
- Integrated web server with standard and user-specific web pages
- Data logging functionality for archiving of data at runtime from the user program
- Powerful, integrated technology functions such as counting, measuring, closed-loop control, and motion control
- Integrated digital and analog inputs/outputs
- Flexible expansion facilities
  - Signal boards for direct use in a controller
  - Signal modules for expansion of controllers with input/output channels;
    including an Energy Meter module for recording and preparing energy data
  - Accessories, e.g. power supply, switch module or SIMATIC Memory Card

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Technical specifications

General technical specifications SIMATIC S7-1200	
Degree of protection	IP20 acc. to IEC 529
Ambient temperature	
• Operation (95% humidity)	
- Horizontal installation	-20 ... +60 °C
- Vertical installation	-20 ... +50 °C
• Transportation and storage	-40 ... +70 °C
- With 95% humidity	25 ... 55 °C
Insulation	
• 5/24 V DC circuits	500 V AC test voltage
• 115/230 V AC circuits to ground	1500 V AC test voltage
• 115/230 V AC circuits to 115/230 V AC circuits	1500 V AC test voltage
• 230 V AC circuits to 5/24 V DC circuits	1500 V AC test voltage
• 115 V AC circuits to 5/24 V DC circuits	1500 V AC test voltage
Electromagnetic compatibility	Requirements of the EMC directive
• Noise immunity acc. to EN 50082-2	Test acc. to: IEC 801-2, IEC 801-3, IEC 801-4, EN 50141, EN 50204, IEC 801-5, VDE 0160
• Emitted interference acc. to EN 50081-1 and EN 50081-2	Test according to EN 55011, Class A, Group 1
Mechanical strength	
• Vibrations, test acc. to / tested with	IEC 68, Part 2-6: 10 ... 57 Hz; constant amplitude 0.3 mm; 58 ... 150 Hz; constant acceleration 1 g (mounted on DIN rail) or 2 g (mounted in switchboard); mode of vibration: frequency sweeps with a sweep rate of 1 octave/minute; duration of vibration: 10 frequency sweeps per axis in each direction of the three mutually perpendicular axes
• Shocks, test acc. to / tested with	IEC 68, Part 2-27/half-sine: magnitude of shock 15 g (peak value), duration 11 ms, 6 shocks in each of the three mutually perpendicular axes

General technical data of SIPLUS S7-1200	
Ambient temperature range	-40/-25/-20 ... +55/+60/+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	
Extended range of environmental conditions	
• with reference to ambient temperature, air pressure and altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• At cold restart, min.	0° C
Relative humidity	
• with condensation, max.	100 %; RH incl. bedewing/frost (no commissioning in bedewed state)
Resistance	
• to biologically active substances/ compliance with EN 60721-3-3	Yes; Class 3B2 mold and fungal spores (except fauna); the supplied plug covers must remain in place on the unused interfaces during operation.
• to chemically active substances/ compliance with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray in accordance with EN 60068-2-52 (severity 3); the supplied plug covers must remain in place on the unused interfaces during operation.
• to mechanically active substances, compliance with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; the supplied plug covers must remain in place on unused interfaces during operation.

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CPU 1211C

Overview

- Controller for intro to S7
- Expandable by:
  - 1 signal board (SB), battery board (BB) or communication board (CB)
  - Max. 3 communication modules (CM)

Technical specifications

Article number	**6ES7211-1BE40-0XB0** CPU 1211C, AC/DC/Relay, 6DI/4DQ/2AI	**6ES7211-1AE40-0XB0** CPU 1211C, DC/DC/DC, 6DI/4DQ/2AI	**6ES7211-1HE40-0XB0** CPU 1211C, DC/DC/Relay, 6DI/4DQ/2AI
General information			
Product type designation	CPU 1211C AC/DC/relay	CPU 1211C DC/DC/DC	CPU 1211C DC/DC/relay
Engineering with			
• Programming package	STEP 7 V14 or higher	STEP 7 V14 or higher	STEP 7 V14 or higher
Supply voltage			
Rated value (DC)			
• 24 V DC		Yes	Yes
Rated value (AC)			
• 120 V AC	Yes		
• 230 V AC	Yes		
Encoder supply			
24 V encoder supply			
• 24 V	20.4 to 28.8V	L+ minus 4 V DC min.	L+ minus 4 V DC min.
Power loss			
Power loss, typ.	10 W	8 W	8 W
Memory			
Work memory			
• integrated	50 kbyte	50 kbyte	50 kbyte
Load memory			
• integrated	1 Mbyte	1 Mbyte	1 Mbyte
• Plug-in (SIMATIC Memory Card), max.	with SIMATIC memory card	with SIMATIC memory card	with SIMATIC memory card
Backup			
• without battery	Yes	Yes	Yes
CPU processing times			
for bit operations, typ.	0.08 µs; / instruction	0.08 µs; / instruction	0.08 µs; / instruction
for word operations, typ.	1.7 µs; / instruction	1.7 µs; / instruction	1.7 µs; / instruction
for floating point arithmetic, typ.	2.3 µs; / instruction	2.3 µs; / instruction	2.3 µs; / instruction
Data areas and their retentivity			
Flag			
• Number, max.	4 kbyte; Size of bit memory address area	4 kbyte; Size of bit memory address area	4 kbyte; Size of bit memory address area
Process image			
• Inputs, adjustable	1 kbyte	1 kbyte	1 kbyte
• Outputs, adjustable	1 kbyte	1 kbyte	1 kbyte
Time of day			
Clock			
• Hardware clock (real-time)	Yes	Yes	Yes

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Technical specifications (continued)

Article number	6ES7211-1BE40-0XB0 CPU 1211C, AC/DC/Relay, 6DI/4DQ/2AI	6ES7211-1AE40-0XB0 CPU 1211C, DC/DC/DC, 6DI/4DQ/2AI	6ES7211-1HE40-0XB0 CPU 1211C, DC/DC/Relay, 6DI/4DQ/2AI
Digital inputs			
Number of digital inputs	6; Integrated	6; Integrated	6; Integrated
• of which inputs usable for technological functions	3; HSC (High Speed Counting)	3; HSC (High Speed Counting)	3; HSC (High Speed Counting)
Digital outputs			
Number of digital outputs	4; Relays	4	4; Relays
• of which high-speed outputs		4; 100 kHz Pulse Train Output	
Analog inputs			
Number of analog inputs	2	2	2
Input ranges			
• Voltage	Yes	Yes	Yes
Analog outputs			
Number of analog outputs	0	0	0
1. Interface			
Interface type	PROFINET	PROFINET	PROFINET
Physics	Ethernet	Ethernet	Ethernet
Protocols			
• PROFINET IO Controller	Yes	Yes	Yes
• PROFINET IO Device	Yes	Yes	Yes
• SIMATIC communication	Yes	Yes	Yes
• Open IE communication	Yes	Yes	Yes
• Web server	Yes	Yes	Yes
• Media redundancy	No	No	No
Protocols			
Open IE communication			
• TCP/IP	Yes	Yes	Yes
• ISO-on-TCP (RFC1006)	Yes	Yes	Yes
• UDP	Yes	Yes	Yes
Web server			
• supported	Yes	Yes	Yes
Communication functions			
S7 communication			
• supported	Yes	Yes	Yes
Number of connections			
• overall	16; dynamically	16; dynamically	16; dynamically
Integrated Functions			
Number of counters	3	6	3
Counting frequency (counter) max.	100 kHz	100 kHz	100 kHz
Frequency measurement	Yes	Yes	Yes
controlled positioning	Yes	Yes	Yes
Number of position-controlled positioning axes, max.	8	8	8
Number of positioning axes via pulse-direction interface	Up to 4 with SB 1222	4; With integrated outputs	Up to 4 with SB 1222
PID controller	Yes	Yes	Yes
Number of alarm inputs	4	4	4
Number of pulse outputs		4	
Limit frequency (pulse)		100 kHz	
Ambient conditions			
Ambient temperature during operation			
• min.	-20 °C	-20 °C	-20 °C
• max.	60 °C	60 °C	60 °C
Pollutant concentrations			
• SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free

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Technical specifications (continued)

Article number	6ES7211-1BE40-0XB0 CPU 1211C, AC/DC/Relay, 6DI/4DQ/2AI	6ES7211-1AE40-0XB0 CPU 1211C, DC/DC/DC, 6DI/4DQ/2AI	6ES7211-1HE40-0XB0 CPU 1211C, DC/DC/Relay, 6DI/4DQ/2AI
Configuration			
Programming			
Programming language			
- LAD	Yes	Yes	Yes
- FBD	Yes	Yes	Yes
- SCL	Yes	Yes	Yes
Dimensions			
Width	90 mm	90 mm	90 mm
Height	100 mm	100 mm	100 mm
Depth	75 mm	75 mm	75 mm
Weights			
Weight, approx.	420 g	370 g	380 g

Ordering data

	Article No.
CPU 1211C	
Compact CPU, AC/DC/relay; Integrated program/data memory 50 KB, load memory 1 MB; Wide-range power supply 85 ... 264 V AC; Boolean execution times 0.1 µs per operation; 6 digital inputs, 4 digital outputs (relays), 2 analog inputs; Expandable by up to 3 communication modules and 1 signal board/communication board; Digital inputs can be used as HSC at 100 kHz	**6ES7211-1BE40-0XB0**
Compact CPU, DC/DC/DC; Integrated program/data memory 50 KB, load memory 1 MB; Power supply 24 V DC; Boolean execution times 0.1 µs per operation; 6 digital inputs, 4 digital outputs, 2 analog inputs; Expandable by up to 3 communication modules and 1 signal board/communication board; Digital inputs can be used as HSC at 100 kHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) at 100 kHz	**6ES7211-1AE40-0XB0**
Compact CPU, DC/DC/relay; Integrated program/data memory 50 KB, load memory 1 MB; Power supply 24 V DC; Boolean execution times 0.1 µs per operation; 6 digital inputs, 4 digital outputs (relays), 2 analog inputs; Expandable by up to 3 communication modules and 1 signal board/communication board; Digital inputs can be used as HSC at 100 kHz	**6ES7211-1HE40-0XB0**

	Article No.
SB 1221 signal board	
4 inputs, 5 V DC, 200 kHz	**6ES7221-3AD30-0XB0**
4 inputs, 24 V DC, 200 kHz	**6ES7221-3BD30-0XB0**
SB 1222 signal board	
4 outputs, 5 V DC, 0.1 A, 200 kHz	**6ES7222-1AD30-0XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	**6ES7222-1BD30-0XB0**
SB 1223 signal board	
2 inputs, 24 V DC, IEC type 1 current sinking; 2 x 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	**6ES7223-0BD30-0XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	**6ES7223-3AD30-0XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	**6ES7223-3BD30-0XB0**
SB 1231 signal board	**6ES7231-4HA30-0XB0**
1 analog input, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	
SB 1231 thermocouple signal board	**6ES7231-5QA30-0XB0**
1 input +/- 80 mV, resolution 15 bits + sign, thermocouples type J, K	
SB 1231 RTD signal board	**6ES7231-5PA30-0XB0**
1 input for resistance temperature sensors Pt 100, Pt 200, Pt 500, Pt 1000, resolution 15 bits + sign	
SB 1232 signal board	**6ES7232-4HA30-0XB0**
1 analog output, ±10 V with 12 bits or 0 to 20 mA with 11 bits	
CB 1241 RS 485 communication board	**6ES7241-1CH30-1XB0**
For point-to-point connection with 1 RS 485 interface	

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Ordering data

	Article No.
BB1297 battery board	**6ES7297-0AX30-0XA0**
For long-term backup of real-time clock, can be plugged into the signal board slot; battery (CR1025) is not included in scope of supply	
Digital input simulator SIM 1274 simulator module (optional)	
8 input switches, for CPU 1211C / CPU 1212C	**6ES7274-1XF30-0XA0**
Analog input simulator SIM 1274 simulator module (optional)	
2 potentiometers	**6ES7274-1XA30-0XA0**
SIMATIC Memory Card (optional)	
4 MB	**6ES7954-8LC03-0AA0**
12 MB	**6ES7954-8LE03-0AA0**
24 MB	**6ES7954-8LF03-0AA0**
256 MB	**6ES7954-8LL03-0AA0**
2 GB	**6ES7954-8LP02-0AA0**
32 GB	**6ES7954-8LT03-0AA0**
Terminal block (spare part)	
For CPU 1211C AC/DC/relay	
• For DI, with 14 screws, tin-coated, coded; 4 units	**6ES7292-1AP40-0XA0**
• For DQ, with 8 screws, tin-coated, coded; 4 units	**6ES7292-1AH40-0XA0**
• For AI, with 3 screws, gold-plated; 4 units	**6ES7292-1BC30-0XA0**
For CPU 1211C DC/DC/DC	
• For DI, with 14 screws, tin-coated; 4 units	**6ES7292-1AP30-0XA0**
• For DQ, with 8 screws, tin-coated; 4 units	**6ES7292-1AH30-0XA0**
• For AI, with 3 screws, gold-plated; 4 units	**6ES7292-1BC30-0XA0**
For CPU 1211C DC/DC/relay	
• For DI, with 14 screws, tin-coated; 4 units	**6ES7292-1AP30-0XA0**
• For DQ, with 8 screws, tin-coated, coded; 4 units	**6ES7292-1AH40-0XA0**
• For AI, with 3 screws, gold-plated; 4 units	**6ES7292-1BC30-0XA0**
RJ45 cable grip	
4 units per pack	
Single port	**6ES7290-3AA30-0XA0**
Front flap set (spare part)	
For CPU 1211C/1212C	**6ES7291-1AA30-0XA0**

	Article No.
STEP 7 Professional / Basic V15.1	
Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC	
Requirement: Windows 7 Home Premium SP1 (64-bit) Windows 7 Professional SP1 (64-bit) Windows 7 Enterprise SP1 (64-bit) Windows 7 Ultimate SP1 (64-bit) Windows 10 Home Version 1709, 1803 Windows 10 Professional Version 1709, 1803 Windows 10 Enterprise Version 1709, 1803 Windows 10 Enterprise 2016 LTSB Windows 10 IoT Enterprise 2015 LTSB Windows 10 IoT Enterprise 2016 LTSB Windows Server 2012 R2 StdE (full installation) Windows Server 2016 Standard (full installation)	
Type of delivery: en, de, fr, it, es, zh	
STEP 7 Professional V15.1, floating license	**6ES7822-1AA05-0YA5**
STEP 7 Professional V15.1, floating license software download incl. license key [1]	**6ES7822-1AE05-0YA5**
Email address required for delivery	
STEP 7 Basic V15.1, floating license	**6ES7822-0AA05-0YA5**
STEP 7 Basic V15.1, floating license, software download incl. license key [1]	**6ES7822-0AE05-0YA5**
Email address required for delivery	

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

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CPU 1212C

Overview

- Controller for intro to S7 with basic expansion options
- Expandable by:
  - 1 signal board (SB), battery board (BB) or communication board (CB)
  - 2 signal modules (SM)
  - Max. 3 communication modules (CM)

Technical specifications

Article number	**6ES7212-1BE40-0XB0** CPU 1212C, AC/DC/Relay, 8DI/6DQ/2AI	**6ES7212-1AE40-0XB0** CPU 1212C ,DC/DC/DC, 8DI/6DQ/2AI	**6ES7212-1HE40-0XB0** CPU 1212C, DC/DC/Relay, 8DI/6DQ/2AI
General information			
Product type designation	CPU 1212C AC/DC/relay	CPU 1212C DC/DC/DC	CPU 1212C DC/DC/relay
Engineering with			
• Programming package	STEP 7 V14 or higher	STEP 7 V14 or higher	STEP 7 V14 or higher
Supply voltage			
Rated value (DC)			
• 24 V DC		Yes	Yes
Rated value (AC)			
• 120 V AC	Yes		
• 230 V AC	Yes		
Encoder supply			
24 V encoder supply			
• 24 V	20.4 to 28.8V	L+ minus 4 V DC min.	L+ minus 4 V DC min.
Power loss			
Power loss, typ.	11 W	9 W	9 W
Memory			
Work memory			
• integrated	75 kbyte	75 kbyte	75 kbyte
Load memory			
• integrated	2 Mbyte	2 Mbyte	2 Mbyte
• Plug-in (SIMATIC Memory Card), max.	with SIMATIC memory card	with SIMATIC memory card	with SIMATIC memory card
Backup			
• without battery	Yes	Yes	Yes
CPU processing times			
for bit operations, typ.	0.08 µs; / instruction	0.08 µs; / instruction	0.08 µs; / instruction
for word operations, typ.	1.7 µs; / instruction	1.7 µs; / instruction	1.7 µs; / instruction
for floating point arithmetic, typ.	2.3 µs; / instruction	2.3 µs; / instruction	2.3 µs; / instruction
Data areas and their retentivity			
Flag			
• Number, max.	4 kbyte; Size of bit memory address area	4 kbyte; Size of bit memory address area	4 kbyte; Size of bit memory address area
Process image			
• Inputs, adjustable	1 kbyte	1 kbyte	1 kbyte
• Outputs, adjustable	1 kbyte	1 kbyte	1 kbyte

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Technical specifications (continued)

Article number	6ES7212-1BE40-0XB0 CPU 1212C, AC/DC/Relay, 8DI/6DQ/2AI	6ES7212-1AE40-0XB0 CPU 1212C ,DC/DC/DC, 8DI/6DQ/2AI	6ES7212-1HE40-0XB0 CPU 1212C, DC/DC/Relay, 8DI/6DQ/2AI
Time of day			
Clock			
• Hardware clock (real-time)	Yes	Yes	Yes
Digital inputs			
Number of digital inputs	8; Integrated	8; Integrated	8; Integrated
• of which inputs usable for technological functions	4; HSC (High Speed Counting)	4; HSC (High Speed Counting)	4; HSC (High Speed Counting)
Digital outputs			
Number of digital outputs	6; Relays	6	6; Relays
• of which high-speed outputs		4; 100 kHz Pulse Train Output	
Analog inputs			
Number of analog inputs	2	2	2
Input ranges			
• Voltage	Yes	Yes	Yes
Analog outputs			
Number of analog outputs	0	0	0
1. Interface			
Interface type	PROFINET	PROFINET	PROFINET
Physics	Ethernet	Ethernet	Ethernet
Protocols			
• PROFINET IO Controller	Yes	Yes	Yes
• PROFINET IO Device	Yes	Yes	Yes
• SIMATIC communication	Yes	Yes	Yes
• Open IE communication	Yes	Yes	Yes
• Web server	Yes	Yes	Yes
• Media redundancy	No	No	No
Protocols			
Open IE communication			
• TCP/IP	Yes	Yes	Yes
• ISO-on-TCP (RFC1006)	Yes	Yes	Yes
• UDP	Yes	Yes	Yes
Web server			
• supported	Yes	Yes	Yes
Communication functions			
S7 communication			
• supported	Yes	Yes	Yes
Number of connections			
• overall	16; dynamically	16; dynamically	16; dynamically
Integrated Functions			
Number of counters	4	4	4
Counting frequency (counter) max.	100 kHz	100 kHz	100 kHz
Frequency measurement	Yes	Yes	Yes
controlled positioning	Yes	Yes	Yes
Number of position-controlled positioning axes, max.	8	8	8
Number of positioning axes via pulse-direction interface	Up to 4 with SB 1222	4; With integrated outputs	Up to 4 with SB 1222
PID controller	Yes	Yes	Yes
Number of alarm inputs	4	4	4
Number of pulse outputs		4	
Limit frequency (pulse)		100 kHz	

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Technical specifications (continued)

Article number	6ES7212-1BE40-0XB0 CPU 1212C, AC/DC/Relay, 8DI/6DQ/2AI	6ES7212-1AE40-0XB0 CPU 1212C ,DC/DC/DC, 8DI/6DQ/2AI	6ES7212-1HE40-0XB0 CPU 1212C, DC/DC/Relay, 8DI/6DQ/2AI
Ambient conditions			
Ambient temperature during operation			
• min.	-20 °C	-20 °C	-20 °C
• max.	60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical	60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical	60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical
Pollutant concentrations			
• SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Configuration			
Programming			
Programming language			
- LAD	Yes	Yes	Yes
- FBD	Yes	Yes	Yes
- SCL	Yes	Yes	Yes
Dimensions			
Width	90 mm	90 mm	90 mm
Height	100 mm	100 mm	100 mm
Depth	75 mm	75 mm	75 mm
Weights			
Weight, approx.	425 g	370 g	385 g

Ordering data

	Article No.
CPU 1212C	
Compact CPU, AC/DC/relay; Integrated program/data memory 75 KB, load memory 2 MB; Wide-range power supply 85 ... 264 V AC; Boolean execution times 0.1 µs per operation; 8 digital inputs, 6 digital outputs (relays), 2 analog inputs; Expandable by up to 3 communication modules, 2 signal modules and 1 signal board/communication board; Digital inputs can be used as HSC at 100 kHz	**6ES7212-1BE40-0XB0**
Compact CPU, DC/DC/DC; Integrated program/data memory 75 KB, load memory 2 MB; Power supply 24 V DC; Boolean execution times 0.1 µs per operation; 8 digital inputs, 6 digital outputs, 2 analog inputs; Expandable by up to 3 communication modules, 2 signal modules, and 1 signal board/communication board; Digital inputs can be used as HSC at 100 kHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) at 100 kHz	**6ES7212-1AE40-0XB0**
Compact CPU, DC/DC/relay; Integrated program/data memory 75 KB, load memory 2 MB; power supply 24 V DC; Boolean execution times 0.1 µs per operation; 8 digital inputs, 6 digital outputs (relays), 2 analog inputs; expandable by up to 3 communication modules, 2 signal modules, and 1 signal board/communication board; digital inputs can be used as HSC at 100 kHz	**6ES7212-1HE40-0XB0**
SB 1221 signal board	
4 inputs, 5 V DC, 200 kHz	**6ES7221-3AD30-0XB0**
4 inputs, 24 V DC, 200 kHz	**6ES7221-3BD30-0XB0**
SB 1222 signal board	
4 outputs, 5 V DC, 0.1 A, 200 kHz	**6ES7222-1AD30-0XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	**6ES7222-1BD30-0XB0**
SB 1223 signal board	
2 inputs, 24 V DC, IEC type 1 current sinking; 2 x 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	**6ES7223-0BD30-0XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	**6ES7223-3AD30-0XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	**6ES7223-3BD30-0XB0**
SB 1231 signal board	**6ES7231-4HA30-0XB0**
1 analog input, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	

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Ordering data	Article No.
SB 1231 thermocouple signal board 1 input +/- 80 mV, resolution 15 bits + sign, thermocouples type J, K	**6ES7231-5QA30-0XB0**
SB 1231 RTD signal board 1 input for resistance temperature sensors Pt 100, Pt 200, Pt 500, Pt 1000, resolution 15 bits + sign	**6ES7231-5PA30-0XB0**
SB 1232 signal board 1 analog output, ±10 V with 12 bits or 0 to 20 mA with 11 bits	**6ES7232-4HA30-0XB0**
CB 1241 RS 485 communication board For point-to-point connection, with 1 RS 485 interface	**6ES7241-1CH30-1XB0**
BB1297 battery board For long-term backup of real-time clock, can be plugged into the signal board slot; battery (CR1025) is not included in scope of supply	**6ES7297-0AX30-0XA0**
Digital input simulator SIM 1274 simulator module (optional) 8 input switches, for CPU 1211C / CPU 1212C	**6ES7274-1XF30-0XA0**
Analog input simulator SIM 1274 simulator module (optional) 2 potentiometers	**6ES7274-1XA30-0XA0**
SIMATIC Memory Card (optional)	
4 MB	**6ES7954-8LC03-0AA0**
12 MB	**6ES7954-8LE03-0AA0**
24 MB	**6ES7954-8LF03-0AA0**
256 MB	**6ES7954-8LL03-0AA0**
2 GB	**6ES7954-8LP02-0AA0**
32 GB	**6ES7954-8LT03-0AA0**
Extension cable for two-tier configuration For connecting digital/analog signal modules; length 2 m	**6ES7290-6AA30-0XA0**
Starter box CPU 1212C AC/DC/relay Complete offer SIMATIC S7-1200, starter box, comprising: CPU 1212C AC/DC/relay, simulator, STEP 7 BASIC CD, manual CD, info material, in Systainer	**6ES7212-1BD34-4YB0**
Terminal block (spare part) For CPU 1212C AC/DC/relay	
• For DI, with 14 screws, tin-coated, coded; 4 units	**6ES7292-1AP40-0XA0**
• For DQ, with 8 screws, tin-coated, coded; 4 units	**6ES7292-1AH40-0XA0**
• For AI, with 3 screws, gold-plated; 4 units	**6ES7292-1BC30-0XA0**

	Article No.
Terminal block (spare part) (cont.) For CPU 1212C DC/DC/DC	
• For DI, with 14 screws, tin-coated; 4 units	**6ES7292-1AP30-0XA0**
• For DQ, with 8 screws, tin-coated; 4 units	**6ES7292-1AH30-0XA0**
• For AI, with 3 screws, gold-plated; 4 units	**6ES7292-1BC30-0XA0**
For CPU 1212C DC/DC/relay	
• For DI, with 14 screws, tin-coated; 4 units	**6ES7292-1AP30-0XA0**
• For DQ, with 8 screws, tin-coated, coded; 4 units	**6ES7292-1AH40-0XA0**
• For AI, with 3 screws, gold-plated; 4 units	**6ES7292-1BC30-0XA0**
RJ45 cable grip 4 units per pack	
Single port	**6ES7290-3AA30-0XA0**
Front flap set (spare part)	
For CPU 1211C/1212C	**6ES7291-1AA30-0XA0**
STEP 7 Professional / Basic V15.1 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Home Premium SP1 (64-bit) Windows 7 Professional SP1 (64-bit) Windows 7 Enterprise SP1 (64-bit) Windows 7 Ultimate SP1 (64-bit) Windows 10 Home Version 1709, 1803 Windows 10 Professional Version 1709, 1803 Windows 10 Enterprise Version 1709, 1803 Windows 10 Enterprise 2016 LTSB Windows 10 IoT Enterprise 2015 LTSB Windows 10 IoT Enterprise 2016 LTSB Windows Server 2012 R2 StdE (full installation) Windows Server 2016 Standard (full installation) Type of delivery: en, de, fr, it, es, zh	
STEP 7 Professional V15.1, floating license	**6ES7822-1AA05-0YA5**
STEP 7 Professional V15.1, floating license software download incl. license key [1] Email address required for delivery	**6ES7822-1AE05-0YA5**
STEP 7 Basic V15.1, floating license	**6ES7822-0AA05-0YA5**
STEP 7 Basic V15.1, floating license, software download incl. license key [1] Email address required for delivery	**6ES7822-0AE05-0YA5**

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

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CPU 1214C

Overview

- Controller for intro to S7 with flexible expansion options
- Expandable by:
  - 1 signal board (SB), battery board (BB) or communication board (CB)
  - 8 signal modules (SM)
  - Max. 3 communication modules (CM)

Technical specifications

Article number	**6ES7214-1BG40-0XB0** CPU 1214C, AC/DC/Relay, 14DI/10DQ/2AI	**6ES7214-1AG40-0XB0** CPU 1214C, DC/DC/DC, 14DI/10DQ/2AI	**6ES7214-1HG40-0XB0** CPU 1214C, DC/DC/Relay, 14DI/10DQ/2AI
General information			
Product type designation	CPU 1214C AC/DC/relay	CPU 1214C DC/DC/DC	CPU 1214C DC/DC/relay
Engineering with			
• Programming package	STEP 7 V14 or higher	STEP 7 V14 or higher	STEP 7 V14 or higher
Supply voltage			
Rated value (DC)			
• 24 V DC		Yes	Yes
Rated value (AC)			
• 120 V AC	Yes		
• 230 V AC	Yes		
Encoder supply			
24 V encoder supply			
• 24 V	20.4 to 28.8V	L+ minus 4 V DC min.	L+ minus 4 V DC min.
Power loss			
Power loss, typ.	14 W	12 W	12 W
Memory			
Work memory			
• integrated	100 kbyte	100 kbyte	100 kbyte
Load memory			
• integrated	4 Mbyte	4 Mbyte	4 Mbyte
• Plug-in (SIMATIC Memory Card), max.	with SIMATIC memory card	with SIMATIC memory card	with SIMATIC memory card
Backup			
• without battery	Yes	Yes	Yes
CPU processing times			
for bit operations, typ.	0.08 µs; / instruction	0.08 µs; / instruction	0.08 µs; / instruction
for word operations, typ.	1.7 µs; / instruction	1.7 µs; / instruction	1.7 µs; / instruction
for floating point arithmetic, typ.	2.3 µs; / instruction	2.3 µs; / instruction	2.3 µs; / instruction
Data areas and their retentivity			
Flag			
• Number, max.	8 kbyte; Size of bit memory address area	8 kbyte; Size of bit memory address area	8 kbyte; Size of bit memory address area
Process image			
• Inputs, adjustable	1 kbyte	1 kbyte	1 kbyte
• Outputs, adjustable	1 kbyte	1 kbyte	1 kbyte
Time of day			
Clock			
• Hardware clock (real-time)	Yes	Yes	Yes

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Technical specifications (continued)

Article number	6ES7214-1BG40-0XB0 CPU 1214C, AC/DC/Relay, 14DI/10DQ/2AI	6ES7214-1AG40-0XB0 CPU 1214C, DC/DC/DC, 14DI/10DQ/2AI	6ES7214-1HG40-0XB0 CPU 1214C, DC/DC/Relay, 14DI/10DQ/2AI
Digital inputs			
Number of digital inputs	14; Integrated	14; Integrated	14; Integrated
• of which inputs usable for technological functions	6; HSC (High Speed Counting)	6; HSC (High Speed Counting)	6; HSC (High Speed Counting)
Digital outputs			
Number of digital outputs	10; Relays	10	10; Relays
• of which high-speed outputs		4; 100 kHz Pulse Train Output	
Analog inputs			
Number of analog inputs	2	2	2
Input ranges			
• Voltage	Yes	Yes	Yes
Analog outputs			
Number of analog outputs	0	0	0
1. Interface			
Interface type	PROFINET	PROFINET	PROFINET
Physics	Ethernet	Ethernet	Ethernet
Protocols			
• PROFINET IO Controller	Yes	Yes	Yes
• PROFINET IO Device	Yes	Yes	Yes
• SIMATIC communication	Yes	Yes	Yes
• Open IE communication	Yes	Yes	Yes
• Web server	Yes	Yes	Yes
• Media redundancy	No	No	No
Protocols			
Open IE communication			
• TCP/IP	Yes	Yes	Yes
• ISO-on-TCP (RFC1006)	Yes	Yes	Yes
• UDP	Yes	Yes	Yes
Web server			
• supported	Yes	Yes	Yes
Communication functions			
S7 communication			
• supported	Yes	Yes	Yes
Number of connections			
• overall	16; dynamically	16; dynamically	16; dynamically
Integrated Functions			
Number of counters	6	6	6
Counting frequency (counter) max.	100 kHz	100 kHz	100 kHz
Frequency measurement	Yes	Yes	Yes
controlled positioning	Yes	Yes	Yes
Number of position-controlled positioning axes, max.	8	8	8
Number of positioning axes via pulse-direction interface	Up to 4 with SB 1222	4; With integrated outputs	Up to 4 with SB 1222
PID controller	Yes	Yes	Yes
Number of alarm inputs	4	4	4
Number of pulse outputs		4	
Limit frequency (pulse)		100 kHz	
Ambient conditions			
Ambient temperature during operation			
• min.	-20 °C	-20 °C	-20 °C
• max.	60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical	60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical	60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical
Pollutant concentrations			
• SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free

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Technical specifications (continued)

Article number	6ES7214-1BG40-0XB0 CPU 1214C, AC/DC/Relay, 14DI/10DQ/2AI	6ES7214-1AG40-0XB0 CPU 1214C, DC/DC/DC, 14DI/10DQ/2AI	6ES7214-1HG40-0XB0 CPU 1214C, DC/DC/Relay, 14DI/10DQ/2AI
Configuration			
Programming			
Programming language			
- LAD	Yes	Yes	Yes
- FBD	Yes	Yes	Yes
- SCL	Yes	Yes	Yes
Dimensions			
Width	110 mm	110 mm	110 mm
Height	100 mm	100 mm	100 mm
Depth	75 mm	75 mm	75 mm
Weights			
Weight, approx.	455 g	415 g	435 g

Ordering data

	Article No.
CPU 1214C	
Compact CPU, AC/DC/relay; Integrated program/data memory 100 KB, load memory 2 MB; Wide-range power supply 85 ... 264 V AC; Boolean execution times 0.1 µs per operation; 14 digital inputs, 10 digital outputs (relays), 2 analog inputs; Expandable by up to 3 communication modules, 8 signal modules and 1 signal board/communication board; Digital inputs can be used as HSC at 100 kHz	**6ES7214-1BG40-0XB0**
Compact CPU, DC/DC/DC; Integrated program/data memory 100 KB, load memory 2 MB; Power supply 24 V DC; Boolean execution times 0.1 µs per operation; 14 digital inputs, 10 digital outputs, 2 analog inputs; expandable by up to 3 communication modules, 8 signal modules, and 1 signal board/communication board; Digital inputs can be used as HSC at 100 kHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) at 100 kHz	**6ES7214-1AG40-0XB0**
Compact CPU, DC/DC/relay; Integrated program/data memory 100 KB, load memory 2 MB; Power supply 24 V DC; Boolean execution times 0.1 µs per operation; 14 digital inputs, 10 digital outputs (relays), 2 analog inputs; Expandable by up to 3 communication modules, 8 signal modules, and 1 signal board/communication board; Digital inputs can be used as HSC at 100 kHz	**6ES7214-1HG40-0XB0**

	Article No.
SB 1221 signal board	
4 inputs, 5 V DC, 200 kHz	**6ES7221-3AD30-0XB0**
4 inputs, 24 V DC, 200 kHz	**6ES7221-3BD30-0XB0**
SB 1222 signal board	
4 outputs, 5 V DC, 0.1 A, 200 kHz	**6ES7222-1AD30-0XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	**6ES7222-1BD30-0XB0**
SB 1223 signal board	
2 inputs, 24 V DC, IEC type 1 current sinking; 2 x 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	**6ES7223-0BD30-0XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	**6ES7223-3AD30-0XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	**6ES7223-3BD30-0XB0**
SB 1231 signal board	**6ES7231-4HA30-0XB0**
1 analog input, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	
SB 1231 thermocouple signal board	**6ES7231-5QA30-0XB0**
1 input +/- 80 mV, resolution 15 bits + sign, thermocouples type J, K	
SB 1231 RTD signal board	**6ES7231-5PA30-0XB0**
1 input for resistance temperature sensors Pt 100, Pt 200, Pt 500, Pt 1000, resolution 15 bits + sign	
SB 1232 signal board	**6ES7232-4HA30-0XB0**
1 analog output, ±10 V with 12 bits or 0 to 20 mA with 11 bits	
CB 1241 RS 485 communication board	**6ES7241-1CH30-1XB0**
For point-to-point connection, with 1 RS 485 interface	

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Ordering data

	Article No.
BB1297 battery board For long-term backup of real-time clock, can be plugged into the signal board slot; battery (CR1025) is not included in scope of supply	**6ES7297-0AX30-0XA0**
Digital input simulator SIM 1274 simulator module (optional) 14 input switches, for CPU 1214C/1215C	**6ES7274-1XH30-0XA0**
Analog input simulator SIM 1274 simulator module (optional) 2 potentiometers	**6ES7274-1XA30-0XA0**
SIMATIC Memory Card (optional)	
4 MB	**6ES7954-8LC03-0AA0**
12 MB	**6ES7954-8LE03-0AA0**
24 MB	**6ES7954-8LF03-0AA0**
256 MB	**6ES7954-8LL03-0AA0**
2 GB	**6ES7954-8LP02-0AA0**
32 GB	**6ES7954-8LT03-0AA0**
Extension cable for two-tier configuration For connecting digital/analog signal modules; length 2 m	**6ES7290-6AA30-0XA0**
Terminal block (spare part)	
For CPU 1214C AC/DC/relay	
• For DI, with 20 screws, tin-coated, coded; 4 units	**6ES7292-1AV40-0XA0**
• For DQ, with 12 screws, tin-coated, coded; 4 units	**6ES7292-1AM40-0XA0**
• For AI, with 3 screws, gold-plated; 4 units	**6ES7292-1BC30-0XA0**
For CPU 1214C DC/DC/DC	
• For DI, with 20 screws, tin-coated; 4 units	**6ES7292-1AV30-0XA0**
• For DQ, with 12 screws, tin-coated; 4 units	**6ES7292-1AM30-0XA0**
• For AI, with 3 screws, gold-plated; 4 units	**6ES7292-1BC30-0XA0**
For CPU 1214C DC/DC/relay	
• For DI, with 20 screws, tin-coated; 4 units	**6ES7292-1AV30-0XA0**
• For DQ, with 12 screws, tin-coated, coded; 4 units	**6ES7292-1AM40-0XA0**
• For AI, with 3 screws, gold-plated; 4 units	**6ES7292-1BC30-0XA0**

	Article No.
RJ45 cable grip 4 units per pack	
Single port	**6ES7290-3AA30-0XA0**
Front flap set (spare part)	
For CPU 1214C	**6ES7291-1AB30-0XA0**
STEP 7 Professional / Basic V15.1 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Home Premium SP1 (64-bit) Windows 7 Professional SP1 (64-bit) Windows 7 Enterprise SP1 (64-bit) Windows 7 Ultimate SP1 (64-bit) Windows 10 Home Version 1709, 1803 Windows 10 Professional Version 1709, 1803 Windows 10 Enterprise Version 1709, 1803 Windows 10 Enterprise 2016 LTSB Windows 10 IoT Enterprise 2015 LTSB Windows 10 IoT Enterprise 2016 LTSB Windows Server 2012 R2 StdE (full installation) Windows Server 2016 Standard (full installation) Type of delivery: en, de, fr, it, es, zh	
STEP 7 Professional V15.1, floating license	**6ES7822-1AA05-0YA5**
STEP 7 Professional V15.1, floating license software download incl. license key [1] Email address required for delivery	**6ES7822-1AE05-0YA5**
STEP 7 Basic V15.1, floating license	**6ES7822-0AA05-0YA5**
STEP 7 Basic V15.1, floating license, software download incl. license key [1] Email address required for delivery	**6ES7822-0AE05-0YA5**

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

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CPU 1215C

Overview

- Powerful controller with enhanced networking option
- Expandable by:
  - 1 signal board (SB), battery board (BB) or communication board (CB)
  - 8 signal modules (SM)
  - Max. 3 communication modules (CM)

Technical specifications

Article number	**6ES7215-1BG40-0XB0** CPU 1215C, AC/DC/RLY, 14DI/10DQ/2AI/2AQ	**6ES7215-1AG40-0XB0** CPU 1215C, DC/DC/DC, 14DI/10DQ/2AI/2AQ	**6ES7215-1HG40-0XB0** CPU 1215C, DC/DC/RLY, 14DI/10DQ/2AI/2AQ
General information			
Product type designation	CPU 1215C AC/DC/relay	CPU 1215C DC/DC/DC	CPU 1215C DC/DC/relay
Engineering with			
• Programming package	STEP 7 V14 or higher	STEP 7 V14 or higher	STEP 7 V14 or higher
Supply voltage			
Rated value (DC)			
• 24 V DC		Yes	Yes
Rated value (AC)			
• 120 V AC	Yes		
• 230 V AC	Yes		
Encoder supply			
24 V encoder supply			
• 24 V	20.4 to 28.8V	L+ minus 4 V DC min.	L+ minus 4 V DC min.
Power loss			
Power loss, typ.	14 W	12 W	12 W
Memory			
Work memory			
• integrated	125 kbyte	125 kbyte	125 kbyte
Load memory			
• integrated	4 Mbyte	4 Mbyte	4 Mbyte
• Plug-in (SIMATIC Memory Card), max.	with SIMATIC memory card	with SIMATIC memory card	with SIMATIC memory card
Backup			
• without battery	Yes	Yes	Yes
CPU processing times			
for bit operations, typ.	0.08 µs; / instruction	0.08 µs; / instruction	0.08 µs; / instruction
for word operations, typ.	1.7 µs; / instruction	1.7 µs; / instruction	1.7 µs; / instruction
for floating point arithmetic, typ.	2.3 µs; / instruction	2.3 µs; / instruction	2.3 µs; / instruction
Data areas and their retentivity			
Flag			
• Number, max.	8 kbyte; Size of bit memory address area	8 kbyte; Size of bit memory address area	8 kbyte; Size of bit memory address area
Process image			
• Inputs, adjustable	1 kbyte	1 kbyte	1 kbyte
• Outputs, adjustable	1 kbyte	1 kbyte	1 kbyte
Time of day			
Clock			
• Hardware clock (real-time)	Yes	Yes	Yes

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Technical specifications (continued)

Article number	6ES7215-1BG40-0XB0 CPU 1215C, AC/DC/RLY, 14DI/10DQ/2AI/2AQ	6ES7215-1AG40-0XB0 CPU 1215C, DC/DC/DC, 14DI/10DQ/2AI/2AQ	6ES7215-1HG40-0XB0 CPU 1215C, DC/DC/RLY, 14DI/10DQ/2AI/2AQ
Digital inputs			
Number of digital inputs	14; Integrated	14; Integrated	14; Integrated
• of which inputs usable for technological functions	6; HSC (High Speed Counting)	6; HSC (High Speed Counting)	6; HSC (High Speed Counting)
Digital outputs			
Number of digital outputs	10; Relays	10	10; Relays
• of which high-speed outputs		4; 100 kHz Pulse Train Output	
Analog inputs			
Number of analog inputs	2	2	2
Input ranges			
• Voltage	Yes	Yes	Yes
Analog outputs			
Number of analog outputs	2	2	2
Output ranges, current			
• 0 to 20 mA	Yes	Yes	Yes
1. Interface			
Interface type	PROFINET	PROFINET	PROFINET
Physics	Ethernet	Ethernet	Ethernet
Protocols			
• PROFINET IO Controller	Yes	Yes	Yes
• PROFINET IO Device	Yes	Yes	Yes
• SIMATIC communication	Yes	Yes	Yes
• Open IE communication	Yes	Yes	Yes
• Web server	Yes	Yes	Yes
• Media redundancy	Yes; as MRP client	Yes; as MRP client	Yes; as MRP client
Protocols			
Open IE communication			
• TCP/IP	Yes	Yes	Yes
• ISO-on-TCP (RFC1006)	Yes	Yes	Yes
• UDP	Yes	Yes	Yes
Web server			
• supported	Yes	Yes	Yes
Communication functions			
S7 communication			
• supported	Yes	Yes	Yes
Number of connections			
• overall	16; dynamically	16; dynamically	16; dynamically
Integrated Functions			
Number of counters	6	6	6
Counting frequency (counter) max.	100 kHz	100 kHz	100 kHz
Frequency measurement	Yes	Yes	Yes
controlled positioning	Yes	Yes	Yes
Number of position-controlled positioning axes, max.	8	8	8
Number of positioning axes via pulse-direction interface	Up to 4 with SB 1222	4; With integrated outputs	Up to 4 with SB 1222
PID controller	Yes	Yes	Yes
Number of alarm inputs	4	4	4
Number of pulse outputs		4	
Limit frequency (pulse)		100 kHz	
Ambient conditions			
Ambient temperature during operation			
• min.	-20 °C	-20 °C	-20 °C
• max.	60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical	60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical	60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical
Pollutant concentrations			
• SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free

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Technical specifications (continued)

Article number	6ES7215-1BG40-0XB0 CPU 1215C, AC/DC/RLY, 14DI/10DQ/2AI/2AQ	6ES7215-1AG40-0XB0 CPU 1215C, DC/DC/DC, 14DI/10DQ/2AI/2AQ	6ES7215-1HG40-0XB0 CPU 1215C, DC/DC/RLY, 14DI/10DQ/2AI/2AQ
Configuration			
Programming			
Programming language			
- LAD	Yes	Yes	Yes
- FBD	Yes	Yes	Yes
- SCL	Yes	Yes	Yes
Dimensions			
Width	130 mm	130 mm	130 mm
Height	100 mm	100 mm	100 mm
Depth	75 mm	75 mm	75 mm
Weights			
Weight, approx.	550 g	500 g	585 g

Ordering data

	Article No.
CPU 1215C	
Compact CPU, AC/DC/relay; Integrated program/data memory 125 KB, load memory 4 MB; Wide-range power supply 85 ... 264 V AC; Boolean execution times 0.085 µs per operation; 14 digital inputs, 10 digital outputs (relays), 2 analog inputs, 2 analog outputs; Expandable by up to 3 communication modules, 8 signal modules and 1 signal board/communication board; Digital inputs can be used as HSC at 100 kHz	**6ES7215-1BG40-0XB0**
Compact CPU, DC/DC/DC; Integrated program/data memory 125 KB, load memory 4 MB; Power supply 24 V DC; Boolean execution times 0.085 µs per operation; 14 digital inputs, 10 digital outputs, 2 analog inputs, 2 analog outputs; Expandable by up to 3 communication modules, 8 signal modules, and 1 signal board/communication board; Digital inputs can be used as HSC at 100 kHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) at 100 kHz	**6ES7215-1AG40-0XB0**
Compact CPU, DC/DC/relay; Integrated program/data memory 125 KB, load memory 4 MB; Power supply 24 V DC; Boolean execution times 0.085 µs per operation; 14 digital inputs, 10 digital outputs (relays), 2 analog inputs, 2 analog outputs; Expandable by up to 3 communication modules, 8 signal modules, and 1 signal board/communication board; Digital inputs can be used as HSC at 100 kHz	**6ES7215-1HG40-0XB0**

	Article No.
SB 1221 signal board	
4 inputs, 5 V DC, 200 kHz	**6ES7221-3AD30-0XB0**
4 inputs, 24 V DC, 200 kHz	**6ES7221-3BD30-0XB0**
SB 1222 signal board	
4 outputs, 5 V DC, 0.1 A, 200 kHz	**6ES7222-1AD30-0XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	**6ES7222-1BD30-0XB0**
SB 1223 signal board	
2 inputs, 24 V DC, IEC type 1 current sinking; 2 x 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	**6ES7223-0BD30-0XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	**6ES7223-3AD30-0XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	**6ES7223-3BD30-0XB0**
SB 1231 signal board	**6ES7231-4HA30-0XB0**
1 analog input, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	
SB 1231 thermocouple signal board	**6ES7231-5QA30-0XB0**
1 input +/- 80 mV, resolution 15 bits + sign, thermocouples type J, K	
SB 1231 RTD signal board	**6ES7231-5PA30-0XB0**
1 input for resistance temperature sensors Pt 100, Pt 200, Pt 500, Pt 1000, resolution 15 bits + sign	
SB 1232 signal board	**6ES7232-4HA30-0XB0**
1 analog output, ±10 V with 12 bits or 0 to 20 mA with 11 bits	
CB 1241 RS 485 communication board	**6ES7241-1CH30-1XB0**
For point-to-point connection, with 1 RS 485 interface	
BB 1297 battery board	**6ES7297-0AX30-0XA0**
For long-term backup of real-time clock; can be plugged into the signal board slot; battery (CR 1025) is not included	

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Ordering data

	Article No.
Digital input simulator SIM 1274 simulator module (optional)	
14 input switches, for CPU 1214C/1215C	**6ES7274-1XH30-0XA0**
Analog input simulator SIM 1274 simulator module (optional)	
2 potentiometers	**6ES7274-1XA30-0XA0**
SIMATIC Memory Card (optional)	
4 MB	**6ES7954-8LC03-0AA0**
12 MB	**6ES7954-8LE03-0AA0**
24 MB	**6ES7954-8LF03-0AA0**
256 MB	**6ES7954-8LL03-0AA0**
2 GB	**6ES7954-8LP02-0AA0**
32 GB	**6ES7954-8LT03-0AA0**
Extension cable for two-tier configuration	**6ES7290-6AA30-0XA0**
For connecting digital/analog signal modules; length 2 m	
Terminal block (spare part)	
For CPU 1215C AC/DC/relay	
• For DI, with 20 screws, tin-coated, coded; 4 units	**6ES7292-1AV40-0XA0**
• For DQ, with 12 screws, tin-coated, coded; 4 units	**6ES7292-1AM40-0XA0**
• For analog units, with 6 screws, gold-plated; 4 units	**6ES7292-1BF30-0XB0**
For CPU 1215C DC/DC/DC	
• For DI, with 20 screws, tin-coated; 4 units	**6ES7292-1AV30-0XA0**
• For DQ, with 12 screws, tin-coated; 4 units	**6ES7292-1AM30-0XA0**
• For analog units, with 6 screws, gold-plated; 4 units	**6ES7292-1BF30-0XB0**
For CPU 1215C DC/DC/relay	
• For DI, with 20 screws, tin-coated; 4 units	**6ES7292-1AV30-0XA0**
• For DQ, with 12 screws, tin-coated, coded; 4 units	**6ES7292-1AM40-0XA0**
• For analog units, with 6 screws, gold-plated; 4 units	**6ES7292-1BF30-0XB0**

	Article No.
Front flap set (spare part)	
For CPU 1215C	**6ES7291-1AC30-0XA0**
RJ45 cable grip	
4 units per pack	
Dual port	**6ES7290-3AB30-0XA0**
STEP 7 Professional / Basic V15.1	
Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC	
Requirement: Windows 7 Home Premium SP1 (64-bit) Windows 7 Professional SP1 (64-bit) Windows 7 Enterprise SP1 (64-bit) Windows 7 Ultimate SP1 (64-bit) Windows 10 Home Version 1709, 1803 Windows 10 Professional Version 1709, 1803 Windows 10 Enterprise Version 1709, 1803 Windows 10 Enterprise 2016 LTSB Windows 10 IoT Enterprise 2015 LTSB Windows 10 IoT Enterprise 2016 LTSB Windows Server 2012 R2 StdE (full installation) Windows Server 2016 Standard (full installation)	
Type of delivery: en, de, fr, it, es, zh	
STEP 7 Professional V15.1, floating license	**6ES7822-1AA05-0YA5**
STEP 7 Professional V15.1, floating license software download incl. license key [1]	**6ES7822-1AE05-0YA5**
Email address required for delivery	
STEP 7 Basic V15.1, floating license	**6ES7822-0AA05-0YA5**
STEP 7 Basic V15.1, floating license, software download incl. license key [1]	**6ES7822-0AE05-0YA5**
Email address required for delivery	

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

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CPU 1217C

Overview

- Powerful controller for extremely fast signal processing
- Expandable by:
  - 1 signal board (SB), battery board (BB) or communication board (CB)
  - 8 signal modules (SM)
  - Max. 3 communication modules (CM)

Technical specifications

Article number	**6ES7217-1AG40-0XB0** CPU 1217C, DC/DC/DC, 14DI/10DQ/2AI/2AQ
General information	
Product type designation	CPU 1217C DC/DC/DC
Engineering with	
• Programming package	STEP 7 V14 or higher
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Encoder supply	
24 V encoder supply	
• 24 V	L+ minus 4 V DC min.
Power loss	
Power loss, typ.	12 W
Memory	
Work memory	
• integrated	150 kbyte
Load memory	
• integrated	4 Mbyte
• Plug-in (SIMATIC Memory Card), max.	with SIMATIC memory card
Backup	
• without battery	Yes
CPU processing times	
for bit operations, typ.	0.08 µs; / instruction
for word operations, typ.	1.7 µs; / instruction
for floating point arithmetic, typ.	2.3 µs; / Operation
Data areas and their retentivity	
Flag	
• Number, max.	8 kbyte; Size of bit memory address area
Process image	
• Inputs, adjustable	1 kbyte
• Outputs, adjustable	1 kbyte

Article number	**6ES7217-1AG40-0XB0** CPU 1217C, DC/DC/DC, 14DI/10DQ/2AI/2AQ
Time of day	
Clock	
• Hardware clock (real-time)	Yes
Digital inputs	
Number of digital inputs	14; Integrated
• of which inputs usable for technological functions	6; HSC (High Speed Counting)
Digital outputs	
Number of digital outputs	10
• of which high-speed outputs	4; 100 kHz Pulse Train Output
Analog inputs	
Number of analog inputs	2
Input ranges	
• Voltage	Yes
Analog outputs	
Number of analog outputs	2
Output ranges, current	
• 0 to 20 mA	Yes
1. Interface	
Interface type	PROFINET
Physics	Ethernet
Protocols	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	Yes; as MRP client

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Technical specifications (continued)

Article number	**6ES7217-1AG40-0XB0** CPU 1217C, DC/DC/DC, 14DI/10DQ/2AI/2AQ
Protocols	
Open IE communication	
• TCP/IP	Yes
• ISO-on-TCP (RFC1006)	Yes
• UDP	Yes
Web server	
• supported	Yes
Communication functions	
S7 communication	
• supported	Yes
Number of connections	
• overall	16; dynamically
Integrated Functions	
Number of counters	6
Counting frequency (counter) max.	1 MHz
Frequency measurement	Yes
controlled positioning	Yes
Number of position-controlled positioning axes, max.	8
Number of positioning axes via pulse-direction interface	4; With integrated outputs
PID controller	Yes
Number of alarm inputs	4
Number of pulse outputs	4
Limit frequency (pulse)	1 MHz
Ambient conditions	
Ambient temperature during operation	
• min.	-20 °C
• max.	60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical
Pollutant concentrations	
• SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Configuration	
Programming	
Programming language	
- LAD	Yes
- FBD	Yes
- SCL	Yes
Dimensions	
Width	150 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	530 g

Ordering data

	Article No.
CPU 1217C	
Compact CPU, DC/DC/DC; Integrated program/data memory 150 KB, load memory 4 MB; Power supply 24 V DC; Boolean execution times 0.085 µs per operation; 14 digital inputs (10 digital 24 V DC inputs, 4 digital 1.5 V DC differential inputs), 10 digital outputs (6 digital 24 V DC outputs, 4 digital 1.5 V DC differential outputs), 2 analog inputs, 2 analog outputs; Expandable by up to 3 communication modules, 8 signal modules, and 1 signal board/communication board; Digital inputs can be used as HSC at 1 MHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) at 100 kHz	**6ES7217-1AG40-0XB0**
SB 1221 signal board	
4 inputs, 5 V DC, 200 kHz	**6ES7221-3AD30-0XB0**
4 inputs, 24 V DC, 200 kHz	**6ES7221-3BD30-0XB0**
SB 1222 signal board	
4 outputs, 5 V DC, 0.1 A, 200 kHz	**6ES7222-1AD30-0XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	**6ES7222-1BD30-0XB0**
SB 1223 signal board	
2 inputs, 24 V DC, IEC type 1 current sinking; 2 x 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	**6ES7223-0BD30-0XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	**6ES7223-3AD30-0XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	**6ES7223-3BD30-0XB0**
SB 1231 signal board	**6ES7231-4HA30-0XB0**
1 analog input, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	
SB 1231 thermocouple signal board	**6ES7231-5QA30-0XB0**
1 input +/- 80 mV, resolution 15 bits + sign, thermocouples type J, K	
SB 1231 RTD signal board	**6ES7231-5PA30-0XB0**
1 input for resistance temperature sensors Pt 100, Pt 200, Pt 500, Pt 1000, resolution 15 bits + sign	
SB 1232 signal board	**6ES7232-4HA30-0XB0**
1 analog output, ±10 V with 12 bits or 0 to 20 mA with 11 bits	

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CPU 1217C

3

Ordering data	Article No.
CB 1241 RS 485 communication board	**6ES7241-1CH30-1XB0**
For point-to-point connection, with 1 RS 485 interface	
BB 1297 battery board	**6ES7297-0AX30-0XA0**
For long-term backup of real-time clock; can be plugged into the signal board slot; battery (CR 1025) is not included	
Digital input simulator SIM 1274 simulator module (optional)	
14 input switches, for CPU 1217C	**6ES7274-1XK30-0XA0**
Analog input simulator SIM 1274 simulator module (optional)	
2 potentiometers	**6ES7274-1XA30-0XA0**
SIMATIC Memory Card (optional)	
4 MB	**6ES7954-8LC03-0AA0**
12 MB	**6ES7954-8LE03-0AA0**
24 MB	**6ES7954-8LF03-0AA0**
256 MB	**6ES7954-8LL03-0AA0**
2 GB	**6ES7954-8LP02-0AA0**
32 GB	**6ES7954-8LT03-0AA0**
Extension cable for two-tier configuration	**6ES7290-6AA30-0XA0**
For connecting digital/analog signal modules; length 2 m	
Terminal block (spare part)	
For CPU 1217C	
• For DI, with 10 screws, tin-coated; 4 units	**6ES7292-1AK30-0XA0**
• For DI, with 10 screws, tin-coated; 4 units	**6ES7292-1AR30-0XA0**
• For DQ, with 18 screws, tin-coated; 4 units	**6ES7292-1AT30-0XA0**
• For analog units, with 6 screws, gold-plated; 4 units	**6ES7292-1BF30-0XB0**
Front flap set (spare part)	
For CPU 1217C	**6ES7291-1AD30-0XA0**
RJ45 cable grip	
4 units per pack	
Dual port	**6ES7290-3AB30-0XA0**

	Article No.
STEP 7 Professional / Basic V15.1	
Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC	
Requirement: Windows 7 Home Premium SP1 (64-bit) Windows 7 Professional SP1 (64-bit) Windows 7 Enterprise SP1 (64-bit) Windows 7 Ultimate SP1 (64-bit) Windows 10 Home Version 1709, 1803 Windows 10 Professional Version 1709, 1803 Windows 10 Enterprise Version 1709, 1803 Windows 10 Enterprise 2016 LTSB Windows 10 IoT Enterprise 2015 LTSB Windows 10 IoT Enterprise 2016 LTSB Windows Server 2012 R2 StdE (full installation) Windows Server 2016 Standard (full installation)	
Type of delivery: en, de, fr, it, es, zh	
STEP 7 Professional V15.1, floating license	**6ES7822-1AA05-0YA5**
STEP 7 Professional V15.1, floating license software download incl. license key [1] Email address required for delivery	**6ES7822-1AE05-0YA5**
STEP 7 Basic V15.1, floating license	**6ES7822-0AA05-0YA5**
STEP 7 Basic V15.1, floating license, software download incl. license key [1] Email address required for delivery	**6ES7822-0AE05-0YA5**

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

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Overview

- The clever compact solution
- With 10 integrated I/Os
- Expandable with:
  - 1 signal board (SB) or communication board (CB); not possible with: 6AG1211-1AE31-2XB0, 6AG1211-1BE31-2XB0, 6AG1211-1HE31-2XB0
  - Max. 3 communication modules (CM)

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	**6AG1211-1AE31-4XB0**
Based on	**6ES7211-1AE31-0XB0** SIPLUS S7-1200 CPU1211 DC/DC/DC
Ambient conditions	
Ambient temperature during operation	
• min.	-20 °C; = Tmin; Startup @ 0 °C
• max.	60 °C; = Tmax
• At cold restart, min.	0 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *

Article number	**6AG1211-1AE31-4XB0**
Based on	**6ES7211-1AE31-0XB0** SIPLUS S7-1200 CPU1211 DC/DC/DC
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A
Configuration	
Programming	
Programming language	
- LAD	Yes
- FBD	Yes
- SCL	Yes
Dimensions	
Width	90 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	370 g

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Technical specifications (continued)

Article number	**6AG1211-1BE31-4XB0**	**6AG1211-1BE31-2XB0**
Based on	**6ES7211-1BE31-0XB0**	**6ES7211-1BE31-0XB0**
	SIPLUS S7-1200 CPU1211 AC/DC/RLY	SIPLUS S7-1200 CPU1211 AC/DC/RLY
Ambient conditions		
Ambient temperature during operation		
• min.	-20 °C; = Tmin; Startup @ 0 °C	-40 °C; = Tmin; Startup @ -25 °C
• max.	60 °C; = Tmax	70 °C; = Tmax; > +60 °C Number of simultaneously controllable inputs and outputs max. 50%; no signal board can be used
• At cold restart, min.	0 °C	-25 °C
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 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. 132 V AC	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. 132 V AC
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark		
- 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!
Conformal coating		
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

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Technical specifications (continued)

Article number	**6AG1211-1HE31-4XB0**	**6AG1211-1HE31-2XB0**
Based on	**6ES7211-1HE31-0XB0**	**6ES7211-1HE31-0XB0**
	SIPLUS S7-1200 CPU1211 DC/DC/RLY	SIPLUS S7-1200 CPU1211 DC/DC/RLY
Ambient conditions		
Ambient temperature during operation		
• min.	-20 °C; = Tmin; Startup @ 0 °C	-40 °C; = Tmin; Startup @ -25 °C
• max.	60 °C; = Tmax	70 °C; = Tmax; > +60 °C Number of simultaneously controllable inputs and outputs max. 50%; no signal board can be used
• At cold restart, min.	0 °C	-25 °C
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 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. 132 V AC	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. 132 V AC
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark		
- 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!
Conformal coating		
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

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SIPLUS CPU 1211C

Ordering data	Article No.
SIPLUS CPU 1211C compact CPU, AC/DC/relay	
(Extended temperature range and exposure to environmental substances)	
Integrated program and data memory of 25 KB, load memory of 1 MB; wide-range alternating voltage supply 85 ... 264 V AC; Boolean execution times of 0.1 ms per operation; 6 digital inputs, 4 digital outputs (relay), 2 analog inputs; expandable with up to 3 communication modules and 1 signal board/communication board; digital inputs usable as HSC with 100 kHz	
• For areas with extreme exposure to media (conformal coating); ambient temperature -20 ... +60 °C	**6AG1211-1BE31-4XB0**
• For areas with extreme exposure to media (conformal coating); ambient temperature -40 ... +70 °C	**6AG1211-1BE31-2XB0**
SIPLUS CPU 1211C compact CPU, DC/DC/DC	
(Extended temperature range and exposure to environmental substances)	
Integrated program and data memory of 25 KB, load memory of 1 MB; power supply 24 V DC; Boolean execution times of 0.1 ms per operation; 6 digital inputs, 4 digital outputs, 2 analog inputs; expandable with up to 3 communication modules and 1 signal board/communication board; digital inputs usable as HSC with 100 kHz, 24 V DC digital outputs usable as pulse outputs (PTO) or pulse-width-modulated outputs (PWM) with 100 kHz	
• For areas with extreme exposure to media (conformal coating); ambient temperature -20 ... +60 °C	**6AG1211-1AE31-4XB0**
SIPLUS CPU 1211C compact CPU, DC/DC/relay	
(Extended temperature range and exposure to environmental substances)	
Integrated program and data memory of 25 KB, load memory of 1 MB; power supply 24 V DC; Boolean execution times of 0.1 ms per operation; 6 digital inputs, 4 digital outputs (relay), 2 analog inputs; expandable with up to 3 communication modules and 1 signal board/communication board; digital inputs usable as HSC with 100 kHz	
• For areas with extreme exposure to media (conformal coating); ambient temperature -20 ... +60 °C	**6AG1211-1HE31-4XB0**
• For areas with extreme exposure to media (conformal coating); ambient temperature -40 ... +70 °C	**6AG1211-1HE31-2XB0**
Accessories	
SIPLUS SB 1221 digital input signal board	
(Extended temperature range and exposure to media; cannot be used with 6AG1211-1....-**2**XB0)	
4 inputs, 5 V DC, 200 kHz, sourcing	**6AG1221-3AD30-5XB0**
4 inputs, 24 V DC, 200 kHz, sourcing	**6AG1221-3BD30-5XB0**
SIPLUS SB 1222 digital output signal board	
(Extended temperature range and exposure to media; cannot be used with 6AG1211-1....-**2**XB0)	
4 outputs, 5 V DC, 0.1 A, 200 kHz	**6AG1222-1AD30-5XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	**6AG1222-1BD30-5XB0**
SIPLUS SB 1223 digital input/output signal board	
(Extended temperature range and exposure to media; cannot be used with 6AG1211-1....-**2**XB0)	
2 inputs, 24 V DC, IEC type 1 current sinking; 2 x 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	
• Suitable for areas with extreme exposure to media (conformal coating)	**6AG1223-0BD30-4XB0**
• Ambient temperature -25 ... +55 °C	**6AG1223-0BD30-5XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	**6AG1223-3AD30-5XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	**6AG1223-3BD30-5XB0**
SIPLUS SB 1232 analog output signal board	
(Extended temperature range and exposure to media; cannot be used with 6AG1211-1....-**2**XB0)	
Ambient temperature range -25 ... +55 °C	
1 analog output, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	**6AG1232-4HA30-5XB0**
Ambient temperature range 0 ... +55 °C	
1 analog output, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	**6AG1232-4HA30-4XB0**
SIPLUS CB 1241 RS 485 communication board	
(Extended temperature range and exposure to media; cannot be used with 6AG1211-1....-**2**XB0)	
for point-to-point connection, with 1 RS 485 interface	**6AG1241-1CH30-5XB1**
Other accessories	See SIMATIC S7-1200 CPU 1211C, page 3/6

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Overview

- The superior compact solution
- With 14 integral input/outputs
- Expandable with:
  - 1 signal board (SB) or communication board (CB); not possible with: 6AG1212-1AE40-2XB0, 6AG1212-1BE40-2XB0, 6AG1212-1HE40-2XB0
  - 2 signal modules (SM)
  - Max. 3 communication modules (CM)

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	**6AG1212-1AE40-4XB0**	**6AG1212-1AE40-2XB0**
Based on	**6ES7212-1AE40-0XB0**	**6ES7212-1AE40-0XB0**
	SIPLUS S7-1200 CPU 1212C DC/DC/DC	SIPLUS S7-1200 CPU 1212C DC/DC/DC
Ambient conditions		
Ambient temperature during operation		
• min.	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C
• max.	60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical	70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 4, digital outputs 3, analog inputs 2 (no adjacent points) with horizontal mounting position; Tmax > +60 °C number of simultaneously switched-on digital inputs 3, digital outputs 2, analog inputs 0 (no adjacent points) with horizontal mounting position
• At cold restart, min.	0 °C	-25 °C
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

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Technical specifications (continued)

Article number	6AG1212-1AE40-4XB0	6AG1212-1AE40-2XB0
Based on	6ES7212-1AE40-0XB0	6ES7212-1AE40-0XB0
	SIPLUS S7-1200 CPU 1212C DC/DC/DC	SIPLUS S7-1200 CPU 1212C DC/DC/DC
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark		
- 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!
Conformal coating		
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

Article number	6AG1212-1BE40-4XB0	6AG1212-1BE40-2XB0
Based on	6ES7212-1BE40-0XB0	6ES7212-1BE40-0XB0
	SIPLUS S7-1200 CPU 1212C AC/DC/RLY	SIPLUS S7-1200 CPU 1212C AC/DC/RLY
Ambient conditions		
Ambient temperature during operation		
• min.	-20 °C; = Tmin; Startup @ 0 °C	-40 °C; = Tmin; Startup @ -25 °C
• max.	60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical	70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 4, digital outputs 3, analog inputs 2 (no adjacent points) with horizontal mounting position; Tmax > +60 °C number of simultaneously switched-on digital inputs 3, digital outputs 2, analog inputs 0 (no adjacent points) with horizontal mounting position
• At cold restart, min.	0 °C	-25 °C
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 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. 132 V AC	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. 132 V AC
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

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Technical specifications (continued)

Article number	**6AG1212-1BE40-4XB0**	**6AG1212-1BE40-2XB0**
Based on	**6ES7212-1BE40-0XB0**	**6ES7212-1BE40-0XB0**
	SIPLUS S7-1200 CPU 1212C AC/DC/RLY	SIPLUS S7-1200 CPU 1212C AC/DC/RLY
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark		
- 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!
Conformal coating		
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

Article number	**6AG1212-1HE40-4XB0**	**6AG1212-1HE40-2XB0**
Based on	**6ES7212-1HE40-0XB0**	**6ES7212-1HE40-0XB0**
	SIPLUS S7-1200 CPU 1212C DC/DC/RLY	SIPLUS S7-1200 CPU 1212C DC/DC/RLY
Ambient conditions		
Ambient temperature during operation		
• min.	-20 °C; = Tmin; Startup @ 0 °C	-40 °C; = Tmin; Startup @ -25 °C
• max.	60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical	70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 4, digital outputs 3, analog inputs 2 (no adjacent points) with horizontal mounting position; Tmax > +60 °C number of simultaneously switched-on digital inputs 3, digital outputs 2, analog inputs 0 (no adjacent points) with horizontal mounting position
• At cold restart, min.	0 °C	-25 °C
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 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. 132 V AC	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. 132 V AC
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

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Technical specifications (continued)

Article number	6AG1212-1HE40-4XB0	6AG1212-1HE40-2XB0
Based on	6ES7212-1HE40-0XB0	6ES7212-1HE40-0XB0
	SIPLUS S7-1200 CPU 1212C DC/DC/RLY	SIPLUS S7-1200 CPU 1212C DC/DC/RLY
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark		
- 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!
Conformal coating		
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

Ordering data

	Article No.		Article No.
SIPLUS CPU 1212C compact CPU, AC/DC/relay		**SIPLUS CPU 1212C compact CPU, DC/DC/DC**	
(Extended temperature range and exposure to media)		(Extended temperature range and exposure to media)	
Integrated program/data memory 75 KB, load memory 1 MB; Wide-range power supply 85 ... 264 V AC; Boolean execution times 0.1 µs per operation; 8 digital inputs, 6 digital outputs (relays), 2 analog inputs; Expandable by up to 3 communication modules, 2 signal modules and 1 signal board/communication board; Digital inputs can be used as HSC at 100 kHz		Integrated program/data memory 75 KB, load memory 1 MB; Power supply 24 V DC; Boolean execution times 0.1 µs per operation; 8 digital inputs, 6 digital outputs, 2 analog inputs; Expandable by up to 3 communication modules, 2 signal modules, and 1 signal board/communication board; Digital inputs can be used as HSC at 100 kHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) at 100 kHz	
• For areas with extreme exposure to media (conformal coating); ambient temperature -20 ... +60 °C	**6AG1212-1BE40-4XB0**	• For areas with extreme exposure to media (conformal coating); ambient temperature -20 ... +60 °C	**6AG1212-1AE40-4XB0**
• For areas with extreme exposure to media (conformal coating); ambient temperature -40 ... +70 °C	**6AG1212-1BE40-2XB0**	• For areas with extreme exposure to media (conformal coating); ambient temperature -40 ... +70 °C	**6AG1212-1AE40-2XB0**

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Ordering data

	Article No.
SIPLUS CPU 1212C compact CPU, DC/DC/relay	
(Extended temperature range and exposure to media)	
Integrated program/data memory 75 KB, load memory 1 MB; Power supply 24 V DC; Boolean execution times 0.1 µs per operation; 8 digital inputs, 6 digital outputs (relays), 2 analog inputs; Expandable by up to 3 communication modules, 2 signal modules, and 1 signal board/communication board; Digital inputs can be used as HSC at 100 kHz	
• For areas with extreme exposure to media (conformal coating); ambient temperature -20 ... +60 °C	**6AG1212-1HE40-4XB0**
• For areas with extreme exposure to media (conformal coating); ambient temperature -40 ... +70 °C	**6AG1212-1HE40-2XB0**
Accessories	
SIPLUS SB 1221 digital input signal board	
(Extended temperature range and exposure to media; cannot be used with 6AG1212-1....-**2**XB0)	
4 inputs, 5 V DC, 200 kHz, sourcing	**6AG1221-3AD30-5XB0**
4 inputs, 24 V DC, 200 kHz, sourcing	**6AG1221-3BD30-5XB0**
SIPLUS SB 1222 digital output signal board	
(Extended temperature range and exposure to media; cannot be used with 6AG1212-1....-**2**XB0)	
4 outputs, 5 V DC, 0.1 A, 200 kHz	**6AG1222-1AD30-5XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	**6AG1222-1BD30-5XB0**

	Article No.
SIPLUS SB 1223 digital input/output signal board	
(Extended temperature range and exposure to media; cannot be used with 6AG1212-1....-**2**XB0)	
2 inputs, 24 V DC, IEC type 1 current sinking; 2 x 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	
• Suitable for areas with extreme exposure to media (conformal coating)	**6AG1223-0BD30-4XB0**
• Ambient temperature -25 ... +55 °C	**6AG1223-0BD30-5XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	**6AG1223-3AD30-5XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	**6AG1223-3BD30-5XB0**
SIPLUS SB 1232 analog output signal board	
(Extended temperature range and exposure to media; cannot be used with 6AG1212-1....-**2**XB0)	
Ambient temperature range -25 ... +55 °C	
1 analog output, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	**6AG1232-4HA30-5XB0**
Ambient temperature range 0 ... +55 °C	
1 analog output, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	**6AG1232-4HA30-4XB0**
SIPLUS CB 1241 RS 485 communication board	
(Extended temperature range and exposure to media; cannot be used with 6AG1212-1....-**2**XB0)	
For point-to-point connection, with 1 RS 485 interface	**6AG1241-1CH30-5XB1**
Additional accessories	See SIMATIC S7-1200 CPU 1212C, page 3/10

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SIPLUS CPU 1214C

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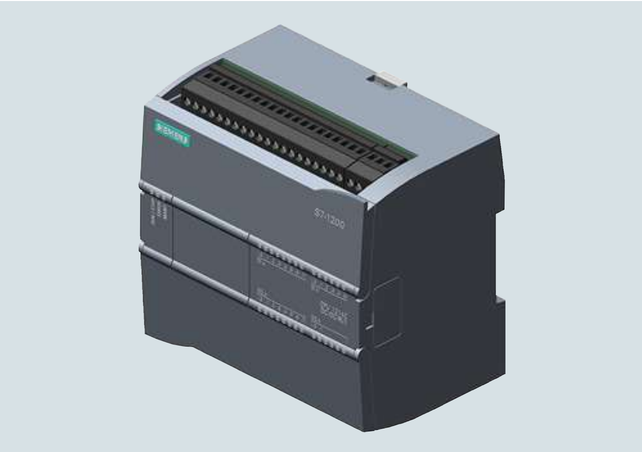
Overview



- The compact high-performance CPU
- With 24 integrated I/Os
- Expandable with:
  - 1 signal board (SB) or communication board (CB); not possible with: 6AG1214-1AG40-2XB0, 6AG1214-1BG40-2XB0, 6AG1214-1HG40-2XB0
  - 8 signal modules (SM)
  - Max. 3 communication modules (CM)

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	**6AG1214-1AG40-4XB0**	**6AG1214-1AG40-5XB0**	**6AG1214-1AG40-2XB0**
Based on	**6ES7214-1AG40-0XB0**	**6ES7214-1AG40-0XB0**	**6ES7214-1AG40-0XB0**
	SIPLUS S7-1200 CPU 1214C DC/DC/DC	SIPLUS S7-1200 CPU 1214C DC/DC/DC	SIPLUS S7-1200 CPU 1214C DC/DC/DC
Ambient conditions			
Ambient temperature during operation			
• min.	-20 °C; = Tmin; Startup @ 0 °C	-40 °C; = Tmin (incl. condensation/ frost); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/ frost); start-up @ -25 °C
• max.	60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical	60 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2 (no adjacent points) with horizontal mounting position	70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2 (no adjacent points) with horizontal mounting position; Tmax > +60 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 1 (no adjacent points) with horizontal mounting position
• At cold restart, min.	0 °C	-25 °C	-25 °C
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
Coolants and lubricants			
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air

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Technical specifications (continued)

Article number	**6AG1214-1AG40-4XB0**	**6AG1214-1AG40-5XB0**	**6AG1214-1AG40-2XB0**
Based on	**6ES7214-1AG40-0XB0**	**6ES7214-1AG40-0XB0**	**6ES7214-1AG40-0XB0**
	SIPLUS S7-1200 CPU 1214C DC/DC/DC	SIPLUS S7-1200 CPU 1214C DC/DC/DC	SIPLUS S7-1200 CPU 1214C DC/DC/DC
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark			
- 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!
Conformal coating			
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

Article number	**6AG1214-1BG40-4XB0**	**6AG1214-1BG40-5XB0**	**6AG1214-1BG40-2XB0**
Based on	**6ES7214-1BG40-0XB0**	**6ES7214-1BG40-0XB0**	**6ES7214-1BG40-0XB0**
	SIPLUS S7-1200 CPU 1214C AC/DC/RLY	SIPLUS S7-1200 CPU 1214C AC/DC/RLY	SIPLUS S7-1200 CPU 1214C AC/DC/RLY
Ambient conditions			
Ambient temperature during operation			
• min.	-20 °C; = Tmin (incl. condensation/ frost); start-up @ 0 °C	-40 °C; = Tmin (incl. condensation/ frost); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/ frost); start-up @ -25 °C
• max.	60 °C; = Tmax	60 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2 (no adjacent points) with horizontal mounting position	70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2 (no adjacent points) with horizontal mounting position; Tmax > +60 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 1 (no adjacent points) with horizontal mounting position
• At cold restart, min.	0 °C	-25 °C	-25 °C

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Technical specifications (continued)

Article number	6AG1214-1BG40-4XB0	6AG1214-1BG40-5XB0	6AG1214-1BG40-2XB0
Based on	6ES7214-1BG40-0XB0	6ES7214-1BG40-0XB0	6ES7214-1BG40-0XB0
	SIPLUS S7-1200 CPU 1214C AC/DC/RLY	SIPLUS S7-1200 CPU 1214C AC/DC/RLY	SIPLUS S7-1200 CPU 1214C AC/DC/RLY
Altitude during operation relating to sea level			
• 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. 132 V AC	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. 132 V AC	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. 132 V AC
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
Coolants and lubricants			
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark			
- 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!
Conformal coating			
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

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Technical specifications (continued)

Article number	**6AG1214-1HG40-4XB0**	**6AG1214-1HG40-5XB0**	**6AG1214-1HG40-2XB0**
Based on	**6ES7214-1HG40-0XB0**	**6ES7214-1HG40-0XB0**	**6ES7214-1HG40-0XB0**
	SIPLUS S7-1200 CPU 1214C DC/DC/RLY	SIPLUS S7-1200 CPU 1214C DC/DC/RLY	SIPLUS S7-1200 CPU 1214C DC/DC/RLY
Ambient conditions			
Ambient temperature during operation			
• min.	-20 °C; = Tmin (incl. condensation/ frost); start-up @ 0 °C	-40 °C; = Tmin (incl. condensation/ frost); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/ frost); start-up @ -25 °C
• max.	60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical	60 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2 (no adjacent points) with horizontal mounting position	70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2 (no adjacent points) with horizontal mounting position; Tmax > +60 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 1 (no adjacent points) with horizontal mounting position
• At cold restart, min.	0 °C	-25 °C	-25 °C
Altitude during operation relating to sea level			
• 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. 132 V AC	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. 132 V AC	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. 132 V AC
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
Coolants and lubricants			
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark			
- 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!
Conformal coating			
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

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SIPLUS CPU 1214C

Ordering data	Article No.
SIPLUS CPU 1214C compact CPU, AC/DC/relay	
(Extended temperature range and exposure to media)	
Integrated program/data memory 100 KB, load memory 2 MB; Wide-range power supply 85 ... 264 V AC; Boolean execution times 0.1 µs per operation; 14 digital inputs, 10 digital outputs (relays), 2 analog inputs; Expandable by up to 3 communication modules, 8 signal modules and 1 signal board/communication board; Digital inputs can be used as HSC at 100 kHz	
• For areas with extreme exposure to media (conformal coating); ambient temperature -20 ... +60 °C	**6AG1214-1BG40-4XB0**
• For areas with extreme exposure to media (conformal coating); ambient temperature -40 ... +60 °C	**6AG1214-1BG40-5XB0**
• For areas with extreme exposure to media (conformal coating); ambient temperature -40 ... +70 °C	**6AG1214-1BG40-2XB0**
SIPLUS CPU 1214C compact CPU, DC/DC/DC	
(Extended temperature range and exposure to media)	
Integrated program/data memory 100 KB, load memory 2 MB; Power supply 24 V DC; Boolean execution times 0.1 µs per operation; 14 digital inputs, 10 digital outputs, 2 analog inputs; expandable by up to 3 communication modules, 8 signal modules, and 1 signal board/communication board; Digital inputs can be used as HSC at 100 kHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) at 100 kHz	
• For areas with extreme exposure to media (conformal coating); ambient temperature -20 ... +60 °C	**6AG1214-1AG40-4XB0**
• For areas with extreme exposure to media (conformal coating); ambient temperature -40 ... +60 °C	**6AG1214-1AG40-5XB0**
• For areas with extreme exposure to media (conformal coating); ambient temperature -40 ... +70 °C	**6AG1214-1AG40-2XB0**

	Article No.
SIPLUS CPU 1214C compact CPU, DC/DC/relay	
(Extended temperature range and exposure to media)	
Integrated program/data memory 100 KB, load memory 2 MB; Power supply 24 V DC; Boolean execution times 0.1 µs per operation; 14 digital inputs, 10 digital outputs (relays), 2 analog inputs; Expandable by up to 3 communication modules, 8 signal modules, and 1 signal board/communication board; Digital inputs can be used as HSC at 100 kHz	
• For areas with extreme exposure to media (conformal coating); ambient temperature -20 ... +60 °C	**6AG1214-1HG40-4XB0**
• For areas with extreme exposure to media (conformal coating); ambient temperature -40 ... +60 °C	**6AG1214-1HG40-5XB0**
• For areas with extreme exposure to media (conformal coating); ambient temperature -40 ... +70 °C	**6AG1214-1HG40-2XB0**
Accessories	
SIPLUS SB 1221 digital input signal board	
(Extended temperature range and exposure to media; cannot be used with 6AG1214-1....-**2**XB0)	
4 inputs, 5 V DC, 200 kHz, sourcing	**6AG1221-3AD30-5XB0**
4 inputs, 24 V DC, 200 kHz, sourcing	**6AG1221-3BD30-5XB0**
SIPLUS SB 1222 digital output signal board	
(Extended temperature range and exposure to media; cannot be used with 6AG1214-1....-**2**XB0)	
4 outputs, 5 V DC, 0.1 A, 200 kHz	**6AG1222-1AD30-5XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	**6AG1222-1BD30-5XB0**

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Ordering data

	Article No.
SIPLUS SB 1223 digital input/output signal board	
(Extended temperature range and exposure to media; cannot be used with 6AG1214-1....-**2**XB0)	
2 inputs, 24 V DC, IEC type 1 current sinking; 2 x 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	
• Suitable for areas with extreme exposure to media (conformal coating)	**6AG1223-0BD30-4XB0**
• Ambient temperature -25 ... +55 °C	**6AG1223-0BD30-5XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	**6AG1223-3AD30-5XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	**6AG1223-3BD30-5XB0**

	Article No.
SIPLUS SB 1232 analog output signal board	
(Extended temperature range and exposure to media; cannot be used with 6AG1214-1....-**2**XB0)	
Ambient temperature range -25 ... +55 °C	
1 analog output, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	**6AG1232-4HA30-5XB0**
Ambient temperature range 0 ... +55 °C	
1 analog output, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	**6AG1232-4HA30-4XB0**
SIPLUS CB 1241 RS 485 communication board	
(Extended temperature range and exposure to media; cannot be used with 6AG1214-1....-**2**XB0)	
For point-to-point connection, with 1 RS 485 interface	**6AG1241-1CH30-5XB1**
Additional accessories	See SIMATIC S7-1200 CPU 1214C, page 3/14

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SIPLUS CPU 1215C

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Overview

- The compact high-performance CPU
- With 24 integrated I/Os
- Expandable with:
  - 1 signal board (SB) or communication board (CB); not possible with: 6AG1215-1AG40-2XB0, 6AG1215-1BG40-2XB0, 6AG1215-1HG40-2XB0
  - 8 signal modules (SM)
  - Max. 3 communication modules (CM)

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	**6AG1215-1AG40-4XB0**	**6AG1215-1AG40-5XB0**	**6AG1215-1AG40-2XB0**
Based on	**6ES7215-1AG40-0XB0** SIPLUS S7-1200 CPU 1215C DC/DC/DC	**6ES7215-1AG40-0XB0** SIPLUS S7-1200 CPU 1215C DC/DC/DC	**6ES7215-1AG40-0XB0** SIPLUS S7-1200 CPU 1215C DC/DC/DC
Ambient conditions			
Ambient temperature during operation			
• min.	-20 °C; = Tmin (incl. condensation/ frost); start-up @ 0 °C	-40 °C; = Tmin (incl. condensation/ frost); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/ frost); start-up @ -25 °C
• max.	60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical	60 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2, analog outputs 2 (no adjacent points) with horizontal mounting position	70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2, analog outputs 2 (no adjacent points) with horizontal mounting position; Tmax > +60 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 1, analog outputs 1 (no adjacent points) with horizontal mounting position
• At cold restart, min.	0 °C	-25 °C	-25 °C
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
Coolants and lubricants			
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

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Technical specifications (continued)

Article number	**6AG1215-1AG40-4XB0**	**6AG1215-1AG40-5XB0**	**6AG1215-1AG40-2XB0**
Based on	**6ES7215-1AG40-0XB0**	**6ES7215-1AG40-0XB0**	**6ES7215-1AG40-0XB0**
	SIPLUS S7-1200 CPU 1215C DC/DC/DC	SIPLUS S7-1200 CPU 1215C DC/DC/DC	SIPLUS S7-1200 CPU 1215C DC/DC/DC
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark			
- 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!
Conformal coating			
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

Article number	**6AG1215-1BG40-4XB0**	**6AG1215-1BG40-5XB0**	**6AG1215-1BG40-2XB0**
Based on	**6ES7215-1BG40-0XB0**	**6ES7215-1BG40-0XB0**	**6ES7215-1BG40-0XB0**
	SIPLUS S7-1200 CPU 1215C AC/DC/RLY	SIPLUS S7-1200 CPU 1215C AC/DC/RLY	SIPLUS S7-1200 CPU 1215C AC/DC/RLY
Ambient conditions			
Ambient temperature during operation			
• min.	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C
• max.	60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical	60 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2, analog outputs 2 (no adjacent points) with horizontal mounting position	70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2, analog outputs 2 (no adjacent points) with horizontal mounting position; Tmax > +60 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 1, analog outputs 1 (no adjacent points) with horizontal mounting position
• At cold restart, min.	0 °C	-25 °C	-25 °C
Altitude during operation relating to sea level			
• 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. 132 V AC	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. 132 V AC	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. 132 V AC
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
Coolants and lubricants			
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air

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Technical specifications (continued)

Article number	6AG1215-1BG40-4XB0	6AG1215-1BG40-5XB0	6AG1215-1BG40-2XB0
Based on	6ES7215-1BG40-0XB0	6ES7215-1BG40-0XB0	6ES7215-1BG40-0XB0
	SIPLUS S7-1200 CPU 1215C AC/DC/RLY	SIPLUS S7-1200 CPU 1215C AC/DC/RLY	SIPLUS S7-1200 CPU 1215C AC/DC/RLY
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark			
- 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!
Conformal coating			
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

Article number	6AG1215-1HG40-4XB0	6AG1215-1HG40-5XB0	6AG1215-1HG40-2XB0
	SIPLUS S7-1200 CPU 1215C DC/DC/RLY	SIPLUS S7-1200 CPU 1215C DC/DC/RLY	SIPLUS S7-1200 CPU 1215C DC/DC/RLY
Ambient conditions			
Ambient temperature during operation			
• min.	-20 °C; = Tmin (incl. condensation/ frost); start-up @ 0 °C	-40 °C; = Tmin (incl. condensation/ frost); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/ frost); start-up @ -25 °C
• max.	60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical	60 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2, analog outputs 2 (no adjacent points) with horizontal mounting position	70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2, analog outputs 2 (no adjacent points) with horizontal mounting position; Tmax > +60 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 1, analog outputs 1 (no adjacent points) with horizontal mounting position
• At cold restart, min.	0 °C	-25 °C	-25 °C
Altitude during operation relating to sea level			
• 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. 132 V AC	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. 132 V AC	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. 132 V AC

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Technical specifications (continued)

Article number	**6AG1215-1HG40-4XB0** SIPLUS S7-1200 CPU 1215C DC/DC/RLY	**6AG1215-1HG40-5XB0** SIPLUS S7-1200 CPU 1215C DC/DC/RLY	**6AG1215-1HG40-2XB0** SIPLUS S7-1200 CPU 1215C DC/DC/RLY
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
Coolants and lubricants			
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark			
- 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!
Conformal coating			
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

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SIPLUS CPU 1215C

Ordering data	Article No.
SIPLUS CPU 1215C compact CPU, AC/DC/relay	
(Extended temperature range and exposure to media)	
Integrated program and data memory 125 KB, load memory 4 MB; wide-range power supply 85 ... 264 V AC; Boolean execution times 0.085 µs per operation; 14 digital inputs, 10 digital outputs (relay), 2 analog inputs, 2 analog outputs; expandable by up to 3 communication modules, 8 signal modules and 1 signal board/communication board; digital inputs usable as HSC with 100 kHz	
• For areas with extreme exposure to media (conformal coating); ambient temperature -20 ... +60 °C	**6AG1215-1BG40-4XB0**
• For areas with extreme exposure to media (conformal coating); ambient temperature -40 ... +60 °C	**6AG1215-1BG40-5XB0**
• For areas with extreme exposure to media (conformal coating); ambient temperature -40 ... +70 °C	**6AG1215-1BG40-2XB0**
SIPLUS CPU 1215C compact CPU, DC/DC/DC	
(Extended temperature range and exposure to media)	
Integrated program and data memory 125 KB, load memory 4 MB; power supply 24 V DC; Boolean execution times 0.085 µs per operation; 14 digital inputs, 10 digital outputs, 2 analog inputs, 2 analog outputs; expandable by up to 3 communication modules, 8 signal modules and 1 signal board/communication board; digital inputs usable as HSC with 100 kHz; 24 V DC digital outputs usable as pulse outputs (PTO) or pulse-width-modulated outputs (PWM) with 100 kHz	
• For areas with extreme exposure to media (conformal coating); ambient temperature -20 ... +60 °C	**6AG1215-1AG40-4XB0**
• For areas with extreme exposure to media (conformal coating); ambient temperature -40 ... +60 °C	**6AG1215-1AG40-5XB0**
• For areas with extreme exposure to media (conformal coating); ambient temperature -40 ... +70 °C	**6AG1215-1AG40-2XB0**

	Article No.
SIPLUS CPU 1215C compact CPU, DC/DC/relay	
(Extended temperature range and exposure to media)	
Integrated program and data memory 125 KB, load memory 4 MB; power supply 24 V DC; Boolean execution times 0.085 µs per operation; 14 digital inputs, 10 digital outputs (relay), 2 analog inputs, 2 analog outputs; expandable by up to 3 communication modules, 8 signal modules and 1 signal board/communication board; digital inputs usable as HSC with 100 kHz	
• For areas with extreme exposure to media (conformal coating); ambient temperature -20 ... +60 °C	**6AG1215-1HG40-4XB0**
• For areas with extreme exposure to media (conformal coating); ambient temperature -40 ... +60 °C	**6AG1215-1HG40-5XB0**
• For areas with extreme exposure to media (conformal coating); ambient temperature -40 ... +70 °C	**6AG1215-1HG40-2XB0**
Accessories	
SIPLUS SB 1221 digital input signal board	
(Extended temperature range and exposure to media; cannot be used with 6AG1215-1....-**2**XB0)	
4 inputs, 5 V DC, 200 kHz, sourcing	**6AG1221-3AD30-5XB0**
4 inputs, 24 V DC, 200 kHz, sourcing	**6AG1221-3BD30-5XB0**
SIPLUS SB 1222 digital output signal board	
(Extended temperature range and exposure to media; cannot be used with 6AG1215-1....-**2**XB0)	
4 outputs, 5 V DC, 0.1 A, 200 kHz	**6AG1222-1AD30-5XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	**6AG1222-1BD30-5XB0**

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Ordering data

	Article No.
SIPLUS SB 1223 digital input/output signal board	
(Extended temperature range and exposure to media; cannot be used with 6AG1215-1....-**2**XB0)	
2 inputs, 24 V DC, IEC type 1 current sinking; 2 x 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	
• Suitable for areas with extreme exposure to media (conformal coating)	**6AG1223-0BD30-4XB0**
• Ambient temperature -25 ... +55 °C	**6AG1223-0BD30-5XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	**6AG1223-3AD30-5XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	**6AG1223-3BD30-5XB0**

	Article No.
SIPLUS SB 1232 analog output signal board	
(Extended temperature range and exposure to media; cannot be used with 6AG1215-1....-**2**XB0)	
Ambient temperature range -25 ... +55 °C	
1 analog output, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	**6AG1232-4HA30-5XB0**
Ambient temperature range 0 ... +55 °C	
1 analog output, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	**6AG1232-4HA30-4XB0**
SIPLUS CB 1241 RS 485 communication board	
(Extended temperature range and exposure to media; cannot be used with 6AG1215-1....-**2**XB0)	
for point-to-point connection, with 1 RS 485 interface	**6AG1241-1CH30-5XB1**
Additional accessories	See SIMATIC S7-1200 CPU 1215C, page 3/18

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Fail-safe CPUs

Overview

The fail-safe SIMATIC S7-1200 Controllers are based on the S7-1200 standard CPUs and offer additional safety-related functions.

They can be used for safety-oriented tasks according to IEC 61508 up to SIL 3 and ISO 13849-1 up to PL e.

Safety-related programs are created in the TIA Portal. The STEP 7 Safety engineering tool offers commands, operations and blocks for safety-related programs in the LAD and FBD languages. To this end, there is a library with pre-configured, TÜV-approved blocks for safety-related functions.

- Standard controller with integrated safety functions:
  - Standardized and convenient diagnostic functions for standard and safety
  - Uniform symbols, data consistency, ...
- Modular system with scalable range of CPUs and expandable I/O quantity structure:
  - One engineering for standard and fail-safe automation
  - Use of the standard I/O modules together with the fail-safe I/O modules in the central system
  - Integrated standard PROFINET functionalities for PROFINET controllers and PROFINET iDevice services
  - Connection of distributed standard I/O via field bus such as PROFINET or PROFIBUS
  - F-library certified by the German Technical Inspectorate (TÜV) for all common safety functions
  - Free programming of the safety logic using FBD and LAD
  - Standard-compliant printout of the F-program
- One integrated engineering for both standard and safety from S7-1200 to S7-300/400/1500 and WinAC RTX F:
  - STEP 7 Safety Basic for easy engineering of the CPU 1200 FC
  - STEP 7 Safety Advanced for the entire fail-safe SIMATIC S7 portfolio
- Integrated system diagnosis of the CPUs, for standard and safety:
  - Consistent plain text display of system diagnostic information in the TIA Portal, HMI and web server
  - Messages are updated even if the CPU is in STOP state
  - System diagnostics integrated in the CPU firmware. Configuration by user not required
  - The diagnostics is automatically updated on configuration changes.
- 2 fail-safe compact controllers with graded performances in the versions DC/DC/DC and DC/DC/relay

Characteristics	CPU 1212 FC	CPU 1214FC	CPU 1215FC
Variants	DC/DC/DC, DC/DC/relay	DC/DC/DC, DC/DC/relay	DC/DC/DC, DC/DC/relay
Main memory, integrated	100 KB	125 KB	150 KB
Load memory, integrated	2 MB	4 MB	4 MB
Memory card	SIMATIC Memory Card (optional)	SIMATIC Memory Card (optional)	SIMATIC Memory Card (optional)
Standard digital inputs/outputs, integrated	8/6	14/10	14/10
Standard analog inputs, integrated	2	2	2
Standard analog outputs, integrated	-	-	2
Process image	1024 bytes for inputs, 1024 bytes for outputs	1024 bytes for inputs, 1024 bytes for outputs	1024 bytes for inputs, 1024 bytes for outputs
Expansion by signal board	Max. 1	Max. 1	Max. 1
Expansion by signal modules	Max. 2	Max. 8	Max. 8
Expansion by communication modules	Max. 3	Max. 3	Max. 3

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Technical specifications

Article number	6ES7212-1AF40-0XB0 CPU 1212FC, DC/DC/DC, 8DI/6DQ/2AI	6ES7212-1HF40-0XB0 CPU 1212FC, DC/DC/Relay, 8DI/6DQ/2AI	6ES7214-1AF40-0XB0 CPU 1214FC, DC/DC/DC, 14DI/10DQ/2AI	6ES7214-1HF40-0XB0 CPU 1214FC, DC/DC/Relay, 14DI/10DQ/2AI	6ES7215-1AF40-0XB0 CPU 1215FC, DC/DC/DC, 14DI/10DQ/2AI/2AQ	6ES7215-1HF40-0XB0 CPU 1215FC, DC/DC/RLY,14DI/10DQ/2AI/2AQ
General information						
Product type designation	CPU 1212FC DC/DC/DC	CPU 1212FC DC/DC/relay	CPU 1214FC DC/DC/DC	CPU 1214FC DC/DC/Relay	CPU 1215FC DC/DC/DC	CPU 1215FC DC/DC/relay
Engineering with						
• Programming package	STEP 7 V14 or higher	STEP 7 V14 or higher	STEP 7 V14 or higher	STEP 7 V14 or higher	STEP 7 V14 or higher	STEP 7 V14 or higher
Supply voltage						
Rated value (DC)						
• 24 V DC	Yes	Yes	Yes	Yes	Yes	Yes
Encoder supply						
24 V encoder supply						
• 24 V	Permissible range: 20.4V to 28.8V	Permissible range: 20.4V to 28.8V	L+ minus 4 V DC min.	L+ minus 4 V DC min.	L+ minus 4 V DC min.	L+ minus 4 V DC min.
Power loss						
Power loss, typ.	9 W	9 W	12 W	12 W	12 W	12 W
Memory						
Work memory						
• integrated	100 kbyte	100 kbyte	125 kbyte	125 kbyte	150 kbyte	150 kbyte
Load memory						
• integrated	2 Mbyte	2 Mbyte	4 Mbyte	4 Mbyte	4 Mbyte	4 Mbyte
• Plug-in (SIMATIC Memory Card), max.	with SIMATIC memory card	with SIMATIC memory card	with SIMATIC memory card	with SIMATIC memory card	with SIMATIC memory card	with SIMATIC memory card
Backup						
• without battery	Yes	Yes	Yes	Yes	Yes	Yes
CPU processing times						
for bit operations, typ.	0.08 µs; / instruction	0.08 µs; / instruction	0.08 µs; / instruction	0.08 µs; / instruction	0.08 µs; / instruction	0.08 µs; / instruction
for word operations, typ.	1.7 µs; / instruction	1.7 µs; / instruction	1.7 µs; / instruction	1.7 µs; / instruction	1.7 µs; / instruction	1.7 µs; / instruction
for floating point arithmetic, typ.	2.5 µs; / instruction	2.5 µs; / instruction	2.3 µs; / instruction	2.3 µs; / instruction	2.3 µs; / instruction	2.3 µs; / instruction
Data areas and their retentivity						
Flag						
• Number, max.	4 kbyte; Size of bit memory address area	4 kbyte; Size of bit memory address area	8 kbyte; Size of bit memory address area	8 kbyte; Size of bit memory address area	8 kbyte; Size of bit memory address area	8 kbyte; Size of bit memory address area
Address area						
I/O address area						
• Inputs	1 024 byte	1 024 byte				
• Outputs	1 024 byte	1 024 byte				
Process image						
• Inputs, adjustable	1 kbyte	1 kbyte	1 kbyte	1 kbyte	1 kbyte	1 kbyte
• Outputs, adjustable	1 kbyte	1 kbyte	1 kbyte	1 kbyte	1 kbyte	1 kbyte
Time of day						
Clock						
• Hardware clock (real-time)	Yes	Yes	Yes	Yes	Yes	Yes
Digital inputs						
Number of digital inputs	8; Integrated	8; Integrated	14	14	14; Integrated	14; Integrated
• of which inputs usable for technological functions	4; HSC (High Speed Counting)	4; HSC (High Speed Counting)	6; HSC (High Speed Counting)	6; HSC (High Speed Counting)	6; HSC (High Speed Counting)	6; HSC (High Speed Counting)
Digital outputs						
Number of digital outputs	6	6	10	10	10	10; Relays
• of which high-speed outputs	4; 100 kHz Pulse Train Output		4; 100 kHz Pulse Train Output		4; 100 kHz Pulse Train Output	
Analog inputs						
Number of analog inputs	2	2	2	2	2	2
Input ranges						
• Voltage	Yes	Yes	Yes	Yes	Yes	Yes
Analog outputs						
Number of analog outputs	0	0	0	0	2	2
Output ranges, current						
• 0 to 20 mA				Yes	Yes	Yes

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Technical specifications (continued)

Article number	6ES7212-1AF40-0XB0	6ES7212-1HF40-0XB0	6ES7214-1AF40-0XB0	6ES7214-1HF40-0XB0	6ES7215-1AF40-0XB0	6ES7215-1HF40-0XB0
	CPU 1212FC, DC/DC/DC, 8DI/6DQ/2AI	CPU 1212FC, DC/DC/Relay, 8DI/6DQ/2AI	CPU 1214FC, DC/DC/DC, 14DI/10DQ/2AI	CPU 1214FC, DC/DC/Relay, 14DI/10DQ/2AI	CPU 1215FC, DC/DC/DC, 14DI/10DQ/2AI/2AQ	CPU 1215FC, DC/DC/RLY,14DI/10DQ/2AI/2AQ
1. Interface						
Interface type	PROFINET	PROFINET	PROFINET	PROFINET	PROFINET	PROFINET
Physics	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet
Protocols						
• PROFINET IO Controller	Yes	Yes	Yes	Yes	Yes	Yes
• PROFINET IO Device	Yes	Yes	Yes	Yes	Yes	Yes
• SIMATIC communication	Yes	Yes	Yes	Yes	Yes	Yes
• Open IE communication	Yes	Yes	Yes	Yes	Yes	Yes
• Web server	Yes	Yes	Yes	Yes	Yes	Yes
• Media redundancy			No	No	Yes; as MRP client	Yes; as MRP client
Protocols						
Open IE communication						
• TCP/IP	Yes	Yes	Yes	Yes	Yes	Yes
• ISO-on-TCP (RFC1006)	Yes	Yes	Yes	Yes	Yes	Yes
• UDP	Yes	Yes	Yes	Yes	Yes	Yes
Web server						
• supported	Yes	Yes	Yes	Yes	Yes	Yes
Communication functions						
S7 communication						
• supported	Yes	Yes	Yes	Yes	Yes	Yes
Number of connections						
• overall			16; dynamically	16; dynamically	16; dynamically	16; dynamically
Integrated Functions						
Number of counters	4	4	6	6	6	6
Counting frequency (counter) max.	100 kHz	100 kHz	100 kHz	100 kHz	100 kHz	100 kHz
Frequency measurement	Yes	Yes	Yes	Yes	Yes	Yes
controlled positioning	Yes	Yes	Yes	Yes	Yes	Yes
Number of position-controlled positioning axes, max.	8	8	8	8	8	8
Number of positioning axes via pulse-direction interface	Up to 4 with SB 1222	Up to 4 with SB 1222	Up to 4 with SB 1222	Up to 4 with SB 1222	4; With integrated outputs	Up to 4 with SB 1222
PID controller	Yes	Yes	Yes	Yes	Yes	Yes
Number of alarm inputs	4		4	4	4	4
Number of pulse outputs	4	4			4	
Limit frequency (pulse)	100 kHz				100 kHz	
Ambient conditions						
Ambient temperature during operation						
• min.	0 °C	0 °C	0 °C	0 °C	0 °C	0 °C
• max.	55 °C	55 °C	55 °C	55 °C	55 °C	55 °C
Pollutant concentrations						
• SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Configuration						
Programming						
Programming language						
- LAD	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe
- FBD	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe	Yes; incl. failsafe
- SCL	Yes	Yes	Yes	Yes	Yes	Yes
Dimensions						
Width	90 mm	90 mm	110 mm	110 mm	130 mm	130 mm
Height	100 mm	100 mm	100 mm	100 mm	100 mm	100 mm
Depth	75 mm	75 mm	75 mm	75 mm	75 mm	75 mm
Weights						
Weight, approx.	370 g	385 g	435 g	435 g	585 g	585 g

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Ordering data

	Article No.
CPU 1212 FC	
Fail-safe compact CPU, DC/DC/DC; integrated program/data memory 100 KB, load memory 2 MB; supply voltage 24 V DC; Boolean execution times 0.085 µs per operation; 8 digital inputs, 6 digital outputs, 2 analog inputs; expandable by up to 3 communication modules, 2 signal modules, and 1 signal board/communication board; digital inputs can be used as HSC at 100 kHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) at 100 kHz	**6ES7212-1AF40-0XB0**
Fail-safe compact CPU, DC/DC/relay; integrated program/data memory 125 KB, load memory 2 MB; supply voltage 24 V DC; Boolean execution times 0.085 µs per operation; 8 digital inputs, 6 digital outputs (relays), 2 analog inputs; expandable by up to 3 communication modules, 2 signal modules, and 1 signal board/communication board; digital inputs can be used as HSC at 100 kHz	**6ES7212-1HF40-0XB0**
CPU 1214FC	
Fail-safe compact CPU, DC/DC/DC; integrated program/data memory 125 KB, load memory 4 MB; supply voltage 24 V DC; Boolean execution times 0.085 µs per operation; 14 digital inputs, 10 digital outputs, 2 analog inputs; expandable by up to 3 communication modules, 8 signal modules, and 1 signal board/communication board; digital inputs can be used as HSC at 100 kHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) at 100 kHz	**6ES7214-1AF40-0XB0**
Fail-safe compact CPU, DC/DC/relay; integrated program/data memory 125 KB, load memory 4 MB; supply voltage 24 V DC; Boolean execution times 0.085 µs per operation; 14 digital inputs, 10 digital outputs (relays), 2 analog inputs; expandable by up to 3 communication modules, 8 signal modules, and 1 signal board/communication board; digital inputs can be used as HSC at 100 kHz	**6ES7214-1HF40-0XB0**
CPU 1215FC	
Fail-safe compact CPU, DC/DC/DC; integrated program/data memory 150 KB, load memory 4 MB; supply voltage 24 V DC; Boolean execution times 0.085 µs per operation; 14 digital inputs, 10 digital outputs, 2 analog inputs; 2 analog outputs; expandable by up to 3 communication modules, 8 signal modules, and 1 signal board/communication board; digital inputs can be used as HSC at 100 kHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) at 100 kHz	**6ES7215-1AF40-0XB0**
Fail-safe compact CPU, DC/DC/relay; integrated program/data memory 150 KB, load memory 4 MB; supply voltage 24 V DC; Boolean execution times 0.085 µs per operation; 14 digital inputs, 10 digital outputs (relays), 2 analog inputs; 2 analog outputs; expandable by up to 3 communication modules, 8 signal modules, and 1 signal board/communication board; digital inputs can be used as HSC at 100 kHz	**6ES7215-1HF40-0XB0**
Accessories	
SIMATIC S7-1200 Fail-Safe Starter Kit	
With CPU 1212FC DC/DC/relay; also includes: F digital input SM 1226 16 x 24 V DC, F digital output SM 1226 4 x 24 V DC, input simulator, STEP 7 Basic and STEP 7 Safety Basic on CD, manual on CD, info material; in Systainer	**6ES7212-1HF41-4YB0**
With CPU 1214FC DC/DC/relay; also includes: F digital input SM 1226 16 x 24 V DC, F digital output SM 1226 4 x 24 V DC, input simulator, STEP 7 Safety Basic on CD, manual on CD, info material; in Systainer	**6ES7212-1HF42-4YB0**
Simulator (optional)	**6ES7274-1XH30-0XA0**
14 incoming circuit breakers	
SIMATIC Memory Card (optional)	
4 MB	**6ES7954-8LC03-0AA0**
12 MB	**6ES7954-8LE03-0AA0**
24 MB	**6ES7954-8LF03-0AA0**
256 MB	**6ES7954-8LL03-0AA0**
2 GB	**6ES7954-8LP02-0AA0**
32 GB	**6ES7954-8LT03-0AA0**

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Fail-safe CPUs

3

Ordering data	Article No.
Extension cable for two-tier configuration	**6ES7290-6AA30-0XA0**
For connecting digital/analog signal modules; length 2 m	
Terminal block (spare part)	
For CPU 1214FC, DC/DC/DC	
• For DI, with 20 screws, tin-coated; 4 units	**6ES7292-1AV30-0XA0**
• For DQ, with 12 screws, tin-coated; 4 units	**6ES7292-1AM30-0XA0**
• For AI, with 3 screws, gold-plated; 4 units	**6ES7292-1BC30-0XA0**
For CPU 1214FC, DC/DC/relay	
• For DI, with 20 screws, tin-coated; 4 units	**6ES7292-1AV30-0XA0**
• For DQ, with 12 screws, tin-coated, coded; 4 units	**6ES7292-1AM40-0XA0**
• For AI, with 3 screws, gold-plated; 4 units	**6ES7292-1BC30-0XA0**
For CPU 1215FC, DC/DC/DC	
• For DI, with 20 screws, tin-coated; 4 units	**6ES7292-1AV30-0XA0**
• For DQ, with 12 screws, tin-coated; 4 units	**6ES7292-1AM30-0XA0**
• For AI, with 6 screws, gold-plated; 4 units	**6ES7292-1BF30-0XB0**
For CPU 1215FC, DC/DC/relay	
• For DI, with 20 screws, tin-coated; 4 units	**6ES7292-1AV30-0XA0**
• For DQ, with 12 screws, tin-coated, coded; 4 units	**6ES7292-1AM40-0XA0**
• For AI, with 6 screws, gold-plated; 4 units	**6ES7292-1BF30-0XB0**
Front flap set (spare part)	
for CPU 1214FC	**6ES7291-1AB30-0XA0**
for CPU 1215FC	**6ES7291-1AC30-0XA0**
RJ45 cable grip	
4 units per pack	
Single port	**6ES7290-3AA30-0XA0**
Dual port	**6ES7290-3AB30-0XA0**

	Article No.
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[1]; email address required for delivery	**6ES7833-1FA15-0YH5**
STEP 7 Safety Basic V15.1	
Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1200 FC Requirement: STEP 7 Basic V15.1 and higher	
Floating license for 1 user; software and documentation on DVD; license key on USB flash drive	**6ES7833-1FB15-0YA5**
Floating license for 1 user; software, documentation and license key for download[1]; email address required for delivery	**6ES7833-1FB15-0YH5**

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

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Overview

The fail-safe SIPLUS S7-1200 Controllers are based on the SIPLUS S7-1200 standard CPUs and offer additional safety-related functions.

They can be used for safety-oriented tasks according to IEC 61508 up to SIL 3 and ISO 13849-1 up to PL e.

Safety-related programs are created in the TIA Portal engineering framework. The STEP 7 Safety engineering tool offers commands, operations and blocks for safety-related programs in the LAD and FBD languages. To this end, there is a library with pre-configured blocks for safety-related functions certified by the German Technical Inspectorate (TÜV).

- Standard controller with integrated safety functions:
  - Standardized and convenient diagnostic functions for standard and safety
  - Uniform symbols, data consistency, ...
- Modular system with scalable range of CPUs and expandable I/O quantity structure:
  - One engineering for standard and fail-safe automation
  - Use of the standard I/O modules together with the fail-safe I/O modules in the central system
  - Integrated standard PROFINET functionalities for PROFINET controllers and PROFINET iDevice services
  - Connection of distributed standard I/O via fieldbus such as PROFINET or PROFIBUS
  - TÜV-approved F-library for all common safety functions
  - Free programming of the safety logic using FBD and LAD
  - Standard-compliant printout of the F-program
- One integrated engineering for both standard and safety from S7-1200 to S7-300/400/1500 and WinAC RTX F:
  - STEP 7 Safety Basic for easy engineering of the CPU 1200 FC
  - STEP 7 Safety Advanced for the entire fail-safe SIMATIC S7 portfolio
- Integrated system diagnosis of the CPUs, for standard and safety:
  - Consistent plain text display of system diagnostic information in the TIA Portal, HMI and web server
  - Messages are updated even if the CPU is in STOP state
  - System diagnostics integrated in the CPU firmware. Configuration by user not required
  - The diagnostics is automatically updated on configuration changes.
- 2 fail-safe compact controllers with graded performances in the versions DC/DC/DC and DC/DC/relay

Characteristics	SIPLUS CPU 1214FC	SIPLUS CPU 1215FC
Variants	DC/DC/DC, DC/DC/relay	DC/DC/DC
Work memory, integrated	125 KB	150 KB
Load memory, integrated	4 MB	4 MB
Memory card	SIMATIC Memory Card (optional)	SIMATIC Memory Card (optional)
Standard digital inputs/outputs, integrated	14/10	14/10
Standard analog inputs, integrated	2	2
Standard analog outputs, integrated	-	2
Process image	1024 bytes for inputs, 1024 bytes for outputs	1024 bytes for inputs, 1024 bytes for outputs
Expansion by signal board	Max. 1	Max. 1
Expansion by signal modules	Max. 8	Max. 8
Expansion by communication modules	Max. 3	Max. 3

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	6AG1214-1AF40-5XB0	6AG1214-1HF40-5XB0	6AG1215-1AF40-5XB0
Based on	6ES7214-1AF40-0XB0 SIPLUS S7-1200 CPU 1214FC DC/DC/DC	6ES7214-1HF40-0XB0 SIPLUS S7-1200 CPU 1214FC DC/DC/RLY	6ES7215-1AF40-0XB0 SIPLUS S7-1200 CPU 1215FC DC/DC/DC
Ambient conditions			
Ambient temperature during operation			
• min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	55 °C; = Tmax	55 °C; = Tmax	55 °C; = Tmax
Altitude during operation relating to sea level			
• 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)
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; incl. condensation / frost permitted (no commissioning under condensation conditions)
Resistance			
Coolants and lubricants			
- Resistant to commercially available coolants and lubricants	Yes	Yes	Yes
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark			
- 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!
Conformal coating			
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

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Ordering data

	Article No.
CPU 1214FC (Extended temperature range and exposure to environmental substances)	
Fail-safe compact CPU, DC/DC/DC; Integrated program/data memory 125 KB, load memory 4 MB; supply voltage 24 V DC; Boolean execution times 0.085 µs per operation; 14 digital inputs, 10 digital outputs, 2 analog inputs; expandable by up to 3 communication modules, 8 signal modules, and 1 signal board/communication board; digital inputs can be used as HSC at 100 kHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) at 100 kHz	**6AG1214-1AF40-5XB0**
Fail-safe compact CPU, DC/DC/relay Integrated program/data memory 125 KB, load memory 4 MB; power supply 24 V DC Boolean execution times 0.085 µs per operation 14 digital inputs, 10 digital outputs (relays) 2 analog inputs Expandable by up to 3 communication modules, 8 signal modules, and 1 signal board/communication board Digital inputs can be used as HSC at 100 kHz	**6AG1214-1HF40-5XB0**

	Article No.
CPU 1215 FC (Extended temperature range and exposure to environmental substances)	
Fail-safe compact CPU, DC/DC/DC Integrated program/data memory 150 KB, load memory 4 MB Power supply 24 V DC Boolean execution times 0.085 µs per operation 14 digital inputs, 10 digital outputs 2 analog inputs; 2 analog outputs Expandable by up to 3 communication modules, 8 signal modules, and 1 signal board/communication board Digital inputs can be used as HSC at 100 kHz 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) at 100 kHz	**6AG1215-1AF40-5XB0**
Accessories	See SIMATIC CPU 121x FC, page 3/47

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SM 1221 digital input modules

Overview

- Digital inputs as supplement to the integral I/O of the CPUs
- For flexible adaptation of the controller to the relevant task
- For subsequent expansion of the system with additional inputs

Technical specifications

Article number	**6ES7221-1BF32-0XB0** Digital Input SM 1221, 8DI, 24V DC	**6ES7221-1BH32-0XB0** Digital Input SM 1221, 16DI, 24V DC
Supply voltage		
Rated value (DC)	24 V	24 V
Input current		
from backplane bus 5 V DC, max.	105 mA	130 mA
Digital inputs		
• from load voltage L+ (without load), max.	4 mA; per channel	4 mA; per channel
Output voltage		
Power supply to the transmitters		
• present	Yes	Yes
Digital inputs		
Number of digital inputs	8	16
• in groups of	2	4
Input characteristic curve in accordance with IEC 61131, type 1	Yes	Yes
Number of simultaneously controllable inputs		
all mounting positions		
- up to 40 °C, max.	8	16
horizontal installation		
- up to 40 °C, max.	8	16
- up to 50 °C, max.	8	16
vertical installation		
- up to 40 °C, max.	8	16
Input voltage		
• Rated value (DC)	24 V	24 V
• for signal "0"	5 V DC at 1 mA	5 V DC at 1 mA
• for signal "1"	15 V DC at 2.5 mA	15 V DC at 2.5 mA
Input current		
• for signal "0", max. (permissible quiescent current)	1 mA	1 mA
• for signal "1", min.	2.5 mA	2.5 mA
• for signal "1", typ.	4 mA	4 mA
Input delay (for rated value of input voltage)		
for standard inputs		
- parameterizable	Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four	Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four
for interrupt inputs		
- parameterizable	Yes	Yes

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Technical specifications (continued)

Article number	6ES7221-1BF32-0XB0 Digital Input SM 1221, 8DI, 24V DC	6ES7221-1BH32-0XB0 Digital Input SM 1221, 16DI, 24V DC
Interrupts/diagnostics/ status information		
Alarms		
• Diagnostic alarm	Yes	Yes
Diagnostics indication LED		
• for status of the inputs	Yes	Yes
Potential separation		
Potential separation digital inputs		
• between the channels, in groups of	2	4
Degree and class of protection		
IP degree of protection	IP20	IP20
Ambient conditions		
Free fall		
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation		
• min.	-20 °C	-20 °C
• max.	60 °C	60 °C
Connection method		
required front connector	Yes	Yes
Mechanics/material		
Enclosure material (front)		
• Plastic	Yes	Yes
Dimensions		
Width	45 mm	45 mm
Height	100 mm	100 mm
Depth	75 mm	75 mm
Weights		
Weight, approx.	170 g	210 g

Ordering data

	Article No.
SM 1221 digital input signal module	
8 inputs, 24 V DC, isolated, current sourcing/sinking	**6ES7221-1BF32-0XB0**
16 inputs, 24 V DC, isolated, current sourcing/sinking	**6ES7221-1BH32-0XB0**
Extension cable for two-tier configuration	**6ES7290-6AA30-0XA0**
For connecting digital/analog signal modules; length 2 m	

	Article No.
Terminal block (spare part)	
For 6ES7221-1BF32-0XB0, 6ES7221-1BH32-0XB0	
• With 7 screws, zinc-plated; 4 pcs.	**6ES7292-1AG30-0XA0**
Front flap set (spare part)	
For modules with a width of 45 mm	**6ES7291-1BA30-0XA0**

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SB 1221 digital input modules

Overview

- Digital inputs as a supplement to the integral I/O of SIMATIC S7-1200 CPUs
- Can be plugged directly into the CPU

Technical specifications

Article number	**6ES7221-3AD30-0XB0** Signal Board SB 1221, 4 DI 5VDC 200KHz	**6ES7221-3BD30-0XB0** Signal Board SB 1221, 4 DI 24VDC 200KHz
General information		
Product type designation	SB 1221, DI 4x5 V DC 200 kHz	SB 1221, DI 4x24 V DC 200 kHz
Input current		
from backplane bus 5 V DC, typ.	40 mA	40 mA
Power loss		
Power loss, typ.	1 W	1 W
Digital inputs		
Number of digital inputs	4; Current-sourcing	4; Current-sourcing
• in groups of	4	4
Input voltage		
• Type of input voltage	DC	DC
• Rated value (DC)	5 V	24 V
• for signal "0"	(L+ minus 1.0 V DC) ... L+ (2.2 ... 0 mA)	(L+ minus 5.0 V DC) ... L+ (1.4 ... 0 mA)
• for signal "1"	0 V ... (L+ minus 2.0 V DC (20 ... 5.1 mA))	0 V ... (L+ minus 10 V DC (10 ... 2.9 mA))
Input current		
• for signal "0", max. (permissible quiescent current)	2.2 mA	1.4 mA
• for signal "1", min.	5.1 mA	2.9 mA
• for signal "1", typ.		7 mA
Input delay (for rated value of input voltage)		
for standard inputs		
- parameterizable	Yes; 0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 µs; 0.05 / 0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 ms	Yes; 0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 µs; 0.05 / 0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 ms
for interrupt inputs		
- parameterizable	Yes	Yes
for technological functions		
- parameterizable	Yes	Yes
Cable length		
• shielded, max.	50 m; shielded, twisted pair	50 m; shielded, twisted pair
Diagnostics indication LED		
• for status of the inputs	Yes	Yes

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Technical specifications (continued)

Article number	6ES7221-3AD30-0XB0 Signal Board SB 1221, 4 DI 5VDC 200KHz	6ES7221-3BD30-0XB0 Signal Board SB 1221, 4 DI 24VDC 200KHz
Degree and class of protection		
Degree of protection acc. to EN 60529		
• IP20	Yes	Yes
Ambient conditions		
Free fall		
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation		
• min.	-20 °C	-20 °C
• max.	60 °C	60 °C
Mechanics/material		
Enclosure material (front)		
• Plastic	Yes	Yes
Dimensions		
Width	38 mm	38 mm
Height	62 mm	62 mm
Depth	21 mm	21 mm
Weights		
Weight, approx.	35 g	35 g

Ordering data

	Article No.
SB 1221 Signal Board digital input modules	
4 inputs, 5 V DC, 200 kHz, sourcing	**6ES7221-3AD30-0XB0**
4 inputs, 24 V DC, 200 kHz, sourcing	**6ES7221-3BD30-0XB0**

	Article No.
Terminal block (spare part)	
for Signal Board	
with 6 screws, gold-plated; 4 pcs.	**6ES7292-1BF30-0XA0**

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SM 1222 digital output modules

Overview

- Digital outputs as supplement to the integral I/O of the CPUs
- For flexible adaptation of the controller to the relevant task
- For subsequent expansion of the system with additional outputs

Technical specifications

Article number	**6ES7222-1BF32-0XB0** Digital Output SM1222, 8 DQ, 24V DC	**6ES7222-1BH32-0XB0** Digital Output SM1222, 16 DQ, 24V DC	**6ES7222-1HF32-0XB0** Digital Output SM 1222, 8 DQ, Relay	**6ES7222-1HH32-0XB0** Digital Output SM1222, 16 DQ, Relay	**6ES7222-1XF32-0XB0** Digital Output SM 1222, 8 DQ, Changeover
Input current					
from backplane bus 5 V DC, max.	120 mA	140 mA	120 mA	135 mA	140 mA
Digital outputs					
• from load voltage L+, max.			11 mA/relay coil	11 mA/relay coil	16.7 mA/relay coil
Digital outputs					
Number of digital outputs	8	16	8	16	8
• in groups of	1	1	2	1	1
Short-circuit protection	No; to be provided externally	No; to be provided externally	No; to be provided externally	No; to be provided externally	No; to be provided externally
Limitation of inductive shutdown voltage to	typ. (L+) -48 V	typ. (L+) -48 V			
Switching capacity of the outputs					
• with resistive load, max.	0.5 A	0.5 A	2 A	2 A	2 A
• on lamp load, max.	5 W	5 W	30 W with DC, 200 W with AC	30 W with DC, 200 W with AC	30 W with DC, 200 W with AC
Output voltage					
• Rated value (DC)	24 V	24 V	5 V DC to 30 V DC	5 V DC to 30 V DC	5 V DC to 30 V DC
• Rated value (AC)			5 V AC to 250 V AC	5 V AC to 250 V AC	5 V AC to 250 V AC
• for signal "0", max.	0.1 V; with 10 kOhm load	0.1 V; with 10 kOhm load			
• for signal "1", min.	20 V DC	20 V DC			
Output current					
• for signal "1" rated value	0.5 A	0.5 A	2 A	2 A	2 A
• for signal "0" residual current, max.	10 µA	10 µA			
Output delay with resistive load					
• "0" to "1", max.	50 µs	50 µs	10 ms	10 ms	10 ms
• "1" to "0", max.	200 µs	200 µs	10 ms	10 ms	10 ms
Total current of the outputs (per group)					
horizontal installation					
- up to 50 °C, max.	4 A; Current per mass	8 A; Current per mass	10 A; Current per mass	10 A; Current per mass	2 A; Current per mass

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Technical specifications (continued)

Article number	6ES7222-1BF32-0XB0 Digital Output SM1222, 8 DQ, 24V DC	6ES7222-1BH32-0XB0 Digital Output SM1222, 16 DQ, 24V DC	6ES7222-1HF32-0XB0 Digital Output SM 1222, 8 DQ, Relay	6ES7222-1HH32-0XB0 Digital Output SM1222, 16 DQ, Relay	6ES7222-1XF32-0XB0 Digital Output SM 1222, 8 DQ, Changeover
Relay outputs					
• Number of relay outputs			8	16	8
• Rated supply voltage of relay coil L+ (DC)			24 V	24 V	24 V
• Number of operating cycles, max.			mechanically 10 million, at rated load voltage 100 000	mechanically 10 million, at rated load voltage 100 000	mechanically 10 million, at rated load voltage 100 000
Switching capacity of contacts					
- with inductive load, max.	0.5 A	0.5 A	2 A	2 A	2 A
- on lamp load, max.	5 W	5 W	30 W with DC, 200 W with AC	30 W with DC, 200 W with AC	30 W with DC, 200 W with AC
- with resistive load, max.	0.5 A	0.5 A	2 A	2 A	2 A
Cable length					
• shielded, max.	500 m	500 m	500 m	500 m	500 m
• unshielded, max.	150 m	150 m	150 m	150 m	150 m
Interrupts/diagnostics/ status information					
Alarms					
• Diagnostic alarm	Yes	Yes	Yes	Yes	Yes
Diagnostics indication LED					
• for status of the outputs	Yes	Yes	Yes	Yes	Yes
Potential separation					
Potential separation digital outputs					
• between the channels			Relays	Relays	Relays
• between the channels, in groups of	1	1	2	4	1
• between the channels and backplane bus	500 V AC	500 V AC	1500 V AC for 1 minute	1500 V AC for 1 minute	1500 V AC for 1 minute
Degree and class of protection					
Degree of protection acc. to EN 60529					
• IP20	Yes	Yes	Yes	Yes	Yes
Standards, approvals, certificates					
CE mark	Yes	Yes	Yes	Yes	Yes
CSA approval	Yes	Yes	Yes	Yes	Yes
UL approval	Yes	Yes	Yes	Yes	Yes
cULus	Yes	Yes	Yes	Yes	Yes
FM approval	Yes	Yes	Yes	Yes	Yes
RCM (formerly C-TICK)	Yes	Yes	Yes	Yes	Yes
Marine approval	Yes	Yes	Yes	Yes	Yes
Ambient conditions					
Free fall					
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation					
• min.	-20 °C	-20 °C	-20 °C	-20 °C	-20 °C
• max.	60 °C	60 °C	60 °C	60 °C; Number of simultaneously activated outputs: 8 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 16 at 55 °C horizontal or 45 °C vertical	60 °C; Number of simultaneously activated outputs: 4 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 at 55 °C horizontal or 45 °C vertical

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Technical specifications (continued)

Article number	6ES7222-1BF32-0XB0 Digital Output SM1222, 8 DQ, 24V DC	6ES7222-1BH32-0XB0 Digital Output SM1222, 16 DQ, 24V DC	6ES7222-1HF32-0XB0 Digital Output SM 1222, 8 DQ, Relay	6ES7222-1HH32-0XB0 Digital Output SM1222, 16 DQ, Relay	6ES7222-1XF32-0XB0 Digital Output SM 1222, 8 DQ, Changeover
Connection method					
required front connector	Yes	Yes	Yes	Yes	Yes
Mechanics/material					
Enclosure material (front)					
• Plastic	Yes	Yes	Yes	Yes	Yes
Dimensions					
Width	45 mm	45 mm	45 mm	45 mm	70 mm
Height	100 mm	100 mm	100 mm	100 mm	100 mm
Depth	75 mm	75 mm	75 mm	75 mm	75 mm
Weights					
Weight, approx.	180 g	220 g	190 g	260 g	310 g

Ordering data

	Article No.
SM 1222 digital output signal module	
8 outputs, 24 V DC; 0.5 A, 5 W, isolated	**6ES7222-1BF32-0XB0**
16 outputs, 24 V DC; 0.5 A, 5 W, isolated	**6ES7222-1BH32-0XB0**
8 relay outputs, 5 ... 30 V DC / 5 ... 250 V AC, 2 A, 30 W DC / 200 W AC	**6ES7222-1HF32-0XB0**
8 relay outputs, change-over contact, 5 ... 30 V DC / 5 ... 250 V AC, 2 A, 30 W DC / 200 W AC	**6ES7222-1XF32-0XB0**
16 relay outputs, 5 ... 30 V DC / 5 ... 250 V AC, 2 A, 30 W DC / 200 W AC	**6ES7222-1HH32-0XB0**
Extension cable for two-tier configuration	**6ES7290-6AA30-0XA0**
For connecting digital/analog signal modules; length 2 m	

	Article No.
Terminal block (spare part)	
For 6ES7222-1BF32-0XB0, 6ES7222-1BH32-0XB0	
• With 7 screws, zinc-plated; 4 pcs.	**6ES7292-1AG30-0XA0**
For 6ES7222-1HF32-0XB0	
• With 7 screws, tin-coated, left coded; 4 units	**6ES7292-1AG40-0XA1**
For 6ES7222-1HH32-0XB0	
• With 7 screws, tin-coated, right coded; 4 units	**6ES7292-1AG40-0XA0**
For 6ES7222-1XF32-0XB0	
• With 11 screws, tin-coated; 4 units	**6ES7292-1AL30-0XA0**
Front flap set (spare part)	
For modules with a width of 45 mm	**6ES7291-1BA30-0XA0**
For modules with a width of 70 mm	**6ES7291-1BB30-0XA0**

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Overview

- Digital outputs as a supplement to the integral I/O of SIMATIC S7-1200 CPUs
- Can be plugged directly into the CPU

Technical specifications

Article number	**6ES7222-1AD30-0XB0** Signal Board SB1222, 4 DQ 5VDC 200KHz	**6ES7222-1BD30-0XB0** Signal Board SB1222, 4 DQ 24VDC 200KHz
General information		
Product type designation	SB 1222, DQ 4x5 V DC 200 kHz	SB 1222, DQ 4x24 V DC 200 kHz
Input current		
from backplane bus 5 V DC, typ.	35 mA	35 mA
Power loss		
Power loss, typ.	0.5 W	0.5 W
Digital outputs		
Number of digital outputs	4; MOSFET, solid-state (current-sinking/current-sourcing)	4; MOSFET, solid-state (current-sinking/current-sourcing)
• in groups of	4	4
Short-circuit protection	No	No
Switching capacity of the outputs		
• with resistive load, max.	0.1 A	0.1 A
Load resistance range		
• upper limit	7 Ω	11 Ω
Output voltage		
• Rated value (DC)	5 V	24 V
• for signal "0", max.	0.2 V	1 V; with 10 kOhm load
• for signal "1", min.	L+ minus 0.7 V DC	L+ (-1.5 V)
• for signal "1", max.	6 V	
Output current		
• for signal "1" permissible range, max.	0.1 A	0.1 A
Cable length		
• shielded, max.	50 m	50 m
Diagnostics indication LED		
• for status of the outputs	Yes	Yes
Degree and class of protection		
Degree of protection acc. to EN 60529		
• IP20	Yes	Yes

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Technical specifications (continued)

Article number	6ES7222-1AD30-0XB0 Signal Board SB1222, 4 DQ 5VDC 200KHz	6ES7222-1BD30-0XB0 Signal Board SB1222, 4 DQ 24VDC 200KHz
Ambient conditions		
Free fall		
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation		
• min.	-20 °C	-20 °C
• max.	60 °C	60 °C
Mechanics/material		
Enclosure material (front)		
• Plastic	Yes	Yes
Dimensions		
Width	38 mm	38 mm
Height	62 mm	62 mm
Depth	21 mm	21 mm
Weights		
Weight, approx.	35 g	35 g

Ordering data

	Article No.
SB 1222 Signal Board digital output modules	
4 outputs, 5 V DC, 0.1 A, 200 kHz	**6ES7222-1AD30-0XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	**6ES7222-1BD30-0XB0**

	Article No.
Terminal block (spare part)	
for Signal Board	
with 6 screws, gold-plated; 4 pcs.	**6ES7292-1BF30-0XA0**

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Overview

- Digital inputs and outputs as supplement to the integral I/O of the CPUs
- For flexible adaptation of the controller to the relevant task
- For subsequent expansion of the system with additional inputs and outputs

Technical specifications

Article number	**6ES7223-1BH32-0XB0**	**6ES7223-1BL32-0XB0**	**6ES7223-1PH32-0XB0**	**6ES7223-1PL32-0XB0**	**6ES7223-1QH32-0XB0**
	Digital I/O SM 1223, 8 DI / 8 DQ	Digital I/O SM 1223, 16DI/16DQ	Digital I/O SM 1223, 8DI/8DQ	Digital I/O SM 1223, 16DI/16DQ	Digital I/O SM 1223, 8DI AC/8DQ Rly
General information					
Product type designation	SM 1223, DI 8x24 V DC, DQ 8x24 V DC	SM 1223, DI 16x24 V DC, DQ 16x24 V DC	SM 1223, DI 8x24 V DC, DQ 8x relay	SM 1223, DI 16x24 V DC, DQ 16x relay	SM 1223, DI 8x120/ 230 V AC, DQ 8x relay
Supply voltage					
Rated value (DC)					
• 24 V DC	Yes	Yes	Yes	Yes	Yes
Input current					
from backplane bus 5 V DC, max.	145 mA	185 mA	145 mA	180 mA	120 mA
Digital inputs					
• from load voltage L+ (without load), max.	4 mA; per channel	4 mA; per channel	4 mA/input 11 mA/ relay	4 mA/input 11 mA/ relay	
Output voltage					
Power supply to the transmitters					
• present	Yes	Yes	Yes	Yes	Yes
Power loss					
Power loss, typ.	2.5 W	4.5 W	5.5 W	10 W	7.5 W
Digital inputs					
Number of digital inputs	8	16	8	16	8
• in groups of	2	2	2	2	4
Input characteristic curve in accordance with IEC 61131, type 1	Yes	Yes	Yes	Yes	Yes
Number of simultaneously controllable inputs					
all mounting positions					
- up to 40 °C, max.	8	16	8	16	8
horizontal installation					
- up to 40 °C, max.	8	16	8	16	8
- up to 50 °C, max.	8	16	8	16	8
vertical installation					
- up to 40 °C, max.	8	16	8	16	8
Input voltage					
• Type of input voltage	DC	DC	DC	DC	AC
• Rated value (DC)	24 V	24 V	24 V	24 V	
• Rated value (AC)					120/230 V AC
• for signal "0"	5 V DC at 1 mA	5 V DC at 1 mA	5 V DC at 1 mA	5 V DC at 1 mA	20 V AC at 1 mA
• for signal "1"	15 V DC at 2.5 mA	15 V DC at 2.5 mA	15 V DC at 2.5 mA	15 V DC at 2.5 mA	79 V AC at 2.5 mA

Technical specifications (continued)

Article number	6ES7223-1BH32-0XB0 Digital I/O SM 1223, 8 DI / 8 DQ	6ES7223-1BL32-0XB0 Digital I/O SM 1223, 16DI/16DQ	6ES7223-1PH32-0XB0 Digital I/O SM 1223, 8DI/8DQ	6ES7223-1PL32-0XB0 Digital I/O SM 1223, 16DI/16DQ	6ES7223-1QH32-0XB0 Digital I/O SM 1223, 8DI AC/8DQ Rly
Input current					
• for signal "0", max. (permissible quiescent current)	1 mA	1 mA	1 mA	1 mA	1 mA
• for signal "1", min.	2.5 mA	2.5 mA	2.5 mA	2.5 mA	2.5 mA
• for signal "1", typ.	4 mA	4 mA	4 mA	4 mA	9 mA
Input delay (for rated value of input voltage)					
for standard inputs					
- parameterizable	Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four	Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four	Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four	Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four	Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four
for interrupt inputs					
- parameterizable	Yes	Yes	Yes	Yes	Yes
Cable length					
• shielded, max.	500 m	500 m	500 m	500 m	500 m
• unshielded, max.	300 m	300 m	300 m	300 m	300 m
Digital outputs					
Number of digital outputs	8	16	8	16	8
• in groups of	1	1	2	4	4
Short-circuit protection	No; to be provided externally	No; to be provided externally	No; to be provided externally	No; to be provided externally	No; to be provided externally
Limitation of inductive shutdown voltage to	L+ (-48 V)	L+ (-48 V)			
Switching capacity of the outputs					
• with resistive load, max.	0.5 A	0.5 A	2 A	2 A	2 A
• on lamp load, max.	5 W	5 W	30 W with DC, 200 W with AC	30 W with DC, 200 W with AC	30 W with DC, 200 W with AC
Output voltage					
• Rated value (DC)	24 V	24 V	5 V DC to 30 V DC	5 V DC to 30 V DC	5 V DC to 30 V DC
• Rated value (AC)			5 V AC to 250 V AC	5 V AC to 250 V AC	5 V AC to 250 V AC
• for signal "0", max.	0.1 V; with 10 kOhm load	0.1 V; with 10 kOhm load			
• for signal "1", min.	20 V DC	20 V DC			
Output current					
• for signal "1" permissible range, max.	0.5 A	0.5 A	2 A	2 A	2 A
• for signal "0" residual current, max.	10 µA	10 µA			
Output delay with resistive load					
• "0" to "1", max.	50 µs	50 µs	10 ms	10 ms	10 ms
• "1" to "0", max.	200 µs	200 µs	10 ms	10 ms	10 ms
Total current of the outputs (per group)					
horizontal installation					
- up to 50 °C, max.	4 A; Current per mass	8 A; Current per mass	10 A; Current per mass	8 A; Current per mass	8 A; Current per mass
Relay outputs					
• Number of relay outputs			8	16	8
• Rated supply voltage of relay coil L+ (DC)			24 V	24 V	24 V
• Number of operating cycles, max.			mechanically 10 million, at rated load voltage 100 000	mechanically 10 million, at rated load voltage 100 000	mechanically 10 million, at rated load voltage 100 000
Switching capacity of contacts					
- with inductive load, max.		0.5 A	2 A	2 A	2 A
- on lamp load, max.		5 W	30 W with DC, 200 W with AC	30 W with DC, 200 W with AC	30 W with DC, 200 W with AC
- with resistive load, max.		0.5 A	2 A	2 A	2 A
Cable length					
• shielded, max.	500 m	500 m	500 m	500 m	500 m
• unshielded, max.	150 m	150 m	150 m	150 m	150 m

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Technical specifications (continued)

Article number	6ES7223-1BH32-0XB0 Digital I/O SM 1223, 8 DI / 8 DQ	6ES7223-1BL32-0XB0 Digital I/O SM 1223, 16DI/16DQ	6ES7223-1PH32-0XB0 Digital I/O SM 1223, 8DI/8DQ	6ES7223-1PL32-0XB0 Digital I/O SM 1223, 16DI/16DQ	6ES7223-1QH32-0XB0 Digital I/O SM 1223, 8DI AC/8DQ Rly
Interrupts/diagnostics/ status information					
Alarms					
• Diagnostic alarm	Yes	Yes	Yes	Yes	Yes
Diagnostics indication LED					
• for status of the inputs	Yes	Yes	Yes	Yes	Yes
• for status of the outputs	Yes	Yes	Yes	Yes	Yes
Potential separation					
Potential separation digital inputs					
• between the channels, in groups of	2	2	2	2	2
Potential separation digital outputs					
• between the channels			Relays	Relays	Relays
• between the channels, in groups of	1	1	2	4	2
• between the channels and backplane bus	500 V AC	500 V AC	1500 V AC for 1 minute	1500 V AC for 1 minute	1500 V AC for 1 minute
Degree and class of protection					
Degree of protection acc. to EN 60529					
• IP20	Yes	Yes	Yes	Yes	Yes
Standards, approvals, certificates					
CE mark	Yes	Yes	Yes	Yes	Yes
CSA approval	Yes	Yes	Yes	Yes	Yes
cULus	Yes	Yes	Yes	Yes	Yes
FM approval	Yes	Yes	Yes	Yes	Yes
RCM (formerly C-TICK)	Yes	Yes	Yes	Yes	Yes
Marine approval	Yes		Yes	Yes	Yes
Ambient conditions					
Free fall					
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation					
• min.	-20 °C	-20 °C	-20 °C	-20 °C	-20 °C
• max.	60 °C	60 °C	60 °C	60 °C; Number of simultaneously activated outputs: 8 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 16 at 55 °C horizontal or 45 °C vertical	60 °C; Number of simultaneously activated outputs: 4 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 at 55 °C horizontal or 45 °C vertical
Connection method					
required front connector	Yes	Yes	Yes	Yes	Yes
Mechanics/material					
Enclosure material (front)					
• Plastic	Yes	Yes	Yes	Yes	Yes
Dimensions					
Width	45 mm	70 mm	45 mm	70 mm	45 mm
Height	100 mm	100 mm	100 mm	100 mm	100 mm
Depth	75 mm	75 mm	75 mm	75 mm	75 mm
Weights					
Weight, approx.	210 g	310 g	230 g	350 g	230 g

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SM 1223 digital input/output modules

Ordering data	Article No.
SM 1223 digital input/output signal module	
8 inputs, 24 V DC, IEC type 1 current sinking; 8 x 24 V DC transistor outputs, 0.5 A, 5 W	**6ES7223-1BH32-0XB0**
16 inputs, 24 V DC, IEC type 1 current sinking; 16 x 24 V DC transistor outputs, 0.5 A, 5 W	**6ES7223-1BL32-0XB0**
8 inputs, 24 V DC, IEC type 1 current sinking; 8 relay outputs, 5 ... 30 V DC/5 ... 250 V AC, 2 A, 30 W DC/200 W AC	**6ES7223-1PH32-0XB0**
16 inputs, 24 V DC, IEC type 1 current sinking; 16 relay outputs, 5 ... 30 V DC/5 ... 250 V AC, 2 A, 30 W DC/200 W AC	**6ES7223-1PL32-0XB0**
8 inputs, 120/230 V AC; 8 relay outputs, 5 ... 30 V DC/5 ... 250 V AC, 2 A, 30 W DC/200 W AC	**6ES7223-1QH32-0XB0**
Extension cable for two-tier configuration	**6ES7290-6AA30-0XA0**
for connecting digital/analog signal modules; length 2 m	

	Article No.
Terminal block (spare part)	
For 6ES7223-1BH32-0XB0	
• With 7 screws, tin-coated; 4 units	**6ES7292-1AG30-0XA0**
For 6ES7223-1BL32-0XB0	
• With 11 screws, tin-coated; 4 units	**6ES7292-1AL30-0XA0**
For 6ES7223-1PH32-0XB0	
• With 7 screws, zinc-plated; 4 pcs.	**6ES7292-1AG30-0XA0**
• With 7 screws, tin-coated, right coded; 4 units	**6ES7292-1AG40-0XA0**
For 6ES7223-1PL32-0XB0	
• With 11 screws, tin-coated; 4 units	**6ES7292-1AL30-0XA0**
• With 11 screws, tin-coated, coded; 4 units	**6ES7292-1AL40-0XA0**
For 6ES7223-1PL32-0XB0	
• With 7 screws, tin-coated, right coded; 4 units	**6ES7292-1AG40-0XA0**
Front flap set (spare part)	
For modules with a width of 45 mm	**6ES7291-1BA30-0XA0**
For modules with a width of 70 mm	**6ES7291-1BB30-0XA0**

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Overview

- Digital inputs and outputs as supplement to the integral I/O of the SIMATIC S7-1200 CPUs
- Can be plugged direct into the CPU

Technical specifications

Article number	**6ES7223-0BD30-0XB0** Signal Board SB1223, 2 DI/2 DQ	**6ES7223-3AD30-0XB0** Signal Board SB 1223, 2DI/2DQ 5V 200KHz	**6ES7223-3BD30-0XB0** Signal Board SB 1223, 2DI/2DQ 24V 200KHz
General information			
Product type designation	SB 1223, DI 2x24 V DC/DQ 2x24 V DC	SB 1223, DI 2x5 V DC/DQ 2x5 V DC 200 kHz	SB 1223, DI 2x24 V DC/DQ 2x24 V DC 200 kHz
Input current			
from backplane bus 5 V DC, typ.	50 mA	35 mA	35 mA
Output voltage			
Power supply to the transmitters			
• Supply current, max.	4 mA; per channel		
Power loss			
Power loss, typ.	1 W	0.5 W	0.5 W
Digital inputs			
Number of digital inputs	2; Current-sinking	2; Current-sourcing	2; Current-sourcing
• in groups of	1	2	2
Input characteristic curve in accordance with IEC 61131, type 1	Yes		
Number of simultaneously controllable inputs			
all mounting positions			
- up to 40 °C, max.	2		2
Input voltage			
• Type of input voltage	DC	DC	DC
• Rated value (DC)	24 V	5 V	24 V
• for signal "0"	0 to 5 V	(L+ minus 1.0 V DC) ... L+	(L+ minus 5.0 V DC) ... L+
• for signal "1"	+15 to +30V	0 V ... (L+ minus 2.0 V DC)	0 V ... (L+ minus 10 V DC)
Input current			
• for signal "0", max. (permissible quiescent current)	1 mA	2.2 mA	1.4 mA
• for signal "1", min.		5.1 mA	2.9 mA
• for signal "1", typ.	0.5 A		7 mA

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Technical specifications (continued)

Article number	6ES7223-0BD30-0XB0 Signal Board SB1223, 2 DI/2 DQ	6ES7223-3AD30-0XB0 Signal Board SB 1223, 2DI/2DQ 5V 200KHz	6ES7223-3BD30-0XB0 Signal Board SB 1223, 2DI/2DQ 24V 200KHz
Input delay (for rated value of input voltage)			
for standard inputs			
- parameterizable	Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four	Yes; 0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 µs; 0.05 / 0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 ms	Yes; 0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 µs; 0.05 / 0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 ms
- at "0" to "1", max.	2 µs		
- at "1" to "0", max.	10 µs		
for interrupt inputs			
- parameterizable	Yes	Yes	Yes
for technological functions			
- parameterizable	Yes	Yes	Yes
Cable length			
• shielded, max.	500 m	50 m; shielded, twisted pair	50 m; shielded, twisted pair
• unshielded, max.	300 m		
Digital outputs			
Number of digital outputs	2; MOSFET, solid-state (current-sinking/current-sourcing)	2; MOSFET, solid-state (current-sinking/current-sourcing)	2; MOSFET, solid-state (current-sinking/current-sourcing)
• in groups of	1	2	2
Short-circuit protection	No	No	No
Switching capacity of the outputs			
• with resistive load, max.	0.5 A	0.1 A	0.1 A
• on lamp load, max.	5 W		
Load resistance range			
• upper limit	0.6 Ω	7 Ω	
Output voltage			
• Rated value (DC)	24 V	5 V	24 V
• for signal "0", max.	0.1 V; with 10 kOhm load	0.2 V	1 V
• for signal "1", min.	20 V	L+ minus 0.7 V DC	L+ (-1.5 V)
• for signal "1", max.		6 V	
Output current			
• for signal "1" permissible range, max.	0.5 A	0.1 A	0.1 A
• for signal "0" residual current, max.	10 µA		
Cable length			
• shielded, max.	500 m	50 m	50 m
• unshielded, max.	150 m		
Interrupts/diagnostics/ status information			
Alarms	Yes		
Diagnostics function	Yes		
Diagnostics indication LED			
• for status of the inputs	Yes	Yes	Yes
• for status of the outputs	Yes	Yes	Yes
Degree and class of protection			
Degree of protection acc. to EN 60529			
• IP20	Yes	Yes	Yes

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Technical specifications (continued)

Article number	6ES7223-0BD30-0XB0 Signal Board SB1223, 2 DI/2 DQ	6ES7223-3AD30-0XB0 Signal Board SB 1223, 2DI/2DQ 5V 200KHz	6ES7223-3BD30-0XB0 Signal Board SB 1223, 2DI/2DQ 24V 200KHz
Ambient conditions			
Free fall			
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation			
• min.	-20 °C	-20 °C	-20 °C
• max.	60 °C	60 °C	60 °C
Mechanics/material			
Enclosure material (front)			
• Plastic	Yes	Yes	Yes
Dimensions			
Width	38 mm	38 mm	38 mm
Height	62 mm	62 mm	62 mm
Depth	21 mm	21 mm	21 mm
Weights			
Weight, approx.	40 g	35 g	35 g

Ordering data

	Article No.
SB 1223 digital input/output signal board	
2 inputs, 24 V DC, IEC type 1 current sinking; 2 x 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	**6ES7223-0BD30-0XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	**6ES7223-3AD30-0XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	**6ES7223-3BD30-0XB0**

	Article No.
Terminal block (spare part)	
for signal board	
with 6 screws, gold-plated; 4 pcs.	**6ES7292-1BF30-0XA0**

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SIPLUS SM 1221 digital input modules

Overview

- Digital inputs as supplement to the integral I/O of the CPUs
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional inputs
- From +60 °C to +70 °C, max. 50% of the inputs can be controlled simultaneously

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	**6AG1221-1BF32-2XB0**	**6AG1221-1BF32-4XB0**	**6AG1221-1BH32-2XB0**	**6AG1221-1BH32-4XB0**
Based on	**6ES7221-1BF32-0XB0**	**6ES7221-1BF32-0XB0**	**6ES7221-1BH32-0XB0**	**6ES7221-1BH32-0XB0**
	SIPLUS S7-1200 SM 1221 8DI	SIPLUS S7-1200 SM 1221 8DI	SIPLUS S7-1200 SM 1221 16DI	SIPLUS S7-1200 SM 1221 16DI
Ambient conditions				
Free fall				
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation				
• min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C
• max.	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated inputs 4 (no adjacent points) for horizontal mounting position	60 °C; = Tmax	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated inputs 8 (no adjacent points) for horizontal mounting position	60 °C; = Tmax
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes	Yes	Yes	Yes

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Technical specifications (continued)

Article number	6AG1221-1BF32-2XB0	6AG1221-1BF32-4XB0	6AG1221-1BH32-2XB0	6AG1221-1BH32-4XB0
Based on	6ES7221-1BF32-0XB0	6ES7221-1BF32-0XB0	6ES7221-1BH32-0XB0	6ES7221-1BH32-0XB0
	SIPLUS S7-1200 SM 1221 8DI	SIPLUS S7-1200 SM 1221 8DI	SIPLUS S7-1200 SM 1221 16DI	SIPLUS S7-1200 SM 1221 16DI
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark				
- 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!
Conformal coating				
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

Ordering data

	Article No.
Digital input SIPLUS signal module SM 1221	
(Extended temperature range and exposure to media)	
8 inputs, 24 V DC, isolated, current sourcing/sinking	
• Suitable for areas with extraordinary exposure to media (conformal coating)	**6AG1221-1BF32-4XB0**
• -25 ... +70 °C, from +60 … +70 °C number of simultaneously controllable inputs and outputs max. 50 %	**6AG1221-1BF32-2XB0**
16 inputs, 24 V DC, isolated, current sourcing/sinking	
• Suitable for areas with extraordinary exposure to media (conformal coating)	**6AG1221-1BH32-4XB0**
• -25 ... +70 °C, from +60 … +70 °C number of simultaneously controllable inputs and outputs max. 50 %	**6AG1221-1BH32-2XB0**

	Article No.
Accessories	See SIMATIC S7-1200 SM 1221 digital input modules, page 3/53

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SIPLUS SB 1221 digital input modules

Overview

- Digital inputs as a supplement to the integral I/O of SIMATIC S7-1200 CPUs
- Can be plugged directly into the CPU

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.

Technical specifications

Article number	**6AG1221-3AD30-5XB0**	**6AG1221-3BD30-5XB0**
Based on	**6ES7221-3AD30-0XB0**	**6ES7221-3BD30-0XB0**
	SIPLUS S7-1200 SB 1221 4DI 5VDC	SIPLUS S7-1200 SB 1221 4DI 24VDC
Ambient temperature		
Ambient temperature during operation		
• min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C
• max.	60 °C; = Tmax; Tmax > 55 °C number of simultaneously activated inputs 2 (no adjacent points) for horizontal mounting position	60 °C; = Tmax; Tmax > 55 °C number of simultaneously activated inputs 2 (no adjacent points) for horizontal mounting position
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spore s (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark		
- 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!

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Technical specifications (continued)

Article number	**6AG1221-3AD30-5XB0**	**6AG1221-3BD30-5XB0**
Based on	**6ES7221-3AD30-0XB0**	**6ES7221-3BD30-0XB0**
	SIPLUS S7-1200 SB 1221 4DI 5VDC	SIPLUS S7-1200 SB 1221 4DI 24VDC
Conformal coating		
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

Ordering data

	Article No.
SIPLUS SB 1221 digital input signal board	
(Extended temperature range and exposure to media)	
4 inputs, 5 V DC, 200 kHz, sourcing	**6AG1221-3AD30-5XB0**
4 inputs, 24 V DC, 200 kHz, sourcing	**6AG1221-3BD30-5XB0**

	Article No.
Accessories	See SIMATIC S7-1200 digital input SB 1221, page 3/55

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SIPLUS SM 1222 digital output modules

Overview

- Digital outputs as a supplement to the integral I/O of the CPUs
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional outputs
- From +60 °C to +70 °C, max. 50% of the inputs can be controlled simultaneously

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	**6AG1222-1BF32-2XB0**	**6AG1222-1BF32-4XB0**	**6AG1222-1BH32-2XB0**	**6AG1222-1BH32-4XB0**
Based on	**6ES7222-1BF32-0XB0**	**6ES7222-1BF32-0XB0**	**6ES7222-1BH32-0XB0**	**6ES7222-1BH32-0XB0**
	SIPLUS S7-1200 SM 1222 8DQ	SIPLUS S7-1200 SM 1222 8DQ	SIPLUS S7-1200 SM 1222 16DQ	SIPLUS S7-1200 SM 1222 16DQ
Ambient conditions				
Free fall				
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation				
• min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C
• max.	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 4 (no adjacent points) for horizontal mounting position	60 °C; = Tmax	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 8 (no adjacent points) for horizontal mounting position	60 °C; = Tmax
• At cold restart, min.	-25 °C	0 °C	-25 °C	0 °C
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

Technical specifications (continued)

Article number	6AG1222-1BF32-2XB0	6AG1222-1BF32-4XB0	6AG1222-1BH32-2XB0	6AG1222-1BH32-4XB0
Based on	6ES7222-1BF32-0XB0	6ES7222-1BF32-0XB0	6ES7222-1BH32-0XB0	6ES7222-1BH32-0XB0
	SIPLUS S7-1200 SM 1222 8DQ	SIPLUS S7-1200 SM 1222 8DQ	SIPLUS S7-1200 SM 1222 16DQ	SIPLUS S7-1200 SM 1222 16DQ
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark				
- 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!
Conformal coating				
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

Article number	6AG1222-1HF32-2XB0	6AG1222-1HF32-4XB0	6AG1222-1HH32-2XB0	6AG1222-1HH32-4XB0
Based on	6ES7222-1HF32-0XB0	6ES7222-1HF32-0XB0	6ES7222-1HH32-0XB0	6ES7222-1HH32-0XB0
	SIPLUS S7-1200 SM 1222 8DQ RLY	SIPLUS S7-1200 SM 1222 8DQ RLY	SIPLUS S7-1200 SM 1222 16DQ RLY	SIPLUS S7-1200 SM 1222 16DQ RLY
Ambient conditions				
Free fall				
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation				
• min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C
• max.	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 4 (no adjacent points) for horizontal mounting position	60 °C; = Tmax	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 8 (no adjacent points) for horizontal mounting position	60 °C; = Tmax
• At cold restart, min.	-25 °C	0 °C	-25 °C	0 °C

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SIPLUS SM 1222 digital output modules

Technical specifications (continued)

Article number	6AG1222-1HF32-2XB0	6AG1222-1HF32-4XB0	6AG1222-1HH32-2XB0	6AG1222-1HH32-4XB0
Based on	6ES7222-1HF32-0XB0	6ES7222-1HF32-0XB0	6ES7222-1HH32-0XB0	6ES7222-1HH32-0XB0
	SIPLUS S7-1200 SM 1222 8DQ RLY	SIPLUS S7-1200 SM 1222 8DQ RLY	SIPLUS S7-1200 SM 1222 16DQ RLY	SIPLUS S7-1200 SM 1222 16DQ RLY
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 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. 132 V AC	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. 132 V AC	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. 132 V AC	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. 132 V AC
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark				
- 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!
Conformal coating				
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

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Ordering data

	Article No.
Digital output SIPLUS signal module SM 1222	
(Extended temperature range and exposure to media)	
8 outputs, 24 V DC; 0.5 A, 5 W, isolated	
• Suitable for areas with extraordinary exposure to media (conformal coating)	**6AG1222-1BF32-4XB0**
• -25 ... +70 °C, from +60 … +70°C number of simultaneously controllable inputs and outputs max. 50%	**6AG1222-1BF32-2XB0**
16 outputs, 24 V DC; 0.5 A, 5 W, isolated	
• Suitable for areas with extraordinary exposure to media (conformal coating)	**6AG1222-1BH32-4XB0**
• -25 ... +70 °C, from +60 … +70°C number of simultaneously controllable inputs and outputs max. 50%	**6AG1222-1BH32-2XB0**
8 outputs, 5 ... 30 V DC/5 ... 250 V AC, relay 2 A, 30 W DC/200 W AC	
• Suitable for areas with extraordinary exposure to media (conformal coating)	**6AG1222-1HF32-4XB0**
• -25 ... +70 °C, from +60 … +70°C number of simultaneously controllable inputs and outputs max. 50%	**6AG1222-1HF32-2XB0**
16 outputs, 5 ... 30 V DC/5 ... 250 V AC, relay 2 A, 30 W DC/200 W AC	
• Suitable for areas with extraordinary exposure to media (conformal coating)	**6AG1222-1HH32-4XB0**
• -25 ... +70 °C, from +60 … +70°C number of simultaneously controllable inputs and outputs max. 50%	**6AG1222-1HH32-2XB0**
Accessories	See SIMATIC S7-1200 digital output SM 1222, page 3/58

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SIPLUS SB 1222 digital output modules

Overview

- Digital outputs as a supplement to the integral I/O of the CPUs
- For flexible adaptation of the controller to the respective task
- For subsequent expansion of the system with additional outputs
- Can be plugged directly into the CPU
- From +60 °C to +70 °C, max. 50% of the inputs can be controlled simultaneously

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	**6AG1222-1AD30-5XB0**	**6AG1222-1BD30-5XB0**
Based on	**6ES7222-1AD30-0XB0**	**6ES7222-1BD30-0XB0**
	SIPLUS S7-1200 SB 1222 4DQ 5VDC	SIPLUS S7-1200 SB 1222 4DQ 24VDC
Ambient temperature		
Ambient temperature during operation		
• min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C
• max.	60 °C; = Tmax; Tmax > 55 °C number of simultaneously activated outputs 2 (no adjacent points) for horizontal mounting position	60 °C; = Tmax; Tmax > 55 °C number of simultaneously activated outputs 2 (no adjacent points) for horizontal mounting position
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

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Technical specifications (continued)

Article number	**6AG1222-1AD30-5XB0**	**6AG1222-1BD30-5XB0**
Based on	**6ES7222-1AD30-0XB0**	**6ES7222-1BD30-0XB0**
	SIPLUS S7-1200 SB 1222 4DQ 5VDC	SIPLUS S7-1200 SB 1222 4DQ 24VDC
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark		
- 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!
Conformal coating		
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

Ordering data

	Article No.
SIPLUS SB 1222 digital output signal board	
(Extended temperature range and exposure to media)	
4 outputs, 5 V DC, 0.1 A, 200 kHz	**6AG1222-1AD30-5XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	**6AG1222-1BD30-5XB0**

	Article No.
Accessories	See SIMATIC S7-1200 digital output module SB 1222, page 3/60

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SIPLUS SM 1223 digital input/output modules

Overview

- Digital inputs and outputs as supplement to the integral I/O of the CPUs
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional inputs and outputs
- From +60 °C to +70 °C, max. 50% of the inputs can be controlled simultaneously

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	**6AG1223-1BH32-2XB0**	**6AG1223-1BH32-4XB0**	**6AG1223-1PH32-2XB0**	**6AG1223-1PH32-4XB0**
Based on	**6ES7223-1BH32-0XB0**	**6ES7223-1BH32-0XB0**	**6ES7223-1PH32-0XB0**	**6ES7223-1PH32-0XB0**
	SIPLUS S7-1200 SM 1223 8DI/8DQ	SIPLUS S7-1200 SM 1223 8DI/8DQ	SIPLUS S7-1200 SM 1223 8DI/8DQ RLY	SIPLUS S7-1200 SM 1223 8DI/8DQ RLY
Ambient conditions				
Free fall				
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation				
• min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C
• max.	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 4, inputs 4 (no adjacent points) for horizontal mounting position	60 °C; = Tmax	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 4, inputs 4 (no adjacent points) for horizontal mounting position	60 °C; = Tmax
• At cold restart, min.	-25 °C	0 °C	-25 °C	0 °C
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	2 000 m	2 000 m
• 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); above 2 000 m max. 132 V AC	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. 132 V AC
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes	Yes	Yes	Yes

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Technical specifications (continued)

Article number	6AG1223-1BH32-2XB0	6AG1223-1BH32-4XB0	6AG1223-1PH32-2XB0	6AG1223-1PH32-4XB0
Based on	6ES7223-1BH32-0XB0	6ES7223-1BH32-0XB0	6ES7223-1PH32-0XB0	6ES7223-1PH32-0XB0
	SIPLUS S7-1200 SM 1223 8DI/8DQ	SIPLUS S7-1200 SM 1223 8DI/8DQ	SIPLUS S7-1200 SM 1223 8DI/8DQ RLY	SIPLUS S7-1200 SM 1223 8DI/8DQ RLY
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark				
- 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!
Conformal coating				
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

Article number	6AG1223-1PL32-2XB0	6AG1223-1PL32-4XB0	6AG1223-1BL32-2XB0	6AG1223-1BL32-4XB0
Based on	6ES7223-1PL32-0XB0	6ES7223-1PL32-0XB0	6ES7223-1BL32-0XB0	6ES7223-1BL32-0XB0
	SIPLUS S7-1200 SM 1223 16DI/16DQ RLY	SIPLUS S7-1200 SM 1223 16DI/16DQ RLY	SIPLUS S7-1200 SM 1223 16DI/16DQ	SIPLUS S7-1200 SM 1223 16DI/16DQ
Ambient conditions				
Free fall				
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation				
• min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C
• max.	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 8, inputs 8 (no adjacent points) for horizontal mounting position	60 °C; = Tmax	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 8, inputs 8 (no adjacent points) for horizontal mounting position	60 °C; = Tmax
• At cold restart, min.	-25 °C	0 °C	-25 °C	0 °C

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Technical specifications (continued)

Article number	6AG1223-1PL32-2XB0	6AG1223-1PL32-4XB0	6AG1223-1BL32-2XB0	6AG1223-1BL32-4XB0
Based on	6ES7223-1PL32-0XB0	6ES7223-1PL32-0XB0	6ES7223-1BL32-0XB0	6ES7223-1BL32-0XB0
	SIPLUS S7-1200 SM 1223 16DI/16DQ RLY	SIPLUS S7-1200 SM 1223 16DI/16DQ RLY	SIPLUS S7-1200 SM 1223 16DI/16DQ	SIPLUS S7-1200 SM 1223 16DI/16DQ
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	2 000 m	2 000 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); above 2 000 m max. 132 V AC	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. 132 V AC	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes	Yes	Yes	Yes
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark				
- 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!
Conformal coating				
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

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Technical specifications (continued)

Article number	**6AG1223-1QH32-4XB0**
Based on	**6ES7223-1QH32-0XB0** SIPLUS S7-1200 SM 1223 8DI AC/8DQ RLY
Ambient temperature	
Ambient temperature during operation	
• min.	-20 °C; = Tmin (incl. condensation/ frost); start-up @ 0 °C
• max.	60 °C; = Tmax
Altitude during operation relating to sea level	

• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at
	1 080 hPa ... 795 hPa
	(-1 000 m ... +2 000 m) //
	Tmin ... (Tmax - 10 K) at
	795 hPa ... 658 hPa
	(+2 000 m ... +3 500 m) //
	Tmin ... (Tmax - 20 K) at
	658 hPa ... 540 hPa
	(+3 500 m ... +5 000 m)

Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

Ordering data

	Article No.
Digital input/output SIPLUS signal module SM 1223	
(Extended temperature range and exposure to media)	
8 inputs, 24 V DC, IEC type 1 current sinking; 8 transistor outputs, 24 V DC, 0.5 A, 5 W	
• For areas with exceptional exposure to media (conformal coating)	**6AG1223-1BH32-4XB0**
• -25 ... +70 °C, from +60 … +70 °C number of simultaneously controllable inputs and outputs max. 50 %	**6AG1223-1BH32-2XB0**
16 inputs, 24 V DC, IEC type 1 current sinking; 16 transistor outputs, 24 V DC, 0.5 A, 5 W	
• For areas with exceptional exposure to media (conformal coating)	**6AG1223-1BL32-4XB0**
• -25 ... +70 °C, from +60 … +70 °C number of simultaneously controllable inputs and outputs max. 50 %	**6AG1223-1BL32-2XB0**
8 inputs, 24 V DC, IEC type 1 current sinking; 8 relay outputs, 5 ... 30 V DC / 5 ... 250 V AC, 2 A, 30 W DC / 200 W AC	
• For areas with exceptional exposure to media (conformal coating)	**6AG1223-1PH32-4XB0**
• -25 ... +70 °C, from +60 … +70 °C number of simultaneously controllable inputs and outputs max. 50 %	**6AG1223-1PH32-2XB0**
16 inputs, 24 V DC, IEC type 1 current sinking; 16 relay outputs, 5 ... 30 V DC / 5 ... 250 V AC, 2 A, 30 W DC / 200 W AC	
• For areas with exceptional exposure to media (conformal coating)	**6AG1223-1PL32-4XB0**
• -25 ... +70 °C, from +60 … +70 °C number of simultaneously controllable inputs and outputs max. 50 %	**6AG1223-1PL32-2XB0**
8 inputs, 120/230 V AC; 8 relay outputs, 5 ... 30 V DC/ 5 ... 250 V AC, 2 A, 30 W DC/ 200 W AC	
• For areas with exceptional exposure to media (conformal coating)	**6AG1223-1QH32-4XB0**
Accessories	See SIMATIC S7-1200 digital input/output SM 1223, page 3/64

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SIPLUS SB 1223 digital input/output modules

Overview

- Digital inputs and outputs as supplement to the integral I/O of the SIPLUS S7-1200 CPUs
- Can be plugged directly into the CPU (cannot be used for +70 °C version)

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	**6AG1223-0BD30-4XB0**	**6AG1223-0BD30-5XB0**	**6AG1223-3AD30-5XB0**	**6AG1223-3BD30-5XB0**
Based on	**6ES7223-0BD30-0XB0**	**6ES7223-0BD30-0XB0**	**6ES7223-3AD30-0XB0**	**6ES7223-3BD30-0XB0**
	SIPLUS S7-1200 SB 1223 2DI/2DQ 24VDC	SIPLUS S7-1200 SB 1223 2DI/2DQ 24VDC	SIPLUS S7-1200 SB 1223 2DI/2DQ 5VDC	SIPLUS S7-1200 SB 1223 2DI/2DQ, 24VDC
Ambient conditions				
Free fall				
• Fall height, max.	0.3 m; five times, in product package			
Ambient temperature during operation				
• min.	0 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C
• max.	55 °C; = Tmax	60 °C; = Tmax	60 °C; = Tmax	60 °C; = Tmax
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost permitted (no commissioning in bedewed state)	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

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Technical specifications (continued)

Article number	6AG1223-0BD30-4XB0	6AG1223-0BD30-5XB0	6AG1223-3AD30-5XB0	6AG1223-3BD30-5XB0
Based on	6ES7223-0BD30-0XB0	6ES7223-0BD30-0XB0	6ES7223-3AD30-0XB0	6ES7223-3BD30-0XB0
	SIPLUS S7-1200 SB 1223 2DI/2DQ 24VDC	SIPLUS S7-1200 SB 1223 2DI/2DQ 24VDC	SIPLUS S7-1200 SB 1223 2DI/2DQ 5VDC	SIPLUS S7-1200 SB 1223 2DI/2DQ, 24VDC
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark				
- 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!
Conformal coating				
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

Ordering data

	Article No.
Digital input/output SIPLUS signal board SB 1223	
(Extended temperature range and exposure to media)	
2 inputs, 24 V DC, IEC type 1 current sinking; 2 x 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	
• Suitable for areas with extreme exposure to media (conformal coating)	**6AG1223-0BD30-4XB0**
• Ambient temperature -25 ... +55 °C	**6AG1223-0BD30-5XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	**6AG1223-3AD30-5XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	**6AG1223-3BD30-5XB0**

	Article No.
Accessories	See SIMATIC S7-1200 digital input/output SB 1223, page 3/67

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SM 1231 analog input modules

Overview

- Analog inputs for SIMATIC S7-1200
- Extremely short conversion times
- For the connection of analog sensors without additional amplifiers
- For solving even more complex automation tasks

Technical specifications

Article number	**6ES7231-4HD32-0XB0**	**6ES7231-4HF32-0XB0**	**6ES7231-5ND32-0XB0**
	Analog Input SM 1231, 4AI	Analog Input SM 1231, 8AI	Analog Input SM 1231, 4AI 16bit
General information			
Product type designation	SM 1231, AI 4x13 bit	SM 1231, AI 8x13 bit	SM 1231, AI 4x16 bit
Supply voltage			
Rated value (DC)			
• 24 V DC	Yes	Yes	Yes
Input current			
Current consumption, typ.	45 mA	45 mA	65 mA
from backplane bus 5 V DC, typ.	80 mA	90 mA	80 mA
Analog inputs			
Number of analog inputs	4; Current or voltage differential inputs	8; Current or voltage differential inputs	4; Current or voltage differential inputs
permissible input voltage for voltage input (destruction limit), max.	35 V	35 V	±35 V
permissible input current for current input (destruction limit), max.	40 mA	40 mA	40 mA
Cycle time (all channels) max.	625 µs	625 µs	100 µs
Input ranges			
• Voltage	Yes; ±10V, ±5V, ±2.5V	Yes; ±10V, ±5V, ±2.5V	Yes; ±10V, ±5V, ±2.5V or ±1.25V
• Current	Yes; 4 to 20 mA, 0 to 20 mA	Yes; 4 to 20 mA, 0 to 20 mA	Yes; 4 to 20 mA, 0 to 20 mA
• Thermocouple	No	No	No
• Resistance thermometer	No	No	No
• Resistance	No	Yes	No
Input ranges (rated values), voltages			
• -1.25 V to +1.25 V			Yes
• -10 V to +10 V	Yes	Yes	Yes
• -2.5 V to +2.5 V	Yes	Yes	Yes
• -5 V to +5 V	Yes	Yes	Yes
Input ranges (rated values), currents			
• 0 to 20 mA	Yes	Yes	Yes
• 4 mA to 20 mA	Yes	Yes	Yes
Thermocouple (TC)			
Temperature compensation			
- parameterizable		No	

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Technical specifications (continued)

Article number	6ES7231-4HD32-0XB0 Analog Input SM 1231, 4AI	6ES7231-4HF32-0XB0 Analog Input SM 1231, 8AI	6ES7231-5ND32-0XB0 Analog Input SM 1231, 4AI 16bit
Analog value generation for the inputs			
Integration and conversion time/ resolution per channel			
• Resolution with overrange (bit including sign), max.	12 bit; + sign	12 bit; + sign	15 bit; + sign
• Integration time, parameterizable	Yes	Yes	Yes
• Interference voltage suppression for interference frequency f1 in Hz	40 dB, DC to 60 V for interference frequency 50 / 60 Hz	40 dB, DC to 60 V for interference frequency 50 / 60 Hz	40 dB, DC to 60 V for interference frequency 50 / 60 Hz
Smoothing of measured values			
• parameterizable	Yes	Yes	Yes
• Step: None	Yes	Yes	Yes
• Step: low	Yes	Yes	Yes
• Step: Medium	Yes	Yes	Yes
• Step: High	Yes	Yes	Yes
Errors/accuracies			
Temperature error (relative to input range), (+/-)	25 °C ±0.1%, to 55 °C ±0.2% total measurement range	25 °C ±0.1%, to 55 °C ±0.2% total measurement range	25 °C ±0.1% / ±0.3% total measurement range
Basic error limit (operational limit at 25 °C)			
• Voltage, relative to input range, (+/-)	0.1 %	0.1 %	0.1 %
• Current, relative to input range, (+/-)	0.1 %	0.1 %	0.1 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency			
• Common mode voltage, max.	12 V	12 V	12 V
Interrupts/diagnostics/ status information			
Alarms	Yes	Yes	Yes
Diagnostics function	Yes	Yes	Yes
Alarms			
• Diagnostic alarm	Yes	Yes	Yes
Diagnostic messages			
• Monitoring the supply voltage	Yes	Yes	Yes
• Wire-break	Yes	Yes	Yes
Diagnostics indication LED			
• for status of the inputs	Yes	Yes	Yes
• for maintenance	Yes	Yes	Yes
Degree and class of protection			
Degree of protection acc. to EN 60529			
• IP20	Yes	Yes	Yes
Standards, approvals, certificates			
CE mark	Yes	Yes	Yes
CSA approval	Yes	Yes	Yes
FM approval	Yes	Yes	Yes
RCM (formerly C-TICK)	Yes	Yes	Yes
Marine approval	Yes	Yes	Yes
Ambient conditions			
Free fall			
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation			
• min.	-20 °C	-20 °C	-20 °C
• max.	60 °C	60 °C	60 °C
Pollutant concentrations			
• SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free

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Technical specifications (continued)

Article number	6ES7231-4HD32-0XB0 Analog Input SM 1231, 4AI	6ES7231-4HF32-0XB0 Analog Input SM 1231, 8AI	6ES7231-5ND32-0XB0 Analog Input SM 1231, 4AI 16bit
Connection method			
required front connector	Yes	Yes	Yes
Mechanics/material			
Enclosure material (front)			
• Plastic	Yes	Yes	Yes
Dimensions			
Width	45 mm	45 mm	45 mm
Height	100 mm	100 mm	100 mm
Depth	75 mm	75 mm	75 mm
Weights			
Weight, approx.	180 g	180 g	180 g

Ordering data

	Article No.
SM 1231 analog input signal module	
4 analog inputs, ±10V, ±5V, ±2.5V, or 0 ... 20 mA, 16 bits	**6ES7231-5ND32-0XB0**
4 analog inputs, ±10V, ±5V, ±2.5V, or 0 ... 20 mA,12 bits + sign	**6ES7231-4HD32-0XB0**
8 analog inputs, ±10V, ±5V, ±2.5V, or 0 ... 20 mA,12 bits + sign	**6ES7231-4HF32-0XB0**
Extension cable for two-tier configuration	**6ES7290-6AA30-0XA0**
For connecting digital/analog signal modules; length 2 m	

	Article No.
Terminal block (spare part)	
For 6ES7231-5ND32-0XB0, 6ES7231-4HD32-0XB0, 6ES7231-4HF32-0XB0	
• With 7 screws, gold-plated; 4 pcs.	**6ES7292-1BG30-0XA0**
Front flap set (spare part)	
For modules with a width of 45 mm	**6ES7291-1BA30-0XA0**

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Overview

- Analog input for SIMATIC S7-1200
- Extremely short conversion times
- For the connection of analog sensors without additional amplifiers
- For solving even more complex automation tasks
- Can be plugged directly into the CPU

Technical specifications

Article number	**6ES7231-4HA30-0XB0**
	Signal Board SB 1231, 1 AI
General information	
Product type designation	SB 1231, AI 1x12 bit
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Input current	
from backplane bus 5 V DC, typ.	55 mA
Power loss	
Power loss, typ.	0.4 W
Analog inputs	
Number of analog inputs	1; Current or voltage differential inputs
permissible input voltage for current input (destruction limit), max.	±35 V
permissible input voltage for voltage input (destruction limit), max.	35 V
permissible input current for voltage input (destruction limit), max.	40 mA
permissible input current for current input (destruction limit), max.	40 mA
Cycle time (all channels) max.	156.25 µs; 400 Hz suppression
Input ranges	
• Voltage	Yes; ±10V, ±5V, ±2.5V
• Current	Yes; 0 to 20 mA
• Thermocouple	No
• Resistance thermometer	No
• Resistance	No
Input ranges (rated values), voltages	
• -10 V to +10 V	Yes
• -2.5 V to +2.5 V	Yes
• -5 V to +5 V	Yes
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
Analog outputs	
Number of analog outputs	0
Cable length	
• shielded, max.	100 m; shielded, twisted pair

Article number	**6ES7231-4HA30-0XB0**
	Signal Board SB 1231, 1 AI
Analog value generation for the inputs	
Measurement principle	integrating
Integration and conversion time/ resolution per channel	
• Resolution with overrange (bit including sign), max.	11 bit; + sign
• Integration time, parameterizable	Yes
• Interference voltage suppression for interference frequency f1 in Hz	40 dB, DC to 60 Hz
Smoothing of measured values	
• parameterizable	Yes
• Step: None	Yes
• Step: low	Yes
• Step: Medium	Yes
• Step: High	Yes
Errors/accuracies	
Temperature error (relative to input range), (+/-)	25 °C ±0.3%, to 55 °C ±0.6% total measurement range
Interrupts/diagnostics/ status information	
Alarms	Yes
Diagnostics function	Yes
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• Wire-break	No
Diagnostics indication LED	
• for status of the inputs	Yes
• for maintenance	Yes
Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes

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Technical specifications (continued)

Article number	6ES7231-4HA30-0XB0 Signal Board SB 1231, 1 AI
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C
• max.	60 °C
Pollutant concentrations	
• SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Connection method	
required front connector	Yes
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	38 mm
Height	62 mm
Depth	21 mm
Weights	
Weight, approx.	35 g

Ordering data

	Article No.
SB 1231 signal board analog input module	
1 analog input, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	**6ES7231-4HA30-0XB0**
Terminal block (spare part)	
for signal board	
with 6 screws, gold-plated; 4 pcs.	**6ES7292-1BF30-0XA0**

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Overview

- Analog outputs for SIMATIC S7-1200
- Extremely short conversion times
- For connecting analog actuators without additional amplifiers
- For solving even more complex automation tasks

Technical specifications

Article number	**6ES7232-4HB32-0XB0** Analog Output SM 1232, 2AQ	**6ES7232-4HD32-0XB0** Analog Output SM 1232, 4AQ
General information		
Product type designation	SM 1232, AQ 2x14 bit	SM 1232, AQ 4x14 bit
Supply voltage		
Rated value (DC)		
• 24 V DC	Yes	Yes
Input current		
Current consumption, typ.	45 mA	45 mA
from backplane bus 5 V DC, typ.	80 mA	80 mA
Analog outputs		
Number of analog outputs	2; Current or voltage	4; Current or voltage
Output ranges, voltage		
• -10 V to +10 V	Yes	Yes
Output ranges, current		
• 0 to 20 mA	Yes	Yes
Load impedance (in rated range of output)		
• with voltage outputs, min.	1 000 Ω	1 000 Ω
• with current outputs, max.	600 Ω	600 Ω
Cable length		
• shielded, max.	100 m; shielded, twisted pair	100 m; shielded, twisted pair
Analog value generation for the outputs		
Integration and conversion time/ resolution per channel		
• Resolution (incl. overrange)	Voltage: 14 bit; Current : 13 bit	Voltage: 14 bit; Current : 13 bit
Errors/accuracies		
Temperature error (relative to output range), (+/-)	25 °C ±0.3%, to 55 °C ±0.6% total measurement range	25 °C ±0.3%, to 55 °C ±0.6% total measurement range
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to output range, (+/-)	0.3 %	0.3 %
• Current, relative to output range, (+/-)	0.3 %	0.3 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency		
• Common mode voltage, max.	12 V	12 V

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Technical specifications (continued)

Article number	6ES7232-4HB32-0XB0 Analog Output SM 1232, 2AQ	6ES7232-4HD32-0XB0 Analog Output SM 1232, 4AQ
Interrupts/diagnostics/ status information		
Alarms	Yes	Yes
Diagnostics function	Yes	Yes
Alarms		
• Diagnostic alarm	Yes	Yes
Diagnostic messages		
• Monitoring the supply voltage	Yes	Yes
• Wire-break	Yes	Yes
• Short-circuit	Yes	Yes
Diagnostics indication LED		
• for status of the outputs	Yes	Yes
• for maintenance	Yes	Yes
Degree and class of protection		
Degree of protection acc. to EN 60529		
• IP20	Yes	Yes
Standards, approvals, certificates		
CE mark	Yes	Yes
CSA approval	Yes	Yes
FM approval	Yes	Yes
RCM (formerly C-TICK)	Yes	Yes
Ambient conditions		
Free fall		
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation		
• min.	-20 °C	-20 °C
• max.	60 °C	60 °C
Pollutant concentrations		
• SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Connection method		
required front connector	Yes	Yes
Mechanics/material		
Enclosure material (front)		
• Plastic	Yes	Yes
Dimensions		
Width	45 mm	45 mm
Height	100 mm	100 mm
Depth	75 mm	75 mm
Weights		
Weight, approx.	180 g	180 g

Ordering data

	Article No.
SM 1232 analog output signal module	
2 analog outputs, ±10 V with 14 bits or 0 ... 20 mA with 13 bits	**6ES7232-4HB32-0XB0**
4 analog outputs, ±10 V with 14 bits or 0 ... 20 mA with 13 bits	**6ES7232-4HD32-0XB0**
Terminal block (spare part)	
For 6ES7232-4HB32-0XB0, 6ES7232-4HD32-0XB0	
with 7 screws, gold-plated; 4 units	**6ES7292-1BG30-0XA0**

	Article No.
Extension cable for two-tier configuration	**6ES7290-6AA30-0XA0**
for connecting digital/analog signal modules; length 2 m	
Front flap set (spare part)	
For modules with a width of 45 mm	**6ES7291-1BA30-0XA0**

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Overview

- Analog output for SIMATIC S7-1200
- Can be plugged directly into the CPU

Technical specifications

Article number	**6ES7232-4HA30-0XB0** Signal Board SB 1232, 1 AQ
General information	
Product type designation	SB 1232, AQ 1x12 bit
Input current	
from backplane bus 5 V DC, typ.	15 mA
Output voltage	
Power supply to the transmitters	
• Supply current, max.	25 mA
Power loss	
Power loss, typ.	1.5 W
Analog inputs	
Number of analog inputs	0
Analog outputs	
Number of analog outputs	1
Cycle time (all channels) max.	Voltage: 300 µS (R), 750 µS (1 uF) Current: 600 ms (1 mH); 2 ms (10 mH)
Output ranges, voltage	
• -10 V to +10 V	Yes
Output ranges, current	
• 0 to 20 mA	Yes
Load impedance (in rated range of output)	
• with voltage outputs, min.	1 000 Ω
• with current outputs, max.	600 Ω
Cable length	
• shielded, max.	100 m; shielded, twisted pair

Article number	**6ES7232-4HA30-0XB0** Signal Board SB 1232, 1 AQ
Analog value generation for the outputs	
Conversion principle	Differential
Integration and conversion time/ resolution per channel	
• Resolution with overrange (bit including sign), max.	12 bit
Errors/accuracies	
Temperature error (relative to output range), (+/-)	25 °C ±0.5%, to 55 °C ±1%
Interrupts/diagnostics/ status information	
Alarms	Yes
Diagnostics function	Yes
Diagnostics indication LED	
• for status of the outputs	Yes
Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C
• max.	60 °C

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SB 1232 analog output modules

Technical specifications (continued)

Article number	6ES7232-4HA30-0XB0 Signal Board SB 1232, 1 AQ
Pollutant concentrations	
• SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	38 mm
Height	62 mm
Depth	21 mm
Weights	
Weight, approx.	40 g

Ordering data

	Article No.
SB 1232 analog output signal board	
1 analog output, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	**6ES7232-4HA30-0XB0**
Terminal block (spare part)	
for signal board	
with 6 screws, gold-plated; 4 pcs.	**6ES7292-1BF30-0XA0**

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Overview

- Analog inputs and outputs for the SIMATIC S7-1200
- Extremely short conversion times
- For connecting analog actuators and sensors without additional amplifiers
- For solving even more complex automation tasks

Technical specifications

Article number	**6ES7234-4HE32-0XB0**
	Analog I/O SM 1234, 4AI/2AQ
General information	
Product type designation	SM 1234, AI 4x13 bit/AQ 2x14 bit
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Input current	
Current consumption, typ.	60 mA
from backplane bus 5 V DC, typ.	80 mA
Analog inputs	
Number of analog inputs	4; Current or voltage differential inputs
permissible input voltage for voltage input (destruction limit), max.	35 V
permissible input current for current input (destruction limit), max.	40 mA
Cycle time (all channels) max.	625 µs
Input ranges	
• Voltage	Yes; ±10V, ±5V, ±2.5V
• Current	Yes; 4 to 20 mA, 0 to 20 mA
Input ranges (rated values), voltages	
• -10 V to +10 V	Yes
• -2.5 V to +2.5 V	Yes
• -5 V to +5 V	Yes
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
• 4 mA to 20 mA	Yes
Analog outputs	
Number of analog outputs	2; Current or voltage
Output ranges, voltage	
• -10 V to +10 V	Yes
Output ranges, current	
• 0 to 20 mA	Yes
• 4 mA to 20 mA	Yes
Load impedance (in rated range of output)	
• with voltage outputs, min.	1 000 Ω
• with current outputs, max.	600 Ω
Cable length	
• shielded, max.	100 m; shielded, twisted pair

Article number	**6ES7234-4HE32-0XB0**
	Analog I/O SM 1234, 4AI/2AQ
Analog value generation for the inputs	
Measurement principle	Differential
Integration and conversion time/ resolution per channel	
• Resolution with overrange (bit including sign), max.	12 bit; + sign
• Integration time, parameterizable	Yes
• Interference voltage suppression for interference frequency f1 in Hz	40 dB, DC to 60 V for interference frequency 50 / 60 Hz
Smoothing of measured values	
• parameterizable	Yes
• Step: None	Yes
• Step: low	Yes
• Step: Medium	Yes
• Step: High	Yes
Analog value generation for the outputs	
Integration and conversion time/ resolution per channel	
• Resolution (incl. overrange)	Voltage: 14 bit; Current : 13 bit
Errors/accuracies	
Temperature error (relative to input range), (+/-)	25 °C ±0.1%, to 55 °C ±0.2% total measurement range
Temperature error (relative to output range), (+/-)	25 °C ±0.3%, to 55 °C ±0.6% total measurement range
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-)	0.1 %
• Current, relative to input range, (+/-)	0.1 %
• Voltage, relative to output range, (+/-)	0.3 %
• Current, relative to output range, (+/-)	0.3 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency	
• Common mode voltage, max.	12 V

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Technical specifications (continued)

Article number	6ES7234-4HE32-0XB0 Analog I/O SM 1234, 4AI/2AQ
Interrupts/diagnostics/ status information	
Alarms	Yes
Diagnostics function	Yes
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
Diagnostics indication LED	
• for status of the inputs	Yes
• for status of the outputs	Yes
• for maintenance	Yes
Potential separation analog outputs	
• between the channels and the power supply of the electronics	No
Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
Marine approval	Yes
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C
• max.	60 °C
Pollutant concentrations	
• SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Connection method	
required front connector	Yes
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	45 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	220 g

Ordering data

	Article No.
SM 1234 analog input/output signal module	
4 analog inputs, ±10 V, ±5 V, ±2.5 V, or 0 ... 20 mA, 12 bits + sign; 2 analog outputs, ±10 V with 14 bits or 0 ... 20 mA with 13 bits	**6ES7234-4HE32-0XB0**
Terminal block (spare part)	
For 6ES7234-4HE32-0XB0	
with 7 screws, gold-plated; 4 pcs.	**6ES7292-1BG30-0XA0**
Extension cable for two-tier configuration	**6ES7290-6AA30-0XA0**
for connecting digital/analog signal modules; length 2 m	
Front flap set (spare part)	
For modules with a width of 45 mm	**6ES7291-1BA30-0XA0**

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Overview

- For the convenient recording of temperatures with great accuracy
- 7 common thermocouple types can be used
- Also for the measurement of analog signals with a low level (±80 mV)
- Can easily be retrofitted to existing plant

Technical specifications

Article number	**6ES7231-5QD32-0XB0** S7-1200, Analog Input SM 1231 TC, 4 AI	**6ES7231-5QF32-0XB0** S7-1200, Analog Input SM 1231 TC, 8 AI
General information		
Product type designation	SM 1231, AI 4x16 bit TC	SM 1231, AI 8x16 bit TC
Supply voltage		
Rated value (DC)		
• 24 V DC	Yes	Yes
Input current		
Current consumption, typ.	40 mA	40 mA
from backplane bus 5 V DC, typ.	80 mA	80 mA
Analog inputs		
Number of analog inputs	4; Thermocouples	8; Thermocouples
permissible input voltage for voltage input (destruction limit), max.	±35 V	±35 V
Technical unit for temperature measurement adjustable	Degrees Celsius/degrees Fahrenheit	Degrees Celsius/degrees Fahrenheit
Input ranges		
• Voltage	Yes	Yes
• Current	No	No
• Thermocouple	Yes; J, K, T, E, R, S, N, C, TXK/XK(L); voltage range: ±80 mV	Yes; J, K, T, E, R & S, B, N, C, TXK/XK(L); voltage range: ±80 mV
• Resistance thermometer	No	No
• Resistance	No	No
Input ranges (rated values), voltages		
• -80 mV to +80 mV	Yes	Yes
Input ranges (rated values), thermocouples		
• Type B	Yes	Yes
• Type C	Yes	Yes
• Type E	Yes	Yes
• Type J	Yes	Yes
• Type K	Yes	Yes
• Type N	Yes	Yes
• Type R	Yes	Yes
• Type S	Yes	Yes
• Type T	Yes	Yes
• Type TXK/TXK(L) to GOST	Yes	Yes
Thermocouple (TC)		
Temperature compensation		
- parameterizable	No	No

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Technical specifications (continued)

Article number	6ES7231-5QD32-0XB0 S7-1200, Analog Input SM 1231 TC, 4 AI	6ES7231-5QF32-0XB0 S7-1200, Analog Input SM 1231 TC, 8 AI
Analog value generation for the inputs		
Measurement principle	integrating	integrating
Integration and conversion time/ resolution per channel		
• Resolution with overrange (bit including sign), max.	15 bit; + sign	15 bit; + sign
• Integration time, parameterizable	No	No
• Interference voltage suppression for interference frequency f1 in Hz	85 dB at 50 / 60 / 400 Hz	85 dB at 50 / 60 / 400 Hz
Smoothing of measured values		
• parameterizable	Yes	Yes
Errors/accuracies		
Temperature error (relative to input range), (+/-)	25 °C ±0.1%, to 55 °C ±0.2% total measurement range	25 °C ±0.1%, to 55 °C ±0.2% total measurement range
Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)	0.5 %	0.5 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency		
• Common mode interference, min.	120 dB	120 dB
Interrupts/diagnostics/ status information		
Alarms	Yes	Yes
Diagnostics function	Yes; Can be read out	Yes; Can be read out
Alarms		
• Diagnostic alarm	Yes	Yes
Diagnostic messages		
• Monitoring the supply voltage	Yes	Yes
• Wire-break	Yes	Yes
Diagnostics indication LED		
• for status of the inputs	Yes	Yes
• for maintenance	Yes	Yes
Degree and class of protection		
Degree of protection acc. to EN 60529		
• IP20	Yes	Yes
Standards, approvals, certificates		
CE mark	Yes	Yes
CSA approval	Yes	Yes
FM approval	Yes	Yes
RCM (formerly C-TICK)	Yes	Yes
Ambient conditions		
Free fall		
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation		
• min.	-20 °C	-20 °C
• max.	60 °C	60 °C
Pollutant concentrations		
• SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Connection method		
required front connector	Yes	Yes

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Technical specifications (continued)

Article number	**6ES7231-5QD32-0XB0** S7-1200, Analog Input SM 1231 TC, 4 AI	**6ES7231-5QF32-0XB0** S7-1200, Analog Input SM 1231 TC, 8 AI
Mechanics/material		
Enclosure material (front)		
• Plastic	Yes	Yes
Dimensions		
Width	45 mm	45 mm
Height	100 mm	100 mm
Depth	75 mm	75 mm
Weights		
Weight, approx.	180 g	220 g

Ordering data

	Article No.
SM 1231 thermocouple module	
4 inputs +/- 80 mV, resolution 15 bits + sign, thermocouple types J, K, S, T, R, E, N	**6ES7231-5QD32-0XB0**
8 inputs +/- 80 mV, resolution 15 bits + sign, thermocouple types J, K, T, E, R, S, N, C, TXK/XK(L)	**6ES7231-5QF32-0XB0**
Accessories	
Terminal block (spare part)	
For 6ES7231-5QD32-0XB0, 6ES7231-5QF32-0XB0	
With 7 screws, gold-plated; 4 units	**6ES7292-1BG30-0XA0**
Extension cable for two-tier configuration	**6ES7290-6AA30-0XA0**
for connecting digital/analog signal modules; length 2 m	
Front flap set (spare part)	
For modules with a width of 45 mm	**6ES7291-1BA30-0XA0**

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SB 1231 thermocouple signal board

Overview

- For the convenient recording of temperatures with great accuracy
- 1 input with 16-bit resolution
- Common thermocouple types can be used
- Also for the measurement of analog signals with a low level (±80 mV)
- Can easily be retrofitted to existing plant
- Can be plugged directly into the CPU

Technical specifications

Article number	**6ES7231-5QA30-0XB0** Signal Board SB 1231 TC, 1 AI
General information	
Product type designation	SB 1231, AI 1x16 bit TC
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Input current	
Current consumption, typ.	5 mA
from backplane bus 5 V DC, typ.	20 mA
Power loss	
Power loss, typ.	0.5 W
Analog inputs	
Number of analog inputs	1; Thermocouples
permissible input voltage for current input (destruction limit), max.	±35 V
permissible input voltage for voltage input (destruction limit), max.	±35 V
Technical unit for temperature measurement adjustable	Degrees Celsius/degrees Fahrenheit
Input ranges	
• Voltage	Yes
• Current	No
• Thermocouple	Yes; J, K, T, E, R & S, B, N, C, TXK/XK(L); voltage range: ±80 mV
• Resistance thermometer	No
• Resistance	No
Input ranges (rated values), voltages	
• -80 mV to +80 mV	Yes
Input ranges (rated values), thermocouples	
• Type J	Yes
• Type K	Yes
Thermocouple (TC)	
Temperature compensation	
- parameterizable	No
Analog outputs	
Number of analog outputs	0
Cable length	
• shielded, max.	100 m; shielded, twisted pair

Article number	**6ES7231-5QA30-0XB0** Signal Board SB 1231 TC, 1 AI
Analog value generation for the inputs	
Measurement principle	integrating
Integration and conversion time/ resolution per channel	
• Resolution with overrange (bit including sign), max.	15 bit; + sign
• Integration time, parameterizable	No
• Interference voltage suppression for interference frequency f1 in Hz	85 dB at 10 / 50 / 60 / 400 Hz
Smoothing of measured values	
• parameterizable	Yes
Errors/accuracies	
Temperature error (relative to input range), (+/-)	25 °C ±0.1%, to 55 °C ±0.2% total measurement range
Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)	0.5 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency	
• Common mode interference, min.	120 dB
Interrupts/diagnostics/ status information	
Alarms	Yes
Diagnostics function	Yes; Can be read out
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• Wire-break	Yes
Diagnostics indication LED	
• for status of the inputs	Yes
• for maintenance	Yes
Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes

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Technical specifications (continued)

Article number	6ES7231-5QA30-0XB0 Signal Board SB 1231 TC, 1 AI
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C
• max.	60 °C
Pollutant concentrations	
• SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Connection method	
required front connector	Yes
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	38 mm
Height	62 mm
Depth	21 mm
Weights	
Weight, approx.	35 g

Ordering data

	Article No.
SB 1231 thermocouple signal board 1 input +/- 80 mV, resolution 15 bits + sign, thermocouples type J, K	**6ES7231-5QA30-0XB0**
Accessories	
Terminal block (spare part) for signal board with 6 screws, gold-plated; 4 pcs.	**6ES7292-1BF30-0XA0**

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SM 1231 RTD signal module

Overview

- For the convenient recording of temperatures with great accuracy
- 4 inputs
- Most popular resistance temperature sensors can be used
- Can easily be retrofitted to existing installation

Technical specifications

Article number	**6ES7231-5PD32-0XB0** S7-1200, Analog Input SM 1231 RTD, 4 AI	**6ES7231-5PF32-0XB0** S7-1200, Analog Input SM 1231 RTD, 8 AI
General information		
Product type designation	SM 1231, AI 4x16 bit RTD	SM 1231, AI 8x16 bit RTD
Supply voltage		
Rated value (DC)		
• 24 V DC	Yes	Yes
Input current		
Current consumption, typ.	40 mA	40 mA
from backplane bus 5 V DC, typ.	80 mA	80 mA
Analog inputs		
Number of analog inputs	4; Resistance thermometer	8; Resistance thermometer
permissible input voltage for voltage input (destruction limit), max.	±35 V	±35 V
Technical unit for temperature measurement adjustable	Degrees Celsius/degrees Fahrenheit	Degrees Celsius/degrees Fahrenheit
Input ranges		
• Voltage	No	No
• Current	No	No
• Thermocouple	No	No
• Resistance thermometer	Yes; Resistance-type transmitter: Pt10, Pt50, Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10, Cu50, Cu100, LG-Ni1000	Yes; Resistance-type transmitter: Pt10, Pt50, Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10, Cu50, Cu100, LG-Ni1000
• Resistance	Yes; 150 Ω, 300 Ω, 600 Ω	Yes; 150 Ω, 300 Ω, 600 Ω
Input ranges (rated values), resistance thermometer		
• Cu 10	Yes	Yes
• Ni 100	Yes	Yes
• Ni 1000	Yes	Yes
• LG-Ni 1000	Yes	Yes
• Ni 120	Yes	Yes
• Ni 200	Yes	Yes
• Ni 500	Yes	Yes
• Pt 100	Yes	Yes
• Pt 1000	Yes	Yes
• Pt 200	Yes	Yes
• Pt 500	Yes	Yes
Input ranges (rated values), resistors		
• 0 to 150 ohms	Yes	Yes
• 0 to 300 ohms	Yes	Yes
• 0 to 600 ohms	Yes	Yes
Thermocouple (TC)		
Temperature compensation		
- parameterizable	No	No

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Technical specifications (continued)

Article number	**6ES7231-5PD32-0XB0** S7-1200, Analog Input SM 1231 RTD, 4 AI	**6ES7231-5PF32-0XB0** S7-1200, Analog Input SM 1231 RTD, 8 AI
Analog value generation for the inputs		
Measurement principle	integrating	integrating
Integration and conversion time/ resolution per channel		
• Resolution with overrange (bit including sign), max.	15 bit; + sign	15 bit; + sign
• Integration time, parameterizable	No	No
• Interference voltage suppression for interference frequency f1 in Hz	85 dB at 50 / 60 / 400 Hz	85 dB at 50 / 60 / 400 Hz
Errors/accuracies		
Temperature error (relative to input range), (+/-)	25 °C ±0.1%, to 55 °C ±0.2% total measurement range	25 °C ±0.1%, to 55 °C ±0.2% total measurement range
Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)	0.05 %	0.05 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency		
• Common mode interference, min.	120 dB	120 dB
Interrupts/diagnostics/ status information		
Alarms	Yes	Yes
Diagnostics function	Yes; Can be read out	Yes; Can be read out
Alarms		
• Diagnostic alarm	Yes	Yes
Diagnostic messages		
• Monitoring the supply voltage	Yes	Yes
• Wire-break	Yes	Yes
Diagnostics indication LED		
• for status of the inputs	Yes	Yes
• for maintenance	Yes	Yes
Degree and class of protection		
Degree of protection acc. to EN 60529		
• IP20	Yes	Yes
Standards, approvals, certificates		
CE mark	Yes	Yes
CSA approval	Yes	Yes
FM approval	Yes	Yes
RCM (formerly C-TICK)	Yes	Yes
Ambient conditions		
Free fall		
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation		
• min.	-20 °C	-20 °C
• max.	60 °C	60 °C
Pollutant concentrations		
• SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Connection method		
required front connector	Yes	Yes
Mechanics/material		
Enclosure material (front)		
• Plastic	Yes	Yes
Dimensions		
Width	45 mm	70 mm
Height	100 mm	100 mm
Depth	75 mm	75 mm
Weights		
Weight, approx.	220 g	220 g

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SM 1231 RTD signal module

Ordering data

	Article No.
SM 1231 RTD signal module	
4 inputs for resistance temperature sensors Pt10/50/100/200/500/1000, Ni100/120/200/500/1000, Cu10/50/100, LG-Ni1000; resistance 150/300/600 ohms, resolution 15 bits + sign	**6ES7231-5PD32-0XB0**
8 inputs for resistance temperature sensors Pt10/50/100/200/500/1000, Ni100/120/200/500/1000, Cu10/50/100, LG-Ni1000; resistance 150/300/600 ohms, resolution 15 bits + sign	**6ES7231-5PF32-0XB0**

	Article No.
Accessories	
Terminal block (spare part)	
For 6ES7231-5PD32-0XB0	
• With 7 screws, gold-plated; 4 units	**6ES7292-1BG30-0XA0**
For 6ES7231-5PF32-0XB0	
• With 11 screws, gold-plated; 4 units	**6ES7292-1BL30-0XA0**
Extension cable for two-tier configuration	**6ES7290-6AA30-0XA0**
for connecting digital/analog signal modules; length 2 m	
Front flap set (spare part)	
For modules with a width of 45 mm	**6ES7291-1BA30-0XA0**
For modules with a width of 70 mm	**6ES7291-1BB30-0XA0**

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Overview

- For the convenient recording of temperatures with great accuracy
- 1 input with 16-bit resolution
- Common resistance temperature sensors can be used
- Can easily be retrofitted to existing plant
- Can be plugged directly into the CPU

Technical specifications

Article number	**6ES7231-5PA30-0XB0** Signal Board SB 1231 RTD
General information	
Product type designation	SB 1231, AI 1x16 bit RTD
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Input current	
Current consumption, typ.	5 mA
from backplane bus 5 V DC, typ.	20 mA
Power loss	
Power loss, typ.	0.5 W
Analog inputs	
Number of analog inputs	1; Resistance thermometer
permissible input voltage for current input (destruction limit), max.	±35 V
Technical unit for temperature measurement adjustable	Degrees Celsius/degrees Fahrenheit
Input ranges	
• Voltage	Yes
• Current	No
• Thermocouple	No
• Resistance thermometer	Yes; Platinum (Pt)
• Resistance	Yes; 150 Ω, 300 Ω, 600 Ω
Input ranges (rated values), resistance thermometer	
• Pt 100	Yes
• Pt 1000	Yes
• Pt 200	Yes
• Pt 500	Yes
Input ranges (rated values), resistors	
• 0 to 150 ohms	Yes
• 0 to 300 ohms	Yes
• 0 to 600 ohms	Yes
Thermocouple (TC)	
Temperature compensation	
- parameterizable	No
Analog outputs	
Number of analog outputs	0
Cable length	
• shielded, max.	100 m; shielded, twisted pair

Article number	**6ES7231-5PA30-0XB0** Signal Board SB 1231 RTD
Analog value generation for the inputs	
Measurement principle	integrating
Integration and conversion time/ resolution per channel	
• Resolution with overrange (bit including sign), max.	15 bit; + sign
• Integration time, parameterizable	No
• Interference voltage suppression for interference frequency f1 in Hz	85 dB at 10 / 50 / 60 / 400 Hz
Errors/accuracies	
Temperature error (relative to input range), (+/-)	25 °C ±0.1%, to 55 °C ±0.2% total measurement range
Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)	0.05 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency	
• Common mode interference, min.	120 dB
Interrupts/diagnostics/ status information	
Alarms	Yes
Diagnostics function	Yes; Can be read out
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• Wire-break	Yes
Diagnostics indication LED	
• for status of the inputs	Yes
• for maintenance	Yes
Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes

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Technical specifications (continued)

Article number	6ES7231-5PA30-0XB0 Signal Board SB 1231 RTD
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C
• max.	60 °C
Pollutant concentrations	
• SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Connection method	
required front connector	Yes
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	38 mm
Height	62 mm
Depth	21 mm
Weights	
Weight, approx.	35 g

Ordering data

	Article No.
RTD signal board SB 1231 1 input for resistance temperature sensors Pt 100, Pt 200, Pt 500, Pt 1000, resolution 15 bits + sign	**6ES7231-5PA30-0XB0**
Accessories	
Terminal block (spare part) for signal board with 6 screws, gold-plated; 4 pcs.	**6ES7292-1BF30-0XA0**

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Overview

- Energy management based on SIMATIC S7-1200
- Data acquisition of electrical characteristics in 1 and 3-phase networks up to 480 V AC
- Direct connection of voltage inputs
- Current measurement performed by 1 A and 5 A current transformers
- Can be used in TN and TT networks
- Data backup of measurement data in the event of a power failure

Technical specifications

Article number	**6ES7238-5XA32-0XB0**
	SM 1238 Energy Meter 480V AC
General information	
Product type designation	SM 1238, AI energy meter 480 V AC
Product function	
• Voltage measurement	Yes
- with voltage transformer	Yes
• Current measurement	Yes
- without current transformer	No
- with current transformer	Yes
• Energy measurement	Yes
• Frequency measurement	Yes
• Power measurement	Yes
• Active power measurement	Yes
• Reactive power measurement	Yes
• I&M data	Yes; I&M 0
• Isochronous mode	No
Engineering with	
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1
Operating mode	
• cyclic measurement	Yes
• acyclic measurement	Yes
• Acyclic measured value access	Yes
• Fixed measured value sets	Yes
• Freely definable measured value sets	No
CiR – Configuration in RUN	
Reparameterization possible in RUN	Yes
Calibration possible in RUN	Yes
Installation type/mounting	
Mounting position	Horizontal, vertical
Supply voltage	
Design of the power supply	from CPU
Type of supply voltage	DC
Input current	
Current consumption, max.	180 mA
Power loss	
Power loss, typ.	0.75 W
Address area	
Address space per module	
• Address space per module, max.	124 byte; 112 byte input / 12 byte output

Article number	**6ES7238-5XA32-0XB0**
	SM 1238 Energy Meter 480V AC
Analog inputs	
Cycle time (all channels), typ.	50 ms; Time for consistent update of all measured and calculated values (cyclic and acyclic data)
Interrupts/diagnostics/ status information	
Alarms	
• Diagnostic alarm	Yes
• Limit value alarm	Yes
• Hardware interrupt	No
Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED)	Yes
• Channel status display	Yes; Green LED
• for channel diagnostics	Yes; red Fn LED
• for module diagnostics	Yes; green/red DIAG LED
Integrated Functions	
Measuring functions	
• Measuring procedure for voltage measurement	TRMS
• Measuring procedure for current measurement	TRMS
• Type of measured value acquisition	seamless
• Curve shape of voltage	Sinusoidal or distorted
• Buffering of measured variables	Yes
• Parameter length	74 byte
• Bandwidth of measured value acquisition	2 kHz; Harmonics: 39 / 50 Hz, 32 / 60 Hz
Measuring range	
- Frequency measurement, min.	45 Hz
- Frequency measurement, max.	65 Hz
Measuring inputs for voltage	
- Measurable line voltage between phase and neutral conductor	277 V
- Measurable line voltage between the line conductors	480 V
- Measurable line voltage between phase and neutral conductor, min.	0 V
- Measurable line voltage between phase and neutral conductor, max.	293 V
- Measurable line voltage between the line conductors, min.	0 V
- Measurable line voltage between the line conductors, max.	508 V
- Measurement category for voltage measurement in accordance with IEC 61010-2-030	CAT II; CAT III in case of guaranteed protection level of 1.5 kV
- Internal resistance line conductor and neutral conductor	3.4 MΩ
- Power consumption per phase	20 mW
- Impulse voltage resistance 1,2/50µs	1 kV

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SM 1238 Energy Meter 480 V AC analog input modules

Technical specifications (continued)

Article number	6ES7238-5XA32-0XB0 SM 1238 Energy Meter 480V AC
Measuring inputs for current	
- measurable relative current (AC), min.	1 %; Relative to the secondary rated current 5 A
- measurable relative current (AC), max.	100 %; Relative to the secondary rated current 5 A
- Continuous current with AC, maximum permissible	5 A
- Apparent power consumption per phase for measuring range 5 A	0.6 V·A
- Rated value short-time withstand current restricted to 1 s	100 A
- Input resistance measuring range 0 to 5 A	25 mΩ; At the terminal
- Zero point suppression	Parameterizable: 2 ... 250 mA, default 50 mA
- Surge strength	10 A; for 1 minute
Accuracy class according to IEC 61557-12	
- Measured variable voltage	0,2
- Measured variable current	0,2
- Measured variable apparent power	0.5
- Measured variable active power	0.5
- Measured variable reactive power	1
- Measured variable power factor	0.5
- Measured variable active energy	0.5
- Measured variable reactive energy	1
- Measured variable neutral current	0.5; calculated
- Measured variable phase angle	±1 °; not covered by IEC 61557-12
- Measured variable frequency	0.05
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes; 3 700V AC (type test) CAT III
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-20 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-20 °C
• vertical installation, max.	50 °C
Dimensions	
Width	45 mm
Height	100 mm
Depth	75 mm
Weights	
Weight (without packaging)	165 g
Data for selecting a current transformer	
• Burden power current transformer x/1A, min.	As a function of cable length and cross section, see device manual
• Burden power current transformer x/5A, min.	As a function of cable length and cross section, see device manual

Ordering data

	Article No.
SM 1238 Energy Meter 480 V AC analog input Energy measurement module for data acquisition in 1 and 3-phase networks (TN, TT) up to 480 V AC; current range: 1 A, 5 A; recording of voltage, current, phase angles, power ratings, energy values, frequencies; with channel diagnostics	**6ES7238-5XA32-0XB0**
Extension cable for two-tier configuration For connecting digital/analog signal modules; length 2 m	**6ES7290-6AA30-0XA0**
Terminal block (spare part)	
For voltage input (top), 7-pole, tinned, coded in middle	**6ES7292-1AG40-0XA2**
For current input (bottom), 7-pole, tinned	**6ES7292-1AG30-0XA0**
Front flap set (spare part)	
For modules with a width of 45 mm	**6ES7291-1BA30-0XA0**

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Overview

- Analog inputs for SIPLUS S7-1200
- With extremely short conversion times
- For connecting analog actuators and sensors without additional amplifiers
- Even solves more complex automation tasks
- From +60 °C to +70 °C, max. 50% of the inputs can be controlled simultaneously

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	**6AG1231-4HD32-4XB0**
Based on	**6ES7231-4HD32-0XB0**
	SIPLUS S7-1200 SM 1231 4AI 13Bit
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C; = Tmin (incl. condensation/ frost); start-up @ 0 °C
• max.	60 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air

Article number	**6AG1231-4HD32-4XB0**
Based on	**6ES7231-4HD32-0XB0**
	SIPLUS S7-1200 SM 1231 4AI 13Bit
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

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SIPLUS SM 1231 analog input modules

Ordering data	Article No.
Analog input SIPLUS signal module SM 1231	
(Extended temperature range and exposure to media)	
Ambient temperature range 0 ... +55 °C	
4 analog inputs ±10 V, ±5 V, ±2.5 V, or 0 ... 20 mA; 12 bits + sign	**6AG1231-4HD32-4XB0**

	Article No.
Accessories	See SIMATIC S7-1200 analog input SM 1231, page 3/86

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Overview

- Analog outputs for SIPLUS S7-1200
- With extremely short conversion times
- For connecting analog actuators without additional amplifiers
- Even solves more complex automation tasks
- From +60 °C to +70 °C, max. 50% of the outputs can be controlled simultaneously

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	**6AG1232-4HB32-4XB0**
Based on	**6ES7232-4HB32-0XB0**
	SIPLUS S7-1200 SM 1232 2AQ 13Bit
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C; = Tmin (incl. condensation/ frost); start-up @ 0 °C
• max.	60 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air

Article number	**6AG1232-4HB32-4XB0**
Based on	**6ES7232-4HB32-0XB0**
	SIPLUS S7-1200 SM 1232 2AQ 13Bit
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

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SIPLUS SM 1232 analog output modules

Ordering data	Article No.
Analog output SIPLUS signal module SM 1232	
(Extended temperature range and exposure to media)	
Ambient temperature range -20 ... +60 °C	
2 analog outputs, ±10 V with 14 bits or 0 ... 20 mA with 13 bits	**6AG1232-4HB32-4XB0**

	Article No.
Accessories	See SIMATIC S7-1200 analog output SM 1232, page 3/90

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Overview

- Analog output for SIPLUS S7-1200
- Can be plugged directly into the CPU (cannot be used for +70 °C version)

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	**6AG1232-4HA30-4XB0**	**6AG1232-4HA30-5XB0**
Based on	**6ES7232-4HA30-0XB0**	**6ES7232-4HA30-0XB0**
	SIPLUS S7-1200 SB 1232 1AQ	SIPLUS S7-1200 SB 1232 1AQ
Ambient conditions		
Free fall		
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation		
• min.	0 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C
• max.	55 °C; = Tmax	55 °C; = Tmax
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

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SIPLUS SB 1232 analog output modules

Technical specifications (continued)

Article number	**6AG1232-4HA30-4XB0**	**6AG1232-4HA30-5XB0**
Based on	**6ES7232-4HA30-0XB0**	**6ES7232-4HA30-0XB0**
	SIPLUS S7-1200 SB 1232 1AQ	SIPLUS S7-1200 SB 1232 1AQ
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark		
- 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!
Conformal coating		
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

Ordering data

	Article No.
SIPLUS SB 1232 analog output signal board	
(Extended temperature range and exposure to media)	
Ambient temperature range -25 ... +55 °C	
1 analog output, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	**6AG1232-4HA30-5XB0**
Ambient temperature range 0 ... +55 °C	
1 analog output, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	**6AG1232-4HA30-4XB0**

	Article No.
Accessories	See SIMATIC S7-1200 analog output SB 1232, page 3/92

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Overview

- Analog inputs and outputs for SIPLUS S7-1200
- With extremely short conversion times
- For connecting analog actuators and sensors without additional amplifiers
- Even solves more complex automation tasks
- From +60 °C to +70 °C, max. 50% of the inputs and outputs can be controlled simultaneously

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	**6AG1234-4HE32-2XB0**	**6AG1234-4HE32-4XB0**
Based on	**6ES7234-4HE32-0XB0**	**6ES7234-4HE32-0XB0**
	SIPLUS S7-1200 SM 1234 4AI/2AQ 13Bit	SIPLUS S7-1200 SM 1234 4AI/2AQ 13Bit
Ambient conditions		
Free fall		
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation		
• min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C
• max.	70 °C; = Tmax; Tmax > +60 °C number of simultaneously used outputs 1, inputs 2 (no adjacent points) for horizontal mounting position	60 °C; = Tmax
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

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SIPLUS SM 1234 analog input/output modules

Technical specifications (continued)

Article number	**6AG1234-4HE32-2XB0**	**6AG1234-4HE32-4XB0**
Based on	**6ES7234-4HE32-0XB0**	**6ES7234-4HE32-0XB0**
	SIPLUS S7-1200 SM 1234 4AI/2AQ 13Bit	SIPLUS S7-1200 SM 1234 4AI/2AQ 13Bit
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark		
- 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!
Conformal coating		
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

Ordering data

	Article No.
Analog input/output SIPLUS signal module SM 1234	
(Extended temperature range and exposure to media)	
Ambient temperature range -25 ... +70 °C, from +60 ... +70 °C number of simultaneously controllable inputs and outputs max. 50%	
4 analog inputs, ±10 V, ±5 V, ±2.5 V, or 0 ... 20 mA, 12 bits + sign; 2 analog outputs, ±10 V with 14 bits or 0 ... 20 mA with 13 bits	**6AG1234-4HE32-2XB0**
Ambient temperature range 0 ... +55 °C	
4 analog inputs, ±10 V, ±5 V, ±2.5 V, or 0 ... 20 mA, 12 bits + sign; 2 analog outputs, ±10 V with 14 bits or 0 ... 20 mA with 13 bits	**6AG1234-4HE32-4XB0**

	Article No.
Accessories	See SIMATIC S7-1200 analog input/output SM 1234, page 3/94

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Overview

- For the convenient recording of temperatures with great accuracy
- 7 common thermocouple types can be used
- Also for the measurement of analog signals with a low level (±80 mV)
- Can easily be retrofitted to existing plant

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	**6AG1231-5QF32-4XB0**	**6AG1231-5QD32-4XB0**
Based on	**6ES7231-5QF32-0XB0**	**6ES7231-5QD32-0XB0**
	SIPLUS S7-1200 SM 1231 8AI TC 16Bit	SIPLUS S7-1200 SM 1231 4AI TC 16Bit
Ambient conditions		
Free fall		
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation		
• min.	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C
• max.	60 °C; = Tmax	60 °C; = Tmax
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark		
- 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!
Conformal coating		
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

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SIPLUS SM 1231 thermocouple modules

Ordering data	Article No.
SIPLUS SM 1231 thermocouple module	
(Extended temperature range and exposure to media)	
Ambient temperature range -40 ... +70 °C	
8 inputs +/- 80 mV, resolution 15 bits + sign, thermocouple types J, K, T, E, R, S, N, C, TXK/XK(L)	**6AG1231-5QF32-4XB0**
4 inputs +/- 80 mV, resolution 15 bits + sign, thermocouple types J, K, T, E, R, S, N, C, TXK/XK(L)	**6AG1231-5QD32-4XB0**

	Article No.
Accessories	See SIMATIC S7-1200 thermocouple module SM 1231, page 3/97

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Overview

- For the convenient recording of temperatures with great accuracy
- 4 inputs
- Most popular resistance temperature sensors can be used
- Can easily be retrofitted to existing plant

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	**6AG1231-5PD32-4XB0**	**6AG1231-5PD32-2XB0**	**6AG1231-5PF32-4XB0**	**6AG1231-5PF32-2XB0**
Based on	**6ES7231-5PD32-0XB0**	**6ES7231-5PD32-0XB0**	**6ES7231-5PF32-0XB0**	**6ES7231-5PF32-0XB0**
	SIPLUS S7-1200 SM 1231 4AI RTD 16Bit	SIPLUS S7-1200 SM 1231 4AI RTD 16Bit	SIPLUS S7-1200 SM 1231 8AI RTD 16Bit	SIPLUS S7-1200 SM 1231 8AI RTD 16Bit
Ambient conditions				
Free fall				
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation				
• min.	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C
• max.	60 °C; = Tmax	70 °C; = Tmax	60 °C; = Tmax	70 °C; = Tmax
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

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Technical specifications (continued)

Article number	6AG1231-5PD32-4XB0	6AG1231-5PD32-2XB0	6AG1231-5PF32-4XB0	6AG1231-5PF32-2XB0
Based on	6ES7231-5PD32-0XB0	6ES7231-5PD32-0XB0	6ES7231-5PF32-0XB0	6ES7231-5PF32-0XB0
	SIPLUS S7-1200 SM 1231 4AI RTD 16Bit	SIPLUS S7-1200 SM 1231 4AI RTD 16Bit	SIPLUS S7-1200 SM 1231 8AI RTD 16Bit	SIPLUS S7-1200 SM 1231 8AI RTD 16Bit
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark				
- 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!
Conformal coating				
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

Ordering data

	Article No.
SIPLUS RTD SM 1231 signal module	
(Extended temperature range and exposure to media)	
4 inputs for resistance temperature sensors Pt10/50/100/200/500/1000, Ni100/120/200/500/1000, Cu10/50/100, LG-Ni1000; resistance 150/300/600 ohms, resolution 15 bits + sign	
• For areas with extreme exposure to media (conformal coating); ambient temperature -20 ... +60 °C	**6AG1231-5PD32-4XB0**
• For areas with extreme exposure to media (conformal coating); ambient temperature -40 ... +70 °C	**6AG1231-5PD32-2XB0**
8 inputs for resistance temperature sensors Pt10/50/100/200/500/1000, Ni100/120/200/500/1000, Cu10/50/100, LG-Ni1000; resistance 150/300/600 ohms, resolution 15 bits + sign	
• For areas with extreme exposure to media (conformal coating); ambient temperature -20 ... +60 °C	**6AG1231-5PF32-4XB0**
• For areas with extreme exposure to media (conformal coating); ambient temperature -40 ... +70 °C	**6AG1231-5PF32-2XB0**

	Article No.
Accessories	See SIMATIC S7-1200 RTD SM 1231 signal module, page 3/102

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Overview

- For the convenient recording of temperatures with great accuracy
- 1 input with 16-bit resolution
- Common resistance temperature sensors can be used
- Can easily be retrofitted to existing plant
- Can be plugged directly into 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.

Technical specifications

Article number	**6AG1231-5PA30-5XB0**
Based on	**6ES7231-5PA30-0XB0** SIPLUS S7-1200 SB 1231 1AI RTD
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-40 °C; = Tmin (incl. condensation/ frost); start-up @ -25 °C
• max.	60 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air

Article number	**6AG1231-5PA30-5XB0**
Based on	**6ES7231-5PA30-0XB0** SIPLUS S7-1200 SB 1231 1AI RTD
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

Ordering data

	Article No.
SIPLUS RTD SB 1231 signal board (Extended temperature range and exposure to environmental substances) 1 input for resistance temperature sensors Pt 100, Pt 200, Pt 500, Pt 1000, resolution 15 bits + sign	**6AG1231-5PA30-5XB0**

	Article No.
Accessories	See: SIMATIC S7-1200 RTD SB 1231 signal board, page 3/104

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SM 1278 4xIO-Link Master

Overview

- Module for connecting up to 4 IO-Link devices according to IO Link Specification V1.1. The IO-Link parameters are configured using the Port Configuration Tool (PCT), version V3.2 and higher.

Technical specifications

Article number	**6ES7278-4BD32-0XB0** S7-1200, SM1278, 4 X IO-Link Master
General information	
Product type designation	SM 1278 4xIO-Link Master
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Power loss	
Power loss, typ.	1 W
Interrupts/diagnostics/ status information	
Diagnostics function	Yes
Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
FM approval	Yes
RCM (formerly C-TICK)	Yes
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C
• max.	60 °C
Connection method	
required front connector	Yes
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	45 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	150 g

Ordering data

	Article No.
SM 1278 signal module 4xIO-Link Master for the connection of up to 4 IO-Link devices according to IO Link Specification V1.1	**6ES7278-4BD32-0XB0**
Terminal block (spare part) with 7 screws, tin-coated; 4 units	**6ES7292-1AG30-0XA0**

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Overview

SIPLUS CMS1200 SM 1281 Condition Monitoring forms part of SIMATIC S7-1200 and is used for the:

- Monitoring of motors, generators, pumps, fans, or other mechanical components
- Recording and analysis of vibrations
- Expansion capability of up to 7 modules

Technical specifications

Article number	**6AT8007-1AA10-0AA0** SM1281_Condition_Monitoring
General information	
Product brand name	SIPLUS
Product category	Condition Monitoring
Product description	S7-1200 module for the monitoring of vibrations on mechanical components based on parameters and frequency-selective analysis functions
Installation type/mounting	
Mounting type	Rail or wall mounting
Mounting position	Horizontal, vertical
Recommended mounting position	Horizontal
Supply voltage	
Type of supply voltage	DC
Rated value (DC)	
• 24 V DC	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Input current	
Current consumption, typ.	200 mA
Current consumption, max.	250 mA
from backplane bus 5 V DC, typ.	80 mA
from backplane bus 5 V DC, max.	85 mA
Power loss	
Power loss, typ.	4.8 W
Memory	
Total memory capacity	1 Gbyte
Hardware configuration	
Design of hardware configuration	Modular, up to 7 modules per CPU
Speed input	
Number of speed inputs	1
Input voltage	
• 24 V DC digital	Yes
Sensor input	
Number of IEPE sensor inputs	4
Sampling frequency, max.	46 875 Hz

Article number	**6AT8007-1AA10-0AA0** SM1281_Condition_Monitoring
Interfaces	
Type of data transmission	Export of raw data as WAV file for further analysis (e.g. using CMS X-Tools) can be downloaded via browser/FTP, online data transfer to CMS X-Tools
Ethernet interface	Yes
Protocols	
Bus communication	Yes
Web server	
• HTTP	Yes
Interrupts/diagnostics/ status information	
Alarms	
• Diagnostic alarm	Yes
Diagnostics indication LED	
• for status of the inputs	Yes
• for maintenance	Yes
• Status indicator digital input (green)	No
Integrated Functions	
Monitoring functions	
• Monitoring of the sensor inputs	Yes; Cable break and short-circuit
• Vibration characteristic monitoring via RMS value of the vibration speed	Yes
• Vibration characteristic monitoring via RMS value of the vibration acceleration	Yes
• Vibration characteristic monitoring via diagnostic characteristic value	Yes
• Frequency-selective monitoring via vibration speed spectrum	Yes
• Frequency-selective monitoring via vibration acceleration spectrum	Yes
• Frequency-selective monitoring via envelope curve analysis	Yes

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SIPLUS CMS1200 SM 1281 Condition Monitoring

Technical specifications (continued)

Article number	6AT8007-1AA10-0AA0 SM1281_Condition_Monitoring
Measuring functions	
• Physical measuring principle	Vibration acceleration
Measuring range	
- Measurement range vibration frequency, min.	0.1 Hz
- Measurement range vibration frequency, max.	10 000 Hz
Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
Certificate of suitability	CE
Reference designation according to DIN EN 81346-2	P
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• horizontal installation, min.	-20 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-20 °C
• vertical installation, max.	45 °C
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Air pressure acc. to IEC 60068-2-13	
• Operation, min.	795 hPa
• Operation, max.	1 080 hPa
• Storage/transport, min.	660 hPa
• Storage/transport, max.	1 080 hPa
Relative humidity	
• Operation without condensation, min.	5 %
• Operation without condensation, max.	95 %
Software	
Browser software required	Web browser Mozilla Firefox (ESR31) or Microsoft Internet Explorer (10/11)
Connection method	
required front connector	Yes
Design of electrical connection	Screw connection
Mechanics/material	
Material of housing	Plastic: polycarbonate, abbreviation: PC- GF 10 FR
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	70 mm
Height	112 mm
Depth	75 mm
Weights	
Weight, approx.	260 g

Ordering data

	Article No.
SIPLUS CMS1200 SM 1281 Condition Monitoring Module for SIMATIC S7-1200 for monitoring vibrations in mechanical components based on characteristic values and frequency-selective analysis functions.	**6AT8007-1AA10-0AA0**
Accessories	
SIPLUS CMS1200 SM1281 shield clamp set For the EMC-compliant connection of signal and encoder cables to the SIPLUS CMS1200 SM 1281 Condition Monitoring.	**6AT8007-1AA20-0AA0**
VIB-SENSOR S01 vibration sensor Piezoelectric sensor for connection to the SIPLUS CMS1200 SM 1281 Condition Monitoring.	**6AT8002-4AB00**
SIPLUS CABLE-MIL For connection of the VIB-SENSOR S01 vibration sensor to the SIPLUS CMS1200 SM 1281 Condition Monitoring.	
SIPLUS CABLE-MIL-300; length 3 m	**6AT8002-4AC03**
SIPLUS CABLE-MIL-1000; length 10 m	**6AT8002-4AC10**

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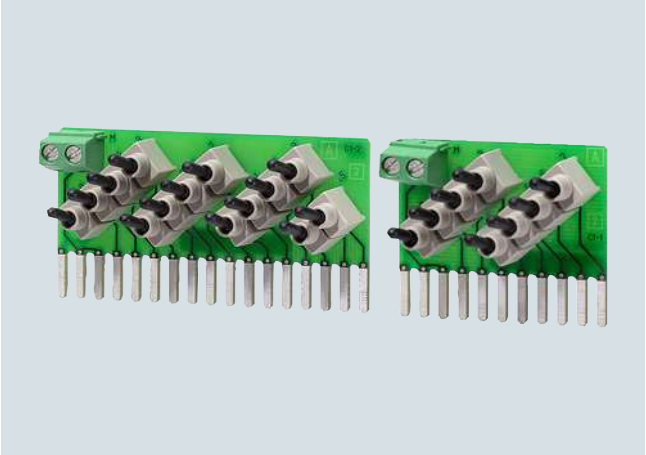
Overview



- Simulator module for program testing during commissioning and ongoing operation
- Simulation of 8 or 14 inputs

Technical specifications

Article number	**6ES7274-1XF30-0XA0** S7-1200 Simulator Module SIM1274, 8 Inp	**6ES7274-1XH30-0XA0** S7-1200 Simulator Module SIM1274, 14 Inp
General information		
Product type designation	SIM 1274, 8DI	SIM 1274, 14 DI
Supply voltage		
Rated value (DC)	24 V	24 V
Digital inputs		
Number of digital inputs	8	14
Digital outputs		
Number of digital outputs	0	0
Degree and class of protection		
Degree of protection acc. to EN 60529		
• IP20	Yes	Yes
Dimensions		
Width	43 mm	67 mm
Height	35 mm	35 mm
Depth	23 mm	23 mm

Ordering data

	Article No.
Digital input simulator SIM 1274 simulator module	
with 8 input switches, for CPU 1211C/1212C	**6ES7274-1XF30-0XA0**
with 14 input switches, for CPU 1214C/1215C	**6ES7274-1XH30-0XA0**
with 14 input switches, for CPU 1217C	**6ES7274-1XK30-0XA0**
Analog input simulator SIM 1274 simulator module	
2 potentiometers	**6ES7274-1XA30-0XA0**

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BB 1297 battery board

Overview

- Battery board for extending the power reserve for the S7-1200 real-time clock

Technical specifications

Article number	6ES7297-0AX30-0XA0
	Battery Board BB 1297 f. CPU 12xx
General information	
Product type designation	BB 1297
Interrupts/diagnostics/ status information	
Alarms	Yes
Diagnostics function	Yes
Diagnostics indication LED	
• for maintenance	Yes; The maintenance LED (MAINT) of the PLC signals that the battery needs to be replaced.
Degree and class of protection	
Degree of protection acc. to EN 60529	IP20
Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
Marine approval	Yes
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C
• max.	60 °C
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Air pressure acc. to IEC 60068-2-13	
• Operation, min.	795 hPa
• Operation, max.	1 080 hPa
• Storage/transport, min.	660 hPa
• Storage/transport, max.	1 080 hPa
Relative humidity	
• Operation at 25 °C without condensation, max.	95 %
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	38 mm
Height	62 mm
Depth	21 mm
Weights	
Weight, approx.	40 g

Ordering data

	Article No.
BB 1297 battery board	**6ES7297-0AX30-0XA0**
For long-term backup of real-time clock; can be plugged into the signal board slot of an S7-1200 CPU in FW version 3.0 or higher; battery (CR 1025) is not included	
Terminal block (spare part)	
For signal board	
with 6 screws, gold-plated; 4 units	**6ES7292-1BF30-0XA0**

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Overview

SIWAREX WP231 is a versatile, legal for trade weighing module for all simple weighing and force measuring tasks. The compact module is easy to install in the SIMATIC S7-1200 automation system. It can also be operated without a SIMATIC CPU.

Technical specifications

SIWAREX WP231	
Integration in automation systems	
S7-1200	SIMATIC S7-1200 system bus
Operator panel and/or automation systems from other vendors	Via Ethernet (Modbus TCP/IP) or RS 485 (Modbus RTU)
Communication interfaces	• SIMATIC S7-1200 backplane bus • RS 485 (Modbus RTU, Siebert remote display) • Ethernet (SIWATOOL V7, Modbus TCP/IP) • Analog output 0/4 - 20 mA • 4 x digital outputs, 24 V DC floating, short-circuit proof • 4 x digital inputs, 24 V DC floating
Commissioning options	• Using SIWATOOL V7 • Using function block in SIMATIC S7-1200 CPU / Touch Panel • Using Modbus TCP/IP • Using Modbus RTU
Measuring accuracy	
EU type approval as non-automatic weighing instrument, trade class III	3000 d ≥ 0.5 µV/e
Error limit according to DIN 1319-1 of full-scale value at 20 °C ± 10 K (68 °F ± 10 K)	0.05%
Internal resolution	Up to ± 4 million parts
Measuring frequency	100 / 120 Hz
Digital filter	Variable adjustable low-pass and average filter
Typical applications	• Non-automatic weighing instruments • Force measurements • Fill-level monitoring • Belt tension monitors
Weighing functions	
Weight values	• Gross • Net • Tare
Limit values	• 2 x min/max • Empty
Zeroing	Per command
Tare	Per command
Tare specification	Per command
Load cells	Full-bridge strain gauges in 4-wire or 6-wire system

SIWAREX WP231	
Load cell powering	
Supply voltage (regulated via feedback)	4.85 V DC
Permissible load resistance	
• R_{Lmin}	> 40 Ω
• R_{Lmax}	< 4 100 Ω
With SIWAREX IS Ex interface	
• R_{Lmin}	> 50 Ω
• R_{Lmax}	< 4 100 Ω
Load cell characteristic	1 … 4 mV/V
Permissible range of the measurement signal (with 4 mV/V sensors)	-21.3 ... +21.3 mV
Max. distance of load cells	500 m (229.66 ft)
Connection to load cells in Ex zone 1	Optionally via SIWAREX IS Ex interface (compatibility of the load cells must be checked)
Approvals/certificates	• ATEX Zone 2 • UL • EAC • KCC • RCM • OIML R76 • Design approval 2009/23/EC (NAWI)
Calibration approval	EU type approval OIML R76
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	200 mA
Max. power consumption SIMATIC Bus	3 mA
IP degree of protection to EN 60529; IEC 60529	IP20
Climatic requirements	
$T_{min(IND)}$ ... $T_{max(IND)}$ (operating temperature)	
• Vertical installation	-10 ... +40 °C (14 ... 104 °F)
• Horizontal installation	-10 ... +55 °C (14 ... 131 °F)
EMC requirements	according to EN 45501
Dimensions	70 x 75 x 100 mm (2.76 x 2.95 x 3.94 in)

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SIWAREX WP231

Ordering data	Article No.
SIWAREX WP231 weighing module Single-channel, legal-for-trade, for NAWI non-automatic weighing instruments (e.g. platform or hopper scales) with analog load cells (1–4 mV/V), 1 x LC, 4 x DQ, 4 x DI, 1 x AQ, 1 x RS 485, Ethernet port.	**7MH4960-2AA01**
SIWAREX S7-1200 manual Available in a range of languages Free download on the Internet at: http://www.siemens.com/weighing-technology	
SIWAREX WP231 "Ready for Use" Complete software package for non-automatic weighing instrument (for S7-1200 and a directly connected operator panel). Free download on the Internet at: http://www.siemens.com/weighing-technology	
SIWAREX WP231 "Ready for Use - legal-for-trade" Software package for non-automatic weighing instruments for S7-1200 requiring official calibration. Free download on the Internet at: http://www.siemens.com/weighing-technology	
Software SecureDisplay Software for a legal trade display on Windows CE-based Panel. SIMATIC Basic and Key Panels are excluded. 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**
Calibration set for SIWAREX WP2xx Valid for SIWAREX WP231 K and SIWAREX WP251. For verification of up to 3 scales, comprising: • 3 x inscription foil for labeling • 1 x protective film • 3 x calibration protection plate • Guidelines for verification, certificates and approvals, adaptable label, SIWAREX WP	**7MH4960-0AY10**

	Article No.
Ethernet cable patch cord 2 m (7 ft) For connecting SIWAREX WP231 to a PC (SIWATOOL), SIMATIC CPU, panel, etc.	**6XV1850-2GH20**
Remote display (optional) The digital remote displays can be connected directly to the SIWAREX WP231 via the RS 485 interface. Suitable remote display: S102 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.	
Accessories	
SIWAREX JB junction box, aluminum housing For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.	**7MH5001-0AA20**
SIWAREX JB junction box, stainless steel housing For connecting up to 4 load cells in parallel.	**7MH5001-0AA00**
SIWAREX JB junction box, stainless steel housing (ATEX) For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).	**7MH4710-1EA01**
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. • Short-circuit current < 199 mA DC • Short-circuit current < 137 mA DC	 **7MH4710-5BA** **7MH4710-5CA**

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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	**7MH4702-8AG**
• For hazardous atmospheres. Sheath color: blue.	**7MH4702-8AF**
Ground terminal for connecting the load cell cable shield to the grounded DIN rail	**6ES5728-8MA11**

	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**

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SIWAREX WP241

Overview

SIWAREX WP241

SIWAREX WP241 is a flexible weighing module for belt scales. The compact module is easy to install in the SIMATIC S7-1200 automation system. It can also be operated as a standalone module, i.e. without a SIMATIC CPU.

Technical specifications

SIWAREX WP241	
Integration in automation systems	
S7-1200	SIMATIC S7-1200 system bus
Operator panel and/or automation systems from other vendors	Via Ethernet (Modbus TCP/IP) or RS 485 (Modbus RTU)
Communication interfaces	• SIMATIC S7-1200 backplane bus • RS 485 (Modbus RTU) • Ethernet (SIWATOOL V7, Modbus TCP/IP) • Analog output 0/4 - 20 mA • 4 x digital outputs, 24 V DC floating, short-circuit proof • 4 x digital outputs, 24 V DC, floating
Commissioning options	• Using SIWATOOL V7 • Using function block in SIMATIC S7-1200 CPU / Touch Panel • Using Modbus TCP/IP • Using Modbus RTU
Measuring accuracy	
Error limit according to DIN 1319-1 of full-scale value at 20 °C ± 10 K (68 °F ± 10 K)	0.05%
Internal resolution	Up to ± 4 million parts
Measuring frequency	100 / 120 Hz
Digital filter	Separate, variable adjustable low-pass and average filter for loading and speed
Filter for conveyor load	Low-pass filter (limit frequency 0.05 ... 50 Hz)
Filter for belt speed	Low-pass filter (limit frequency 0.05 ... 50 Hz)
Weighing functions	
Readout data	• Weight • Belt load • Material flow rate • Accumulated total • Main total • Free totals 1 … 4 • Belt speed
Limits (min/max)	• Belt load • Material flow rate • Belt speed

SIWAREX WP241	
Load cells	Full-bridge strain gauges in 4-wire or 6-wire system
Load cell powering	
Supply voltage (regulated via feedback)	4.85 V DC
Permissible load resistance	
• R_{Lmin}	> 40 Ω
• R_{Lmax}	< 4100 Ω
With SIWAREX IS Ex interface	
• R_{Lmin}	> 50 Ω
• R_{Lmax}	< 4100 Ω
Load cell characteristic	1 … 4 mV/V
Permissible measurement signal range	-21.3 ... +21.3 mV
Max. distance of load cells	500 m (229.66 ft)
Connection to load cells in Ex zone 1	Optionally via SIWAREX IS Ex interface (compatibility of the load cells must be checked)
Approvals/certificates	• ATEX Zone 2 • UL • EAC • KCC • RCM
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	200 mA
Max. power consumption SIMATIC Bus	3 mA
IP degree of protection to EN 60529; IEC 60529	IP20
Climatic requirements	
$T_{min(IND)}$ ... $T_{max(IND)}$ (operating temperature)	
• Vertical installation	-10 ... +40 °C (14 ... 104 °F)
• Horizontal installation	-10 ... +55 °C (14 ... 131 °F)
EMC requirements	according to EN 45501
Dimensions	70 x 75 x 100 mm (2.76 x 2.95 x 3.94 in)

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Ordering data

	Article No.
SIWAREX WP241 weighing module Single-channel, for conveyor scales with analog load cells / full-bridge strain gauges (1 - 4 mV/V), 1 x LC, 4 x DQ, 4 x DI, 1 x AQ, 1 x RS 485, Ethernet port.	**7MH4960-4AA01**
SIWAREX S7-1200 manual Available in a range of languages Free download on the Internet at: http://www.siemens.com/weighing-technology	
SIWAREX WP241 "Ready for Use" Complete software package for belt scales (for S7-1200 and a directly connected operator panel) 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**
Ethernet cable patch cord 2 m (7 ft) For connecting SIWAREX WP241 to a PC (SIWATOOL), SIMATIC CPU, panel, etc.	**6XV1850-2GH20**
Accessories	
SIWAREX JB junction box, aluminum housing For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.	**7MH5001-0AA20**
SIWAREX JB junction box, stainless steel housing For connecting up to 4 load cells in parallel.	**7MH5001-0AA00**
SIWAREX JB junction box, stainless steel housing (ATEX) For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).	**7MH4710-1EA01**
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.	
• Short-circuit current < 199 mA DC	**7MH4710-5BA**
• Short-circuit current < 137 mA DC	**7MH4710-5CA**

	Article No.
Cable (optional)	
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY 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	**7MH4702-8AG**
• For hazardous atmospheres. Sheath color: blue.	**7MH4702-8AF**
Ground terminal for connecting the load cell cable shield to the grounded DIN rail	**6ES5728-8MA11**
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	**9LA1110-8SM50-0AA0**
Flat charge for travel and setup in Germany	**9LA1110-8RA10-0AA0**

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SIWAREX WP251

Overview

SIWAREX WP251 electronic weighing module

SIWAREX WP251 is a flexible weighing module for dosing and filling processes. The compact module can be installed seamlessly in the SIMATIC S7-1200 automation system. It can also be used without a SIMATIC CPU in stand-alone mode.

Technical specifications

SIWAREX WP251	
Weighing modes	• Non-automatic weighing instrument (NAWI) (filling + removal) (legal-for-trade in accordance with OIML R-76) • Automatic catchweighing instruments (ACI) (filling + removal) (legal-for-trade in accordance with OIML R-51) • Gravimetric filling instruments (GFI) (legal-for-trade in accordance with OIML R-61) • Discontinuous totalizing automatic weighing instruments (THW) — legal-for-trade in accordance with OIML R-107
Integration in automation systems	
S7-1200	SIMATIC S7-1200 system bus
Operator panel and/or automation systems from other vendors	Via Ethernet (Modbus TCP/IP) or RS 485 (Modbus RTU)
Ports	• 1 x SIMATIC S7-1200 system bus • 1 x Ethernet (SIWATOOL and Modbus TCP/IP) • 1 x RS 485 (Modbus RTU or remote display) • 1 x analog output (0/4 ... 20 mA) • 4 x digital inputs (24 V DC, floating) • 4 x digital outputs (24 V DC, floating, short-circuit proof)
Functions	• 3 limits • Tare • Tare specification • Zeroing • Zero adjustment • Statistics • Automatic correction of the shut-off points • Internal protocol memory for 550 000 entries • Trace function for signal analysis • Internal restore point • Stand-alone mode or SIMATIC S7-1200 integrated

SIWAREX WP251	
Parameter assignment	• Full access using function block in SIMATIC S7-1200 • Full access using Modbus TCP/IP • Full access using Modbus RTU
Remote display	
Connection	via RS 485
Scale adjustment	PC software SIWATOOL (Ethernet), S7-1200 function block and touch panel or directly connected operator panel (Modbus)
Measuring accuracy	
Error limit according to DIN 1319-1 of full-scale value at 20 °C ± 10 K (68 °F ± 10 K)	0.05%
Internal resolution	Up to ± 4 million parts
Number of measurements/second	100 or 120 (selectable)
Filter	• Low-pass filter 0.1 ... 50 Hz • Average value filter
Load cells	Strain gauges in 4-wire or 6-wire system
Load cell powering	
Supply voltage (regulated via feedback)	4.85 V DC
Permissible load resistance	
• R_{Lmin}	> 40 Ω
• R_{Lmax}	< 4 100 Ω
With SIWAREX IS Ex interface	
• R_{Lmin}	> 50 Ω
• R_{Lmax}	< 4 100 Ω
Load cell characteristic	1 ... 4 mV/V
Permissible range of the measurement signal (with 4 mV/V sensors)	-21.3 ... +21.3 mV
Max. distance of load cells	500 m (229.66 ft)
Connection to load cells in Ex zone 1	Optionally via SIWAREX IS Ex interface
Certificates	• ATEX Zone 2 • UL • KCC • EAC • RCM

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Technical specifications (continued)

SIWAREX WP251	
Calibration approvals	• EU type-examination certificate 2014/31/EU (NAWI) according to OIML R76 • EU type-examination certificate 2014/32/EU (MID) according to OIML R61 and OIML R51 • EU type-examination certificate 2014/32/EU (MID) according to OIML R107
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	200 mA
Max. power consumption SIMATIC Bus	3 mA
IP degree of protection to EN 60529; IEC 60529	IP20

SIWAREX WP251	
Climatic requirements	
$T_{min(IND)}$ ... $T_{max(IND)}$ (operating temperature)	
• Vertical installation	-10 ... +40 °C (14 ... 104 °F)
• Horizontal installation	-10 ... +55 °C (14 ... 131 °F)
EMC requirements	according to EN 45501
Dimensions	70 x 75 x 100 mm (2.76 x 2.95 x 3.94 in)

Ordering data

	Article No.
SIWAREX WP251 weighing module Single-channel, legal-for-trade, for automatic dosing and filling scales (GFI, ACI, NAWI) with analog load cells / full-bridge strain gauges (1 - 4 mV/V), 1 x LC, 4 x DQ, 4 x DI, 1 x AQ, 1 x RS 485, Ethernet port.	**7MH4960-6AA01**
SIWAREX WP251 equipment manual Available in a range of languages Free download on the Internet at: http://www.siemens.com/weighing-technology	
SIWAREX WP251 "Ready for Use" 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**
Calibration set for SIWAREX WP2xx Valid for SIWAREX WP231 K and SIWAREX WP251. For verification of up to 3 scales, comprising: • 3 x inscription foil for labeling • 1 x protective film • 3 x calibration protection plate • Guidelines for verification, certificates and approvals, adaptable label, SIWAREX WP	**7MH4960-0AY10**

	Article No.
Ethernet cable patch cord 2 m (7 ft) For connecting SIWAREX WP251 to a PC (SIWATOOL), SIMATIC CPU, panel, etc.	**6XV1850-2GH20**
Remote display (optional) The digital remote displays can be connected directly to the SIWAREX WP251 via the RS 485 interface. Suitable remote display: S102 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.	

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SIWAREX WP251

Ordering data

	Article No.
Accessories	
SIWAREX JB junction box, aluminum housing For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.	**7MH5001-0AA20**
SIWAREX JB junction box, stainless steel housing For connecting up to 4 load cells in parallel.	**7MH5001-0AA00**
SIWAREX JB junction box, stainless steel housing (ATEX) For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).	**7MH4710-1EA01**
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.	
• Short-circuit current < 199 mA DC	**7MH4710-5BA**
• Short-circuit current < 137 mA DC	**7MH4710-5CA**

	Article No.
Cable (optional)	
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY 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	**7MH4702-8AG**
• For hazardous atmospheres. Sheath color: blue.	**7MH4702-8AF**
Ground terminal for connecting the load cell cable shield to the grounded DIN rail	**6ES5728-8MA11**
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**

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Overview

- For quick, high-performance serial data exchange via point-to-point connection
- Implemented protocols: ASCII, USS drive protocol, Modbus RTU, 3964(R)
- Additional protocols can also be loaded
- Simple parameterization with STEP 7 Basic

Technical specifications

Article number	**6ES7241-1CH32-0XB0** Communication Module CM 1241, RS422/485	**6ES7241-1AH32-0XB0** Communication Module CM 1241, RS232
General information		
Product type designation	CM 1241 RS 422 / 485	CM 1241 RS 232
Supply voltage		
Rated value (DC)		
• 24 V DC	Yes	Yes
Input current		
Current consumption, max.	220 mA; From backplane bus 5 V DC	200 mA; From backplane bus 5 V DC
Power loss		
Power loss, typ.	1.1 W	1.1 W
Interfaces		
Number of interfaces	1	1
Interface physics, RS 232C (V.24)		Yes
Interface (physical) RS 422/485 (X.27)	Yes	
Point-to-point connection		
• Cable length, max.	1 000 m	10 m
Integrated protocol driver		
- Freeport	Yes	Yes
- ASCII	Yes; Available as library function	Yes; Available as library function
- Modbus	Yes	Yes
- Modbus RTU master	Yes	Yes
- MODBUS RTU slave	Yes	Yes
- USS	Yes; Available as library function	
Protocols		
Integrated protocols		
Freeport		
- Telegram length, max.	1 kbyte	1 kbyte
- Bits per character	7 or 8	7 or 8
- Number of stop bits	1 (Standard), 2	1 (Standard), 2
- Parity	No parity (standard); even, uneven, mark (parity bit always 1); space (parity bit always 0)	No parity (standard); even, uneven, mark (parity bit always 1); space (parity bit always 0)
3964 (R)		
- Telegram length, max.	1 kbyte	1 kbyte
- Bits per character	7 or 8	7 or 8
- Number of stop bits	1 (Standard), 2	1 (Standard), 2
- Parity	No parity (standard); even, uneven, mark (parity bit always 1); space (parity bit always 0)	No parity (standard); even, uneven, mark (parity bit always 1); space (parity bit always 0)

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Technical specifications (continued)

Article number	**6ES7241-1CH32-0XB0** Communication Module CM 1241, RS422/485	**6ES7241-1AH32-0XB0** Communication Module CM 1241, RS232
Modbus RTU master		
- Address area	1 through 49 999 (Standard Modbus addressing)	1 through 49 999 (Standard Modbus addressing)
- Number of slaves, max.	247; slave numbers 1 through 247, per MODBUS network segment maximum 32 devices, additional repeaters needed to expand the network to maximum configuration	247; slave numbers 1 through 247, per MODBUS network segment maximum 32 devices, additional repeaters needed to expand the network to maximum configuration
MODBUS RTU slave		
- Address area	1 through 49 999 (Standard Modbus addressing)	1 through 49 999 (Standard Modbus addressing)
Interrupts/diagnostics/ status information		
Diagnostics function	Yes	Yes
Diagnostics indication LED		
• for status of the outputs	Yes	Yes
Degree and class of protection		
Degree of protection acc. to EN 60529		
• IP20	Yes	Yes
Standards, approvals, certificates		
CE mark	Yes	Yes
cULus	Yes	Yes
FM approval	Yes	Yes
RCM (formerly C-TICK)	Yes	Yes
KC approval	Yes	Yes
Ambient conditions		
Free fall		
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation		
• min.	-20 °C	-20 °C
• max.	60 °C	60 °C
Dimensions		
Width	30 mm	30 mm
Height	100 mm	100 mm
Depth	75 mm	75 mm
Weights		
Weight, approx.	155 g	150 g

Ordering data

	Article No.
CM 1241 communication module	
Communication module for point-to-point connection, with one RS 422/485 interface	**6ES7241-1CH32-0XB0**
Communication module for point-to-point connection, with one RS 232 interface	**6ES7241-1AH32-0XB0**

	Article No.
Accessories	
Front flap set (spare part)	
For communication modules	**6ES7291-1CC30-0XA0**

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Overview

- For fast, high-performance serial data exchange via point-to-point connection
- Implemented protocols: ASCII, USS drive protocol, Modbus RTU
- Additional protocols can be loaded later
- Simple parameterization with STEP 7 Basic
- Can be plugged directly into the CPU

Technical specifications

Article number	**6ES7241-1CH30-1XB0** Communication Board CB 1241, RS485
General information	
Product type designation	CB 1241 RS 485
Input current	
from backplane bus 5 V DC, typ.	50 mA
Power loss	
Power loss, typ.	1.5 W
Interfaces	
Point-to-point connection	
• Cable length, max.	1 000 m
Integrated protocol driver	
- Freeport	Yes
- ASCII	Yes; Available as library function
- Modbus	Yes
- Modbus RTU master	Yes
- MODBUS RTU slave	Yes
- USS	Yes; Available as library function
Protocols	
Integrated protocols	
Freeport	
- Telegram length, max.	1 kbyte
- Bits per character	7 or 8
- Number of stop bits	1 (Standard), 2
- Parity	No parity (standard); even, uneven, mark (parity bit always 1); space (parity bit always 0)
3964 (R)	
- Telegram length, max.	1 kbyte
- Bits per character	7 or 8
- Number of stop bits	1 (Standard), 2
- Parity	No parity (standard); even, uneven, mark (parity bit always 1); space (parity bit always 0)
Modbus RTU master	
- Address area	1 through 49 999 (Standard Modbus addressing)
- Number of slaves, max.	247; slave numbers 1 through 247, per MODBUS network segment maximum 32 devices, additional repeaters needed to expand the network to maximum configuration
MODBUS RTU slave	
- Address area	1 through 49 999 (Standard Modbus addressing)

Article number	**6ES7241-1CH30-1XB0** Communication Board CB 1241, RS485
Interrupts/diagnostics/ status information	
Diagnostics function	Yes
Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C
• max.	60 °C
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	38 mm
Height	62 mm
Depth	21 mm
Weights	
Weight, approx.	40 g

Ordering data

	Article No.
Communication board CB 1241 RS485 for point-to-point connection, with 1 RS 485 interface	**6ES7241-1CH30-1XB0**

	Article No.
Accessories	
Terminal block (spare part) for signal board with 6 screws, gold-plated; 4 pcs.	**6ES7292-1BF30-0XA0**

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CM 1242-5

Overview

DP-M	DP-S	FMS	PG/OP	S7
	●			

The CM 1242-5 communication module is used to connect a SIMATIC S7-1200 to PROFIBUS as a DP slave and has the following characteristics:

- PROFIBUS DPV1 slave in accordance with IEC 61158
- Module replacement without PG supported
- Power is supplied via the backplane bus so that no extra cabling is required
- Support of all standard baud rates from 9.6 kbps to 12 Mbps
- Compact industry-standard enclosure in S7-1200 design for mounting on a DIN rail
- Fast commissioning thanks to easy configuration using STEP 7 without additional programming overhead

The CM 1242-5 is intended for use in factory automation. Low-cost PROFIBUS-based automation solutions can be created on the basis of the SIMATIC S7-1200 for optimal production.

Technical specifications

Article number	**6GK7242-5DX30-0XE0**
Product type designation	CM 1242-5
Transmission rate	
Transfer rate	
• at the 1st interface acc. to PROFIBUS	9.6 kbit/s ... 12 Mbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	0
Number of electrical connections	
• at the 1st interface acc. to PROFIBUS	1
• for power supply	0
Type of electrical connection	
• at the 1st interface acc. to PROFIBUS	9-pin Sub-D socket (RS485)
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage 1 from backplane bus	5 V
Consumed current	
• from backplane bus at DC at 5 V typical	0.15 A
Power loss [W]	0.75 W

Article number	**6GK7242-5DX30-0XE0**
Product type designation	CM 1242-5
Permitted ambient conditions	
Ambient temperature	
• for vertical installation during operation	0 ... 45 °C
• for horizontally arranged busbars during operation	0 ... 55 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	Compact module S7-1200 single width
Width	30 mm
Height	100 mm
Depth	75 mm
Net weight	0.115 kg
Mounting type	
• 35 mm DIN rail mounting	Yes
• S7-300 rail mounting	No
• wall mounting	Yes

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Technical specifications (continued)

Article number	6GK7242-5DX30-0XE0
Product type designation	CM 1242-5
Product properties, functions, components general	
Number of units	
• per CPU maximum	3
Performance data PROFIBUS DP	
Service as DP slave	
• DPV0	Yes
• DPV1	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
Performance data telecontrol	
Protocol is supported	
• TCP/IP	No
Product functions management, configuration	
Configuration software	
• required	STEP 7 Basic/Professional

Ordering data

	Article No.
CM 1242-5 communication module	
Communication module for electrical connection of SIMATIC S7-1200 to PROFIBUS as a DP slave module	**6GK7242-5DX30-0XE0**
Accessories	
PROFIBUS FastConnect connection plug RS485	
With 90° cable outlet; insulation displacement technology, max. transmission rate 12 Mbps	
• Without PG interface	**6ES7972-0BA52-0XA0**
• With PG interface	**6ES7972-0BB52-0XA0**
PROFIBUS FC standard cable	
2-core bus cable, shielded, special design for fast mounting, sold by the meter; delivery unit: max. 1000 m, minimum order 20 m, sold by the meter	**6XV1830-0EH10**
PROFIBUS FastConnect stripping tool	
Stripping tool for fast stripping of the PROFIBUS FastConnect bus cable	**6GK1905-6AA00**
PROFIBUS bus terminal 12M	
Bus terminal for connection of PROFIBUS nodes at up to 12 Mbps with connecting cable	**6GK1500-0AA10**

Note:

You can find ordering data for software in the Industry Mall.

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3

Overview

The CM 1243-2 communication module is the AS-Interface master for the SIMATIC S7-1200 and has the following features:

- As many as 62 AS-Interface slaves can be connected
- Integrated analog value transmission
- Supports all AS-Interface master functions in accordance with the AS-Interface Specification V3.0
- Indication of the operating state on the front of the device displayed via LED
- Display of operating mode, AS-Interface voltage faults, configuration faults and peripheral faults via LED behind the front panel
- Compact enclosure in the design of the SIMATIC S7-1200
- Suitable for AS-Interface with 30 V voltage and AS-i Power24V: In combination with the optional DCM 1271 data decoupling module, a standard 24 V power supply unit can be used
- Configuration and diagnostics via the TIA Portal

Design

The CM 1243-2 communication module is positioned to the left of the S7-1200 CPU and linked to the S7-1200 via lateral contacts.

It has:

- Terminals for two AS-i cables (internally jumpered) via two screw terminals each
- One terminal for connection to the functional ground
- LEDs for indication of the operating state and fault statuses of the connected slaves

The screw terminals (included in scope of supply) can be removed to facilitate installation.

Function

The CM 1243-2 supports all specified functions of the AS-Interface Specification V3.0.

The values of the digital AS-i slaves can be activated via the process image of the S7-1200. During configuration of the slaves in the TIA Portal, the values of the analog AS-i slaves can also be accessed directly in the process image.

It is also possible to exchange all data of the AS-i Master and the connected AS-i slaves with the S7-1200 via the data record interface.

Changeover of the operating mode, automatic application of the slave configuration and the re-addressing of a connected AS-i slave can be implemented via the control panel of the CM 1243-2 in the TIA Portal.

The optional DCM 1271 data decoupling module has an integrated detection unit for detecting ground faults on the AS-Interface cable. The integrated overload protection also disconnects the AS-Interface cable if the drive current required exceeds 4 A.
For more information on DCM 1271, see page 3/140.

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

To configure CM 1243-2, you require STEP 7 V11 + SP2 or higher.

For STEP 7 V11 + SP2 or higher, the additional Hardware Support Package for CM 1243-2 is required. This is available from the Industry Online Support Portal, see https://support.industry.siemens.com/cs/ww/en/view/72341852.

The software enables user-friendly configuration and diagnostics of the AS-i Master and any connected slaves.

Alternatively, you can also apply the AS-Interface ACTUAL configuration at the "touch of a button" via the control panel integrated in the TIA Portal/STEP 7.

When operated on a S7-1200 CPU with firmware version V4.0 or higher, the firmware version V1.1 (or higher) is required for the CM 1243-2.

Benefits

- More flexibility and versatility in the use of SIMATIC S7-1200 as the result of a significant increase in the number of digital and analog inputs/outputs available
- Very easy configuration and diagnostics of the AS-Interface via the TIA Portal (STEP 7 V11 + SP2 or higher)
- Simple operation with AS-Interface power supply unit (see https://mall.industry.siemens.com/mall/en/ww/Catalog/Products/8200165?tree=CatalogTree) possible without restrictions
- Alternatively: No need for the AS-i power supply unit with AS-i Power24V. The AS-Interface cable is powered through an existing 24 V DC PELV power supply unit. For decoupling, the AS-i DCM 1271 data decoupling module is required, see page 3/140.
- LEDs for indication of fault statuses for fast diagnostics
- Monitoring of AS-Interface voltage facilitates diagnostics

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Application

The CM 1243-2 is the AS-Interface master connection for the 12xx CPUs of the SIMATIC S7-1200. Through connection to AS-Interface, the number of digital inputs and outputs available for the S7-1200 is greatly increased (max. 496 DI / 496 DQ on the AS-Interface per CM).

The integrated analog value processing also makes the analog values available at the AS-Interface for the S7-1200. Up to 31 analog slaves with a standard address (each with up to four channels) or up to 62 analog slaves with an A/B address (each with up to two channels) are possible per CM.

Operating conditions

- The CM 1243-2 communication module exchanges data with the S7-1200 CPU with a cycle time of 10 ms.
- The AS-i cycle time depends on the AS-i bus capacity and is up to 5 ms in the case of 31 slave addresses; for more information, see manual "AS-i Master CM 1243-2 and AS-i DCM 1271 data decoupling module for SIMATIC S7-1200", https://support.industry.siemens.com/cs/ww/en/view/57358958.
- For calculation of the maximum switching frequency at inputs/outputs of AS-i slaves, these cycle times and the runtime of the user program must be added up.

Ordering data

Ordering data	Article No.
CM 1243-2 communication module • AS-Interface master for SIMATIC S7-1200 • Corresponds to AS-Interface Specification V3.0 • With screw terminals, removable terminals (included in the scope of supply) • Dimensions (W × H × D / mm): 30 × 100 × 75 Note: The CM 1243-2 communication module is available as a SIPLUS version under Article No. 6AG1243-2AA30-7XB0 in the extended temperature range (from -25 to 70 °C) and for use in harsh environmental conditions (coated according to environment standard IEC 60721). For more information, see www.siemens.com/siplus-extreme.	**3RK7243-2AA30-0XB0**
Accessories	
Screw terminals (replacement) • For screw terminals, 5-pole For AS-i Master CM 1243-2 and AS-i DCM 1271 data decoupling module	**3RK1901-3MA00**
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 × H × D / mm): 84 × 195 × 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/15750/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

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3

Overview

With the aid of the DCM 1271 data decoupling module, the AS-Interface network can also be supplied with 24 V DC or 30 V DC from a standard power supply unit and the transmission of data and power can be implemented on one cable.

The DCM 1271 data decoupling module has the same type of enclosure as an S7-1200 module and can therefore be perfectly combined with the AS-i Master CM 1243-2.

The DCM 1271 data decoupling module has no connection to the backplane bus of the SIMATIC S7-1200 and is therefore not counted as a communication module for the calculation of the maximum configuration.

Features of the DCM 1271 data decoupling module

- Design: S7-1200, 30 mm wide, degree of protection IP20
- Detachable terminals (included in delivery)
- Single data decoupling
- Supply of several AS-i networks with a single power supply unit
- Operation with 24 V DC or 30 V DC, grounded or non-grounded
- Current limitation at 4 A
- Integrated ground-fault detection
- Diagnostic LEDs for ground faults and overloads
- Signaling contact for ground-fault detection

Ground-fault detection

The integrated ground fault detection functions with grounded and non-grounded power supply: The connection of negative pole and ground (upstream from the data decoupling module) customary with 24 V DC power supplies is permitted. A ground fault to the negative or positive pole on the AS-Interface network (behind the data decoupling module) is identified and signaled via LED and a transistor output.

Benefits

- An existing standard power supply unit with 24 V DC or 30 V DC can be used for supplying AS-i networks
- The AS-Interface system can also be used in tightly budgeted applications because no AS-Interface power supply unit needs to be purchased
- Applications benefit in addition from the advantages of a modern bus system:
  - High level of standardization
  - Additional diagnostics and maintenance information
  - Faster commissioning

Application

The AS-Interface data decoupling module is designed for AS-Interface networks with 30 V or 24 V supply (AS-i Power24V).

Operation of an AS-i network with the data decoupling module and a 30 V standard power supply unit is technically equivalent to the use of an AS-Interface power supply unit and offers the service-proven features of AS-Interface for all applications.

AS-i Power24V uses a 24 V power supply unit in conjunction with a data decoupling module and is particularly suitable for

- Compact machines using AS-Interface input/output modules
- Applications in the control cabinet for AS-Interface integration of SIRIUS 3RT2 contactors using 3RA27 function modules

Note:

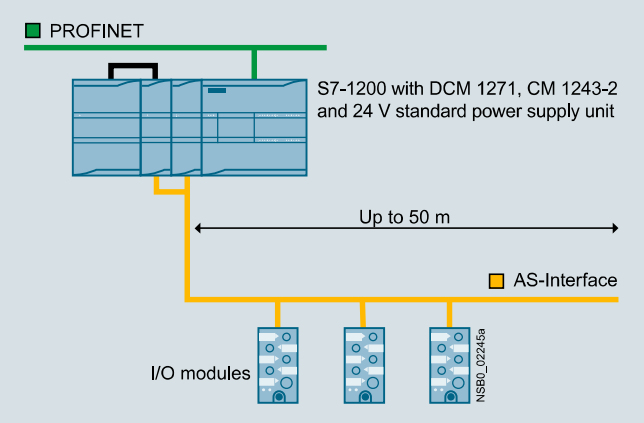
The power supply units must comply with the PELV (Protective Extra Low Voltage) or SELV (Safety Extra Low Voltage) standards, have a residual ripple of < 250 mVpp, and in the event of a fault must limit the output voltage to a maximum of 40 V. 24 V power supply units are recommended, see SITOP power supplies, https://mall.industry.siemens.com/mall/en/WW/Catalog/Products/10244081?tree=CatalogTree, or 30 V power supply units PSN 130S, see https://mall.industry.siemens.com/mall/en/WW/Catalog/Products/10174512?tree=CatalogTree.

Note on AS-i Power24V:

The length of an AS-i Power24V network is restricted to 50 m in order to limit the voltage drop along the cable.

AS-i Masters, AS-i slaves and the sensors and actuators supplied through the AS-i cable must be designed for the reduced voltage. Sensors and actuators for the standard voltage range of 10 to 30 V can be supplied with sufficient voltage.

Please also observe the requirements specified under "AS-i Power24V" for the operation of AS-i Power24V, see https://mall.industry.siemens.com/mall/en/WW/Catalog/Products/10057530?tree=CatalogTree.



Configuration of an AS-i Power24V network with AS-Interface DCM 1271 data decoupling module

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Ordering data

	Article No.
DCM 1271 data decoupling module • With screw terminals, removable terminals (included in the scope of supply) • Dimensions (W × H × D / mm): 30 × 100 × 75	**3RK7271-1AA30-0AA0**
Accessories	
Screw terminals (replacement)	
• With screw terminals, 5-pole For AS-i Master CM 1243-2 and AS-i DCM 1271 data decoupling module	**3RK1901-3MA00**
• With screw terminals, 3-pole for AS-i DCM 1271 data decoupling module for connecting the power supply unit	**3RK1901-3MB00**

More information

More information
More information on AS-i Power24V, see "System Manual AS-Interface", https://support.industry.siemens.com/cs/ww/en/view/26250840 Manual for AS-i Master CM 1234-2 and AS-i DCM 1271 data decoupling module, see https://support.industry.siemens.com/cs/ww/en/view/57358958

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CM 1243-5

Overview

DP-M	DP-S	FMS	PG/OP	S7
●			●	●

The CM 1243-5 communication module is used to connect a SIMATIC S7-1200 to PROFIBUS as a DP master and has the following characteristics:

- PROFIBUS DPV1 master in accordance with IEC 61158
- Support of up to 16 PROFIBUS DP slaves
- Communication with other S7 controllers based on S7 communication
- Allows programming devices and operator panels with PROFIBUS interfaces to be connected to the SIMATIC S7-1200
- Module replacement without PG supported
- Support of all standard baud rates from 9.6 kbps to 12 Mbps
- Compact industrial enclosure in SIMATIC S7-1200 design for mounting on a DIN rail
- Fast commissioning thanks to easy configuration using STEP 7 without additional programming overhead

The CM 1243-5 is intended for use in factory automation. Low-cost PROFIBUS-based automation solutions can be created on the basis of the SIMATIC S7-1200 for optimal production.

Technical specifications

Article number	**6GK7243-5DX30-0XE0**
Product type designation	CM 1243-5
Transmission rate	
Transfer rate	
• at the 1st interface acc. to PROFIBUS	9.6 kbit/s ... 12 Mbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	0
Number of electrical connections	
• at the 1st interface acc. to PROFIBUS	1
• for power supply	1
Type of electrical connection	
• at the 1st interface acc. to PROFIBUS	9-pin Sub-D socket (RS485)
• for power supply	3-pole terminal block
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
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	20 %
Consumed current	
• from external supply voltage at DC at 24 V typical	0.1 A
Power loss [W]	2.4 W

Article number	**6GK7243-5DX30-0XE0**
Product type designation	CM 1243-5
Permitted ambient conditions	
Ambient temperature	
• for vertical installation during operation	0 ... 45 °C
• for horizontally arranged busbars during operation	0 ... 55 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	Compact module S7-1200 single width
Width	30 mm
Height	100 mm
Depth	75 mm
Net weight	0.134 kg
Mounting type	
• 35 mm DIN rail mounting	Yes
• S7-300 rail mounting	No
• wall mounting	Yes
Product properties, functions, components general	
Number of units	
• per CPU maximum	3

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Technical specifications (continued)

Article number	**6GK7243-5DX30-0XE0**
Product type designation	CM 1243-5
Performance data PROFIBUS DP	
Service as DP master	
• DPV1	Yes
Number of DP slaves on DP master usable	16
Amount of data	
• of the address area of the inputs as DP master total	512 byte
• of the address area of the outputs as DP master total	512 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	No
• DPV1	No
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	8
• with PG connections maximum	1
• with PG/OP connections maximum	3
• Note	max. 4 connections to other S7 stations
Performance data multi-protocol mode	
Number of active connections with multi-protocol mode	
• without DP maximum	8
• with DP maximum	8
Performance data telecontrol	
Protocol is supported	
• TCP/IP	No
Product functions management, configuration	
Configuration software	
• required	STEP 7 Basic/Professional

Ordering data

	Article No.
CM 1243-5 communication module	
Communication module for electrical connection of SIMATIC S7-1200 to PROFIBUS as a DPV1 master	**6GK7243-5DX30-0XE0**
Accessories	
PROFIBUS FastConnect connection plug RS485	
With 90° cable outlet; insulation displacement technology, max. transmission rate 12 Mbps	
• Without PG interface	**6ES7972-0BA52-0XA0**
• With PG interface	**6ES7972-0BB52-0XA0**
PROFIBUS FC standard cable	
2-core bus cable, shielded, special design for fast mounting, delivery unit: max. 1000 m, minimum order 20 m, sold by the meter	**6XV1830-0EH10**
PROFIBUS FastConnect stripping tool	
Stripping tool for fast stripping of the PROFIBUS FastConnect bus cable	**6GK1905-6AA00**
PROFIBUS bus terminal 12M	
Bus terminal for connection of PROFIBUS nodes up to 12 Mbps with connecting cable	**6GK1500-0AA10**

Note:

You can find ordering data for software in the Industry Mall.

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CSM 1277 unmanaged

Overview

- Unmanaged switch for connecting a SIMATIC S7-1200 to an Industrial Ethernet network with a line, tree or star topology
- Multiplication of Ethernet interfaces on a SIMATIC S7-1200 for additional connection of up to three programming devices, operator controls, and further Ethernet nodes
- Simple, space-saving mounting on the SIMATIC S7-1200 DIN rail
- Low-cost solution for implementing small, local Ethernet networks
- Connection without any problems using RJ45 standard plug connectors
- Simple and fast status display via LEDs on the device
- Integral autocrossover function permits use of uncrossed connecting cables

Technical specifications

Article number	**6GK7277-1AA10-0AA0**
Product type designation	SCALANCE CSM 1277
Transmission rate	
Transfer rate	10 Mbit/s, 100 Mbit/s
Interfaces for communication integrated	
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
Interfaces others	
Number of electrical connections	
• for power supply	1
Type of electrical connection	
• for power supply	3-pole terminal block
Supply voltage, current consumption, power loss	
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

Article number	**6GK7277-1AA10-0AA0**
Product type designation	SCALANCE CSM 1277
Permitted ambient conditions	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity	
• at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Design	SIMATIC S7-1200 device design
Width	45 mm
Height	100 mm
Depth	75 mm
Net weight	0.15 kg
Mounting type	
• 35 mm DIN rail mounting	Yes
• wall mounting	Yes
• S7-300 rail mounting	No
• S7-1500 rail mounting	No
Product functions management, configuration	
Product function	
• multiport mirroring	No
Product function switch-managed	No
Product functions Redundancy	
Product function	
• Parallel Redundancy Protocol (PRP)/ operation in the PRP-network	Yes
• Parallel Redundancy Protocol (PRP)/ Redundant Network Access (RNA)	No

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Technical specifications (continued)

Article number	**6GK7277-1AA10-0AA0**
Product type designation	SCALANCE CSM 1277
Standards, specifications, approvals	
Standard	
• for FM	FM3611: Class 1, Divison 2, Group A, B, C, D / T.., CL.1, Zone 2, GP. IIC, T.. Ta
• for hazardous zone	EN 600079-15:2005, EN 600079-0:2006, II 3 G Ex nA II T4, KEMA 08 ATEX 0003 X
• for safety from CSA and UL	UL 508, CSA C22.2 No. 142
• for emitted interference	EN 61000-6-4 (Class A)
• for interference immunity	EN 61000-6-2
Standards, specifications, approvals CE	
Certificate of suitability CE marking	Yes
Standards, specifications, approvals miscellaneous	
Certificate of suitability	EN 61000-6-2, EN 61000-6-4
• C-Tick	Yes
• KC approval	No
Standards, specifications, approvals ship classification	
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
Standards, specifications, approvals product conformity	
MTBF	273 y

Ordering data

	Article No.
CSM 1277 compact switch module Unmanaged switch for connecting a SIMATIC S7-1200 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, S7-1200 module including electronic manual on CD-ROM	**6GK7277-1AA10-0AA0**
SIPLUS NET CSM 1277 compact switch module Unmanaged switch for connection of SIPLUS S7-1200 and up to three further stations to Industrial Ethernet with 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-1200 module including electronic manual on CD-ROM	**6AG1277-1AA10-4AA0**
Accessories	
IE FC TP trailing cable 2 x 2 (Type C) 4-core, shielded TP installation cable for connection to IE FC outlet RJ45/ IE FC RJ45 plug 180/90 for use as trailing cable; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1 000 m, minimum order quantity 20 m	**6XV1840-3AH10**
IE FC RJ45 plug 180 2 x 2 RJ45 plug connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface	
• 1 pack = 1 unit	**6GK1901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1901-1BB10-2AE0**
IE FC outlet RJ45 For connection of Industrial Ethernet FC cables and TP cords; graduated prices for 10 and 50 units or more	**6GK1901-1FC00-0AA0**
IE TP cord RJ45/RJ45	
• TP cord pre-assembled with 2 RJ45 plug connectors; length: 0.5 m	**6XV1850-2GE50**
• TP cable 4 x 2 with 2 RJ45 plug connectors; length: 0.5 m	**6XV1870-3QE50**

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Overview

The CP 1243-1 communications processor is used for connecting the SIMATIC S7-1200 to telecontrol centers via remote networks and telecontrol protocols (DNP3, IEC 60870-5-104, TeleControl Basic), and for safe communication via IP-based networks.

The CP has the following features:

- Ethernet-based connection to TeleControl Server Basic, e.g. via Internet
- Data transfer of measured values, control variables, or alarms optimized for telecontrol systems
- Automatic sending of alert emails
- Data buffering of up to 64,000 values ensures a secure database even with temporary connection failures
- Secure communication via VPN connections based on IPSec
- Access protection via stateful inspection firewall
- Support of SINEMA Remote Connect with autoconfiguration
- Clearly laid out LED signaling for fast and easy diagnostics
- Compact industrial enclosure in S7-1200 design for mounting on a DIN rail
- Fast commissioning thanks to easy configuration using STEP 7

Technical specifications

Article number	6GK7243-1BX30-0XE0
Product type designation	CP 1243-1
Transmission rate	
Transfer rate	
• at the 1st interface	10 ... 100 Mbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	1
Number of electrical connections	
• at the 1st interface acc. to Industrial Ethernet	1
• for power supply	0
Type of electrical connection	
• at the 1st interface acc. to Industrial Ethernet	RJ45 port
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage 1 from backplane bus	5 V
Consumed current	
• from backplane bus at DC at 5 V typical	0.25 A
Power loss [W]	1.25 W

Article number	6GK7243-1BX30-0XE0
Product type designation	CP 1243-1
Permitted ambient conditions	
Ambient temperature	
• for vertical installation during operation	-20 ... +60 °C
• for horizontally arranged busbars during operation	-20 ... +70 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	Compact module S7-1200 single width
Width	30 mm
Height	110 mm
Depth	75 mm
Net weight	0.122 kg
Mounting type	
• 35 mm DIN rail mounting	Yes
• wall mounting	Yes
Product properties, functions, components general	
Number of units	
• per CPU maximum	3
Performance data open communication	
Number of possible connections for open communication	
• by means of T blocks maximum	like CPU

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Technical specifications (continued)

Article number	6GK7243-1BX30-0XE0
Product type designation	CP 1243-1
Performance data S7 communication	
Number of possible connections for S7 communication	
• Note	like CPU
Performance data IT functions	
Number of possible connections	
• as e-mail client maximum	1
Performance data telecontrol	
Suitability for use	
• Node station	No
• substation	Yes
• TIM control center	No
Control center connection	For use with TeleControl Server Basic, WinCC and PCS7
• by means of a permanent connection	supported
• Note	Connection to SCADA system via Telecontrol Server Basic and Standard Telecontrol protocols
Protocol is supported	
• DNP3	Yes
• IEC 60870-5	Yes
Product function data buffering if connection is aborted	Yes; 64,000 events (TeleControl Basic, DNP3 or IEC 60870-5-104)
Number of data points per station maximum	200
Number of stations for direct communication with Telecontrol Server Basic	
• in send direction maximum	3
• in receive direction maximum	15
Performance data Teleservice	
Diagnostics function online diagnostics with SIMATIC STEP 7	Yes
Product function	
• program download with SIMATIC STEP 7	Yes
• Remote firmware update	Yes
Product functions management, configuration	
Configuration software	
• required	STEP 7 Basic/Professional
Product functions Diagnosis	
Product function Web-based diagnostics	Yes

Article number	6GK7243-1BX30-0XE0
Product type designation	CP 1243-1
Product functions Security	
Firewall version	stateful inspection
Product function with VPN connection	IPSec, SINEMA RC
Type of encryption algorithms with VPN connection	AES-256, AES-192, AES-128, 3DES-168
Type of authentication procedure with VPN connection	Preshared key (PSK), X.509v3 certificates
Type of hashing algorithms with VPN connection	MD5, SHA-1, SHA-2
Number of possible connections with VPN connection	8
Product function	
• password protection for Web applications	No
• password protection for teleservice access	No
• encrypted data transmission	Yes
• ACL - IP-based	No
• ACL - IP-based for PLC/routing	No
• switch-off of non-required services	Yes
• Blocking of communication via physical ports	No
• log file for unauthorized access	No
Product functions Time	
Protocol is supported	
• NTP	Yes
• NTP (secure)	Yes
time synchronization	
• from NTP-server	Yes
• from control center	Yes

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Ordering data

	Article No.
CP 1243-1 communications processor	
CP 1243-1 communications processor for connecting SIMATIC S7-1200 as an additional Ethernet interface and for connection to control centers via telecontrol protocols (DNP3, IEC 60870, TeleControl Basic), security (firewall, VPN)	**6GK7243-1BX30-0XE0**
Accessories	
Compact Switch Module CSM 1277	
Unmanaged switch for connecting a SIMATIC S7-1200 and up to three further nodes to Industrial Ethernet with 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-1200 module including electronic device manual on CD-ROM	**6GK7277-1AA10-0AA0**
IE FC RJ45 plugs	
RJ45 connectors for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
IE FC RJ45 plug 180	
180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface	
• 1 pack = 1 unit	**6GK1901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1901-1BB10-2AE0**
IE FC TP standard cable GP 2 x 2 (Type A)	
4-core, shielded TP installation cable for connection to IE FC outlet RJ45/IE F RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. length 1 000 m, minimum order quantity 20 m	**6XV1840-2AH10**
IE FC stripping tool	
Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	**6GK1901-1GA00**

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Overview

The CP 1242-7 GPRS V2 communications processor is used to connect a SIMATIC S7-1200 to the globally available GSM/GPRS mobile radio network and has the following characteristics:

- Worldwide wireless exchange of data between S7-1200 controllers and/or between S7-1200 controllers and control centers with an Internet connection
- Communication based on the GPRS (**G**eneral **P**acket **R**adio **S**ervice) mobile wireless service with data transmission speeds of up to 86 kbps in the downlink and 43 kbps in the uplink
- GPRS mode with fixed IP addresses and dynamic IP addresses with standard mobile phone contract
- Time synchronization based on NTP (**N**etwork **T**ime **P**rotocol)
- Sending and receiving of text messages
- LED signaling for fast diagnostics
- Compact industrial enclosure in S7-1200 design for mounting on a DIN rail
- Fast commissioning thanks to easy configuration using STEP 7

In conjunction with the TeleControl Server Basic software, the CP 1242-7 forms a telecontrol system with additional properties:

- Connection of up to 5000 telecontrol stations to the control center via an OPC interface
- Data buffering in the substations in the event of connection failures
- Central status monitoring of the substations
- No special provider services required for fixed IP addresses
- Teleservice access with STEP 7 to the substations via the Internet

The CP 1242-7 V2 is a new product version of the CP 1242-7. The concept for process data transmission has been expanded with a simple data point configuration, which enables substantially easier commissioning without high programming overhead and minimizes susceptibility to errors during the projects implementation phase. CP 1242-7 has also been equipped with new functions, such as access to the internal web server of the S7-1200. This opens up numerous new application areas.

Technical specifications

Article number	**6GK7242-7KX31-0XE0**
Product type designation	CP 1242-7 V2
Transmission rate	
Transfer rate	
• for GPRS transmission	
- with downlink maximum	86 kbit/s
- with uplink maximum	43 kbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	0
Number of electrical connections	
• for external antenna(s)	1
• for power supply	1
Number of slots	
• for SIM cards	1
Type of electrical connection	
• for external antenna(s)	SMA socket (50 ohms)
• for power supply	3-pole terminal block
Slot version	
• for SIM card	Standard

Article number	**6GK7242-7KX31-0XE0**
Product type designation	CP 1242-7 V2
Wireless technology	
Type of mobile wireless service	
• is supported SMS	Yes
• is supported GPRS	Yes
• Note	GPRS (Multislot Class 10)
Type of mobile network is supported	
• GSM	Yes
• UMTS	No
• LTE	No
Operating frequency	
• 850 MHz	Yes
• 900 MHz	Yes
• 1800 MHz	Yes
• 1900 MHz	Yes
Transmit power	
• at operating frequency 900 MHz	2 W
• at operating frequency 1800 MHz	1 W
• at operating frequency 1900 MHz	1 W

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Technical specifications (continued)

Article number	6GK7242-7KX31-0XE0
Product type designation	CP 1242-7 V2
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
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	20 %
Consumed current	
• from external supply voltage at DC at 24 V typical	0.1 A
• from external supply voltage at DC at 24 V maximum	0.22 A
Power loss [W]	2.4 W
Permitted ambient conditions	
Ambient temperature	
• for vertical installation during operation	-20 ... +60 °C
• for horizontally arranged busbars during operation	-20 ... +70 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	Compact module S7-1200 single width
Width	30 mm
Height	100 mm
Depth	75 mm
Net weight	0.133 kg
Mounting type	
• 35 mm DIN rail mounting	Yes
• S7-300 rail mounting	No
• wall mounting	Yes
Product properties, functions, components general	
Number of units	
• per CPU maximum	3
Performance data	
Number of users/telephone numbers definable maximum	10

Article number	6GK7242-7KX31-0XE0
Product type designation	CP 1242-7 V2
Performance data open communication	
Number of possible connections for open communication	
• by means of T blocks maximum	like CPU
Performance data IT functions	
Number of possible connections	
• as e-mail client maximum	1
Performance data telecontrol	
Control center connection	Telecontrol Server Basic
• by means of a permanent connection	supported
• by means of demand-oriented connection	supported
• Note	Connection to SCADA system using OPC interface
Protocol is supported	
• DNP3	No
• IEC 60870-5	No
Product function data buffering if connection is aborted	Yes; 64,000 events
Number of stations for direct communication with Telecontrol Server Basic	
• in send direction maximum	3
• in receive direction maximum	15
Performance data Teleservice	
Diagnostics function online diagnostics with SIMATIC STEP 7	Yes
Product function	
• program download with SIMATIC STEP 7	Yes
• Remote firmware update	Yes
Product functions management, configuration	
Configuration software	
• required	STEP 7 Basic/Professional
Product functions Diagnosis	
Product function Web-based diagnostics	Yes
Product functions Security	
Product function	
• password protection for teleservice access	Yes
• encrypted data transmission	Yes
Product functions Time	
Protocol is supported	
• NTP	Yes
time synchronization	
• from control center	Yes

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Ordering data

	Article No.
Communications processor CP 1242-7 GPRS[1]	
Communications processor CP 1242-7 GPRS V2 for connecting SIMATIC S7-1200 to TeleControl Server Basic via GSM/GPRS mobile radio network	**6GK7242-7KX31-0XE0**

	Article No.
Accessories	
ANT794-4MR antenna Omnidirectional antenna for GSM (2G), UMTS (3G) and LTE (4G) networks; omnidirectional; weatherproof for indoor and outdoor use; 5 m cable with fixed connection to antenna; SMA connector; including mounting bracket, screws, wall plugs	**6NH9860-1AA00**
ANT794-3M antenna Flat panel antenna for GSM (2G) networks, for triband with 900/1 800/1 900 MHz; weatherproof for indoor/outdoor use, 1.2 m cable with fixed connection to antenna; SMA connector, incl. assembly adhesive tape	**6NH9870-1AA00**

[1] Please note country approvals under:
http://www.siemens.com/wireless-approvals

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CP 1243-7 LTE

Overview

CP 1243-7 LTE is used to connect the S7-1200 to a mobile wireless 4th Generation LTE (Long Term Evolution) network. The increased data rates compared to GPRS and widespread introduction of LTE open up new areas of application.
The CP1243-7 is characterized by the following properties:

- 1 connection to LTE (4G) mobile wireless network (various versions for EU and North America)
- Data transfer of measured values, control variables, or alarms optimized for telecontrol systems
- Operation with fixed IP addresses and dynamic IP addresses with standard cellular phone contract
- Time synchronization based on NTP (Network Time Protocol)
- On-demand connection setup via voice call or text message
- Sending and receiving of text messages
- Teleservice access with STEP 7 to substations via mobile wireless networks
- Compact industrial enclosure in S7-1200 design for mounting on a DIN rail
- Temperature range in operation: -20°C to +70°C
- DIN rail mounting
- Diagnostics LEDs (overall status and details)
- Integrated security functions (VPN and firewall)
- Access to the CPU web server
- Fast commissioning due to simplified configuration with STEP 7
- Data buffering of up to 64,000 values ensures a secure database even with temporary connection failures
- Support of SINEMA Remote Connect with autoconfiguration

Technical specifications

Article number	**6GK7243-7KX30-0XE0**	**6GK7243-7SX30-0XE0**
Product type designation	CP 1243-7 LTE EU	CP 1243-7 LTE US
Transmission rate		
Transfer rate		
• for LTE transmission		
- with downlink maximum	42 Mbit/s	42 Mbit/s
- with uplink maximum	5.76 Mbit/s	5.76 Mbit/s
Interfaces		
Number of interfaces acc. to Industrial Ethernet	0	0
Number of electrical connections		
• for external antenna(s)	1	1
• for power supply	1	1
Number of slots		
• for SIM cards	1	1
Type of electrical connection		
• for external antenna(s)	SMA socket (50 ohms)	SMA socket (50 ohms)
• for power supply	3-pole terminal block	3-pole terminal block
Slot version		
• for SIM card	Standard	Standard
Wireless technology		
Type of mobile wireless service		
• is supported SMS	Yes	Yes
• is supported GPRS	Yes	Yes
• Note	GPRS (Multislot Class 10)	GPRS (Multislot Class 10)
Type of mobile network is supported		
• GSM	Yes	Yes
• UMTS	Yes	Yes
• LTE	Yes	Yes
Operating frequency		
• 850 MHz		Yes
• 1900 MHz		Yes

Article number	**6GK7243-7KX30-0XE0**	**6GK7243-7SX30-0XE0**
Product type designation	CP 1243-7 LTE EU	CP 1243-7 LTE US
Operating frequency		
• for GSM transmission 900 MHz	Yes	
• for GSM transmission 1800 MHz	Yes	
• with UMTS transmission 900 MHz	Yes	
• with UMTS transmission 2100 MHz	Yes	
• for LTE transmission 700 MHz		Yes
• for LTE transmission 800 MHz	Yes	
• for LTE transmission 1700 MHz		Yes
• for LTE transmission 1800 MHz	Yes	
• for LTE transmission 2600 MHz	Yes	
Supply voltage, current consumption, power loss		
Type of voltage of the supply voltage	DC	DC
Supply voltage external	24 V	24 V
Supply voltage external at DC Rated value	24 V	24 V
Relative positive tolerance at DC at 24 V	20 %	20 %
Relative negative tolerance at DC at 24 V	20 %	20 %
Consumed current		
• from external supply voltage at DC at 24 V typical	0.1 A	0.1 A
• from external supply voltage at DC at 24 V maximum	0.22 A	0.22 A

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Technical specifications (continued)

Article number	6GK7243-7KX30-0XE0	6GK7243-7SX30-0XE0
Product type designation	CP 1243-7 LTE EU	CP 1243-7 LTE US
Permitted ambient conditions		
Ambient temperature		
• for vertical installation during operation	-20 ... +60 °C	-20 ... +60 °C
• for horizontally arranged busbars during operation	-20 ... +70 °C	-20 ... +70 °C
• during storage	-40 ... +70 °C	-40 ... +70 °C
• during transport	-40 ... +70 °C	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %	95 %
Protection class IP	IP20	IP20
Design, dimensions and weight		
Module format	Compact module S7-1200 single width	Compact module S7-1200 single width
Width	30 mm	30 mm
Height	100 mm	100 mm
Depth	75 mm	75 mm
Net weight	0.133 kg	0.133 kg
Mounting type		
• 35 mm DIN rail mounting	Yes	Yes
• S7-300 rail mounting	No	No
• wall mounting	Yes	Yes
Product properties, functions, components general		
Number of units		
• per CPU maximum	3	3
Performance data		
Number of users/telephone numbers definable maximum	10	10
Performance data open communication		
Number of possible connections for open communication		
• by means of T blocks maximum	like CPU	like CPU
Performance data IT functions		
Number of possible connections		
• as e-mail client maximum	1	1
Performance data telecontrol		
Suitability for use		
• substation	Yes	Yes
Control center connection	Telecontrol Server Basic	Telecontrol Server Basic
• by means of a permanent connection	supported	supported
• by means of demand-oriented connection	supported	supported
• Note	Connection to SCADA system using OPC interface	Connection to SCADA system using OPC interface
Protocol is supported		
• DNP3	No	No
• IEC 60870-5	No	No

Article number	6GK7243-7KX30-0XE0	6GK7243-7SX30-0XE0
Product type designation	CP 1243-7 LTE EU	CP 1243-7 LTE US
Product function data buffering if connection is aborted	Yes; 64,000 events	Yes; 64,000 events
Number of stations for direct communication with Telecontrol Server Basic		
• in send direction maximum	3	3
• in receive direction maximum	15	15
Performance data Teleservice		
Diagnostics function online diagnostics with SIMATIC STEP 7	Yes	Yes
Product function		
• program download with SIMATIC STEP 7	Yes	Yes
• Remote firmware update	Yes	Yes
Product functions management, configuration		
Configuration software		
• required	STEP 7 Basic/ Professional	STEP 7 Basic/ Professional
Product functions Diagnosis		
Product function Web-based diagnostics	Yes	Yes
Product functions Security		
Firewall version	stateful inspection	stateful inspection
Product function with VPN connection	IPSec, SINEMA RC	IPSec, SINEMA RC
Type of encryption algorithms with VPN connection	AES-256, AES-192, AES-128, 3DES-168, DES-56	AES-256, AES-192, AES-128, 3DES-168, DES-56
Type of authentication procedure with VPN connection	Preshared key (PSK), X.509v3 certificates	Preshared key (PSK), X.509v3 certificates
Type of hashing algorithms with VPN connection	MD5, SHA-1	MD5, SHA-1
Number of possible connections with VPN connection	1	1
Product function		
• password protection for teleservice access	Yes	Yes
• encrypted data transmission	Yes	Yes
Product functions Time		
Protocol is supported		
• NTP	Yes	Yes
time synchronization		
• from control center	Yes	Yes

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Ordering data

	Article No.
Communication processor CP 1243-7 LTE	
Communication processor for connecting SIMATIC S7-1200 to TeleControl Server Basic via LTE mobile wireless network	
• **CP 1243-7 LTE EU** Frequencies in European band: 700, 1 700 MHz	**6GK7243-7KX30-0XE0**
Frequencies in European band: 700, 1 700 MHz	
• **CP 1243-7 LTE US** Frequencies in North American band: 800, 1 800, 2 600 MHz	**6GK7243-7SX30-0XE0**

	Article No.
Accessories	
ANT794-4MR antenna Omnidirectional antenna for GSM (2G), UMTS (3G) and LTE (4G) networks; omnidirectional; weatherproof for indoor and outdoor use; 5 m cable with fixed connection to antenna; SMA connector; including mounting bracket, screws, wall plugs	**6NH9860-1AA00**

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Overview

The CP 1243-8 IRC (Industrial Remote Communication) communications processor is used for connecting a SIMATIC S7-1200 via the SINAUT ST7 telecontrol protocol to higher-level ST7 stations or to an ST7 control center. The CP 1243-8 IRC (as of HW2 and firmware V3.0) also offers connection to a DNP3 or IEC-capable control center via a corresponding open DNP3 or IEC 60870-5-104 telecontrol protocol. The CP 1243-8 IRC (as of HW2 and firmware V3.0) also offers connection to a DNP3 or IEC-capable control center via a corresponding open DNP3 or IEC 60870-5-104 telecontrol protocol.

The CP has the following features:

- Support for telecontrol protocol SINAUT ST7, DNP3, IEC 60870-5-104
- Two WAN connections for selecting the communication paths:
  - Ethernet-based connection: RJ45 port on the module for connecting external routers, e.g. SCALANCE M
  - Additional connection configurable via plug-in TS modules
- Both WAN interfaces can also be operated simultaneously: Route redundancy
- Data transfer of measured values, control variables, or alarms optimized for telecontrol systems
- Automatic transmission of alarms per email or text message
- Time synchronization based on NTP (Network Time Protocol) or via the SINAUT system
- Data buffering of up to 16,000 data frames prevents data loss in the event of temporary connection failures
- Secure communication via VPN connections based on IPSec
- Access protection via stateful inspection firewall
- Support of SINEMA Remote Connect with autoconfiguration
- Fast and simple diagnostics via clear LED indicators, STEP 7 and web browser
- Compact industrial enclosure in S7-1200 design for mounting on a DIN rail

The integrated Ethernet interface and the option of using the TS modules provide flexible connection options for the CP. The following TS modules are available:

- TS module RS232
- TS module MODEM
- TS module ISDN

Technical specifications

Article number	**6GK7243-8RX30-0XE0**
Product type designation	CP 1243-8 IRC
Transmission rate	
Transfer rate	
• at the 1st interface	10 ... 100 Mbit/s
• at the 2nd interface	0.3 ... 115.2 kbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	1
Number of electrical connections	
• at the 1st interface acc. to Industrial Ethernet	1
• for power supply	1
Type of electrical connection	
• at the 1st interface acc. to Industrial Ethernet	RJ45 port
• at interface 2 for external data transmission	Interface to the TS Module
• for power supply	3-pole terminal block

Article number	**6GK7243-8RX30-0XE0**
Product type designation	CP 1243-8 IRC
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage 1 from backplane bus	5 V
Supply voltage external	24 V
Supply voltage external	19.2 ... 28.8 V
Supply voltage external at DC Rated value	24 V
Supply voltage external at DC rated value	19.2 ... 28.8 V
Consumed current	
• from backplane bus at DC at 5 V typical	0.25 A
• from external supply voltage at DC at 24 V typical	0.1 A
Power loss [W] Note	1.25 W from S7-1200 backplane without TS module. 2.4 W from 24 V DC external with TS module
Power loss [W]	2.4 W

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Technical specifications (continued)

Article number	6GK7243-8RX30-0XE0
Product type designation	CP 1243-8 IRC
Permitted ambient conditions	
Ambient temperature	
• for vertical installation during operation	-20 ... +60 °C
• for horizontally arranged busbars during operation	-20 ... +70 °C
• during storage	-40 ... -70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	Compact module S7-1200 single width
Width	30 mm
Height	110 mm
Depth	75 mm
Net weight	0.122 kg
Mounting type	
• 35 mm DIN rail mounting	Yes
• S7-300 rail mounting	No
• wall mounting	Yes
Product properties, functions, components general	
Number of units	
• per CPU maximum	1
• Note	One CP pluggable on left side of CPU, one TS Module pluggable left side of CP.
Performance data open communication	
Number of possible connections for open communication	
• by means of T blocks maximum	like CPU
Performance data S7 communication	
Number of possible connections for S7 communication	
• with PG connections maximum	2
• with OP connections maximum	1
• Note	Configured S7-Connection for ST7-Communication
Service	
• SINAUT ST7 via S7 communication	Yes
Performance data IT functions	
Number of possible connections	
• as e-mail client maximum	1

Article number	6GK7243-8RX30-0XE0
Product type designation	CP 1243-8 IRC
Performance data telecontrol	
Suitability for use	
• Node station	No
• substation	Yes
• TIM control center	No
• Note	Ethernet and TS Module can be operated in parallel
Control center connection	control center with ST7 function
• by means of a permanent connection	supported
Protocol is supported	
• DNP3	Yes
• IEC 60870-5	Yes
• SINAUT ST7 protocol	Yes
Product function data buffering if connection is aborted	Yes; 16,000 data messages (ST7), up to 64.000 events (DNP3 or IEC 60870-5-104)
Number of data points per station maximum	200
Transmission format	
• 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 ST7 protocol	Polling
• with dial-up network with SINAUT ST7 protocol	spontaneous
Hamming distance	
• for SINAUT ST7 protocol	4
Performance data Teleservice	
Diagnostics function online diagnostics with SIMATIC STEP 7	Yes
Product function	
• program download with SIMATIC STEP 7	Yes
• Remote firmware update	Yes
Product functions management, configuration	
Protocol is supported	
• SNMP v3	Yes
• DCP	Yes
Configuration software	
• required	SINAUT ES V5.5 and STEP7 V13 SP1 or higher
• for PG configuring required SINAUT ST7 configuration software for PG	Yes
Product functions Diagnosis	
Product function Web-based diagnostics	Yes

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Technical specifications (continued)

Article number	6GK7243-8RX30-0XE0
Product type designation	CP 1243-8 IRC
Product functions Security	
Firewall version	stateful inspection
Suitability for operation Virtual Private Network	Yes
Product function with VPN connection	IPSec, SINEMA RC
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	8
Product function	
• password protection for teleservice access	No
• encrypted data transmission	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
Product functions Time	
Protocol is supported	
• NTP	Yes
time synchronization	
• from NTP-server	Yes
• from control center	Yes
Accessories	
accessories	TS Module RS232 or TS Module MODEM or TS Module ISDN

Ordering data

	Article No.
CP 1243-8 IRC communications processor Communications processor for connecting a SIMATIC S7-1200 via the SINAUT ST7 telecontrol protocol to higher-level ST7 stations or to an ST7 control center, or a DNP3 or IEC-capable control center via a corresponding DNP3 or IEC 60870-5-104 open telecontrol protocols	6GK7243-8RX30-0XE0
Accessories	
SINAUT engineering software V5.5 + SP3 On CD, consisting of: • SINAUT ST7/DNP3 configuration and diagnostic software for STEP 7 V5.6 • SINAUT TD7 block library • Electronic manual in German and English	6NH7997-0CA55-0AA0
SINAUT engineering software V5.5 Upgrade from V5.0, V5.1, V5.2, V5.3 or V5.4	6NH7997-0CA55-0GA0
TeleService module Connection to TS Adapter IE Basic/ Advanced or CP 1243-8 IRC. Power supply via TS Adapter IE Basic/Advanced or CP 1243-8 IRC.	
TS module RS 232	6ES7972-0MS00-0XA0
TS module modem	6ES7972-0MM00-0XA0
TS module ISDN	6ES7972-0MD00-0XA0
CSM 1277 compact switch module Unmanaged switch for connecting a SIMATIC S7-1200 and up to three further nodes to Industrial Ethernet with 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-1200 module including electronic device manual on CD-ROM	6GK7277-1AA10-0AA0

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SIMATIC RF120C

Overview

The SIMATIC RF120C is a communication module for connecting the SIMATIC identification systems directly to the SIMATIC S7-1200. The RFID readers as well as the MV400 optical readers can be operated on the SIMATIC RF120C.

Integration into the TIA Portal and the uniform plug-in connection systems permit fast and simple commissioning.

Technical specifications

Article number	**6GT2002-0LA00**
Product type designation	RF120C communication module
Suitability for operation	SIMATIC S7-1200 together with RF200/300/600, MV400, MOBY D/U
Transmission rate	
Transfer rate at the point-to-point connection serial maximum	115.2 kbit/s
Interfaces	
Design of the interface for point-to-point connection	RS422
Number of readers connectable	1
Type of electrical connection	
• of the backplane bus	S7-1200 backplane bus
• for supply voltage	Screw terminals
Design of the interface to the reader for communication	D-sub, 9-pin, socket
Mechanical data	
Material	Xantar MX 1094
Color	Ti-grey 24L01
Tightening torque of the screw for securing the equipment maximum	0.45 N·m
Supply voltage, current consumption, power loss	
Supply voltage	
• at DC Rated value	24 V
• at DC	20 ... 30 V
Consumed current at DC at 24 V	
• without connected devices typical	0.03 A
• with connected devices maximum	1 A

Article number	**6GT2002-0LA00**
Product type designation	RF120C communication module
Permitted ambient conditions	
Ambient temperature	
• during operation	0 ... 55 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Protection class IP	IP20
Shock resistance	According to IEC 61131-2
Shock acceleration	300 m/s²
Vibrational acceleration	100 m/s²
Design, dimensions and weight	
Width	30 mm
Height	100 mm
Depth	75 mm
Net weight	0.15 kg
Mounting type	S7-1200 rack
Wire length for RS 422 interface maximum	1 000 m
Product properties, functions, components general	
Display version	4 LEDs for reader connection, 1 LED for device status
Product function transponder file handler can be addressed	No
Protocol is supported	
• S7 communication	Yes
Type of parameterization	HSP
Type of programming	ID profile, library with functions
Type of computer-mediated communication	acyclic communication
Standards, specifications, approvals	
Certificate of suitability	CE, FCC, cULus, KCC, C-Tick, FM, Ex: II 3G Ex nAA IIC T4 Gc
MTBF	196 y

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Ordering data

	Article No.
SIMATIC RF120C communication module Integrated in the S7-1200 controller for connection of a reader	**6GT2002-0LA00**
Accessories for all readers	
Reader cable for SIMATIC RF200 / RF300 / RF600 / MV400 PUR material, suitable for cable carriers, straight reader connector	
2 m	**6GT2091-4LH20**
5 m	**6GT2091-4LH50**
10 m	**6GT2091-4LN10**

	Article No.
Accessories for extended use	
Extension cable for all readers PUR material, suitable for cable carriers.	
2 m, straight connector	**6GT2891-4FH20**
5 m, straight connector	**6GT2891-4FH50**
10 m, straight connector	**6GT2891-4FN10**
20 m, straight connector	**6GT2891-4FN20**
50 m, straight connector	**6GT2891-4FN50**
2 m, connector angled at reader	**6GT2891-4JH20**
5 m, connector angled at reader	**6GT2891-4JH50**
10 m, connector angled at reader	**6GT2891-4JN10**
DVD "RFID Systems Software & Documentation"	**6GT2080-2AA20**

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SIPLUS CM 1241 communication modules

Overview

- For fast, high-performance serial data exchange via point-to-point coupling
- Implemented protocols: ASCII, USS drive protocol, Modbus RTU
- Additional protocols can also be loaded
- Simple parameterization with STEP 7 Basic

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	6AG1241-1AH32-4XB0	6AG1241-1AH32-2XB0	6AG1241-1CH32-4XB0	6AG1241-1CH32-2XB0
Based on	6ES7241-1AH32-0XB0	6ES7241-1AH32-0XB0	6ES7241-1CH32-0XB0	6ES7241-1CH32-0XB0
	SIPLUS S7-1200 CM 1241 RS232	SIPLUS S7-1200 CM1241 RS232	SIPLUS S7-1200 CM 1241 RS422/485	SIPLUS S7-1200 CM 1241 RS422/485
Ambient conditions				
Free fall				
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation				
• min.	-20 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C
• max.	60 °C; = Tmax	70 °C; = Tmax	60 °C; = Tmax	70 °C; Tmax > 60 °C, derating: Max. one module may be configured; this module must be the last module on the CM bus; minimum clearance on the left side of at least 45 mm
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air

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Technical specifications (continued)

Article number	6AG1241-1AH32-4XB0	6AG1241-1AH32-2XB0	6AG1241-1CH32-4XB0	6AG1241-1CH32-2XB0
Based on	6ES7241-1AH32-0XB0	6ES7241-1AH32-0XB0	6ES7241-1CH32-0XB0	6ES7241-1CH32-0XB0
	SIPLUS S7-1200 CM 1241 RS232	SIPLUS S7-1200 CM1241 RS232	SIPLUS S7-1200 CM 1241 RS422/485	SIPLUS S7-1200 CM 1241 RS422/485
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark				
- 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!
Conformal coating				
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

Ordering data

	Article No.
SIPLUS CM 1241 communication module	
(Extended temperature range and exposure to media)	
Ambient temperature -40 ... +70° C	
Communication module for point-to-point connection, with one RS 232 interface	**6AG1241-1AH32-2XB0**
Communication module for point-to-point connection, with one RS 485 interface	**6AG1241-1CH32-2XB0**
Suitable for areas with extreme exposure to media (conformal coating)	
Communication module for point-to-point connection, with one RS 232 interface	**6AG1241-1AH32-4XB0**
Communication module for point-to-point connection, with one RS 485 interface	**6AG1241-1CH32-4XB0**

	Article No.
Accessories	See SIMATIC S7-1200 communication module CM 1241, page 3/134

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SIPLUS CB 1241 communication board RS485

Overview

- For fast, high-performance serial data exchange via point-to-point connection
- Implemented protocols: ASCII, USS drive protocol, Modbus RTU
- Additional protocols can be loaded later
- Simple parameterization with STEP 7 Basic
- Can be plugged directly into 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.

Technical specifications

Article number	**6AG1241-1CH30-5XB1**
Based on	**6ES7241-1CH30-1XB1**
	SIPLUS S7-1200 CB 1241 RS485
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-40 °C; = Tmin (incl. condensation/ frost); start-up @ -25 °C
• max.	55 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air

Article number	**6AG1241-1CH30-5XB1**
Based on	**6ES7241-1CH30-1XB1**
	SIPLUS S7-1200 CB 1241 RS485
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

Ordering data

	Article No.
SIPLUS CB 1241 RS485 communication board for point-to-point connection, with 1 RS 485 interface	**6AG1241-1CH30-5XB1**

	Article No.
Accessories	See SIMATIC CB 1241 RS485 communication board, page 3/135

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Overview

DP-M	DP-S	FMS	PG/OP	S7
	●			

The SIPLUS CM 1242-5 communication module is used to connect a SIPLUS S7-1200 controller to PROFIBUS as a DP slave and has the following characteristics:

- PROFIBUS DPV1 slave in accordance with IEC 61158
- Module replacement without PG supported
- Power is supplied via the backplane bus so that no extra cabling is required
- Support of all standard baud rates from 9.6 kbps to 12 Mbps
- Compact industry-standard enclosure in S7-1200 design for mounting on a DIN rail
- Fast commissioning thanks to easy configuration using STEP 7 without additional programming overhead

The CM 1242-5 is intended for use in factory automation. Low-cost PROFIBUS-based automation solutions can be created on the basis of S7-1200 for optimal production.

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 S7-1200 CM 1242-5	
Article No.	**6AG1 242-5DX30-2XE0**
Article No. based on	**6GK7 242-5DX30-0XE0**
Ambient temperature range	-25 ... +55 °C
Ambient conditions	Suitable for exceptional exposure to media (e.g. sulfur chlorine atmosphere).
Technical data	The technical data of the standard product applies except for the ambient conditions.
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning under condensation conditions.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Air pressure (depending on the highest positive temperature range specified)	1 080 ... 795 hPa (-1 000 ... +2 000 m) see ambient temperature range 795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K 658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K

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

Ordering data

	Article No.
SIPLUS communication module CM 1242-5 (Extended temperature range and exposure to media) Communication module for electrical connection of SIMATIC S7-1200 to PROFIBUS as a DPV1 slave	**6AG1242-5DX30-2XE0**
Accessories	See SIMATIC S7-1200 CM 1242-5 communication module, page 3/137

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SIPLUS Communication Module CM 1243-2

Overview

The CM 1243-2 communication module is the AS-Interface master for the SIMATIC S7-1200 and has the following features:

- 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
- Indication of the operating state on the front of the device via LED
- Indication of operating mode, AS-Interface voltage faults, configuration faults and I/O faults via LEDs behind the front panel
- Compact enclosure in the design of the SIMATIC S7-1200
- Suitable for AS-Interface with 30 V voltage and AS-i Power24V: In combination with the optional DCM 1271 data decoupling module, a standard 24 V power supply unit can be used
- Configuration and diagnostics via the TIA Portal

Installation

The CM 1243-2 communication module is positioned to the left of the S7-1200 CPU and linked to the S7-1200 via lateral contacts.

It incorporates:

- Terminals for two AS-i cables (internally jumpered) via two screw terminals each
- One terminal for connection to the functional ground
- LEDs for indication of the operating state and fault statuses of the connected slaves

The screw terminals (included in the scope of supply) can be removed to facilitate installation.

Function

The CM 1243-2 supports all specified functions of the AS-Interface Specification V3.0.

The values of the digital AS-i slaves can be addressed via the process image of the S7-1200. During configuration of the slaves in the TIA Portal, the values of the analog AS-i slaves can also be accessed directly in the process image.

It is also possible to exchange all data of the AS-i Master and the connected AS-i slaves with the S7-1200 via the data record interface.

Changeover of the operating mode, automatic application of the slave configuration and the re-addressing of a connected AS-i slave can be implemented via the control panel of the CM 1243-2 in the TIA Portal.

The optional DCM 1271 data decoupling unit has an integrated detection unit for detecting ground faults on the AS-Interface cable. The integrated overload protection also disconnects the AS-Interface cable if the drive current required exceeds 4 A. For more information on DCM 1271, see page 3/140.

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 constitute one element of such a concept.

For more information about industrial security, please visit www.siemens.com/industrialsecurity.

Configuration

To configure CM 1243-2, you require STEP 7 V11 + SP2 or higher.

For STEP 7 V11 + SP2 or higher, the additional Hardware Support Package for CM 1243-2 is required. This is available from the Industry Online Support Portal, see https://support.industry.siemens.com/cs/ww/en/view/72341852.

The software enables user-friendly configuration and diagnostics of the AS-i Master and any connected slaves.

Alternatively, you can also apply the AS-Interface ACTUAL configuration at the touch of a button via the control panel integrated in the TIA Portal/STEP 7.

Firmware V1.1 (or higher) is required for the CM 1243-2 module for operation on an S7-1200 CPU from firmware V4.0.

Note:

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

Ordering data

	Article No.
SIPLUS CM 1243-2 communication module (Extended temperature range and exposure to media) • AS-Interface master for SIMATIC S7-1200 • Corresponds to AS-Interface Specification V3.0 • With screw terminals, removable terminals (included in the scope of supply) • Dimensions (W × H × D/mm) 30 × 100 × 75	**6AG1243-2AA30-7XB0**
Accessories	See S7-1200 CM 1243-2 communication module

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Overview

DP-M	DP-S	FMS	PG/OP	S7
●			●	●

The CM 1243-5 communication module is used to connect a SIMATIC S7-1200 controller to PROFIBUS as a DP master and has the following characteristics:

- PROFIBUS DPV1 master in accordance with IEC 61158
- Support of up to 16 PROFIBUS DP slaves
- Communication with other S7 controllers based on S7 communication
- Allows the connection of programming devices and operator panels with a PROFIBUS interface to S7-1200
- Module replacement without PG supported
- Support of all standard baud rates from 9.6 kbps to 12 Mbps
- Compact industry-standard enclosure in S7-1200 design for mounting on a DIN rail
- Fast commissioning thanks to easy configuration using STEP 7 without additional programming overhead

The CM 1243-5 is intended for use in factory automation. Low-cost PROFIBUS-based automation solutions can be created on the basis of S7-1200 for optimal production.

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 S7-1200 CM 1243-5	
Article No.	**6AG1 243-5DX30-2XE0**
Article No. based on	**6GK7 243-5DX30-0XE0**
Ambient temperature range	-25 ... +70 °C
Ambient conditions	Suitable for exceptional exposure to media (e.g. sulfur chlorine atmosphere).
Technical data	The technical data of the standard product applies except for the ambient conditions.
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning under condensation conditions.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Air pressure (depending on the highest positive temperature range specified)	1 080 ... 795 hPa (-1 000 ... +2 000 m) see ambient temperature range 795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K 658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K

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

Ordering data

	Article No.
SIPLUS CM 1243-5 communication module (Extended temperature range and exposure to media) Communication module for electrical connection of SIMATIC S7-1200 to PROFIBUS as a DPV1 master	**6AG1243-5DX30-2XE0**
Accessories	See SIMATIC S7-1200 CM 1243-5 communication module, page 3/143

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SIPLUS NET CSM 1277

Overview

- Unmanaged switch for connecting a SIPLUS S7-1200 controller to an Industrial Ethernet network with a line, tree or star topology
- Multiplication of Ethernet interfaces on a SIPLUS S7-1200 controller for additional connection of up to three programming devices, operator controls, and further Ethernet nodes
- Simple, space-saving mounting on the SIPLUS S7-1200 DIN rail
- Low-cost solution for implementing small, local Ethernet networks
- Problem-free connection using RJ45 plugs
- Simple and fast status display via LEDs on the device
- Integral autocrossover function permits use of uncrossed connecting cables

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 NET CSM 1277	
Article No.	**6AG1 277-1AA10-4AA0**
Article No. based on	**6GK7 277-1AA10-0AA0**
Ambient temperature range	0 … +60 °C

Ordering data

	Article No.
SIPLUS NET CSM 1277 compact switch module (Extended temperature range and exposure to media) Unmanaged switch for connecting a SIPLUS S7-1200 controller and up to three further nodes to Industrial Ethernet with 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-1200 module including electronic device manual on CD-ROM	**6AG1277-1AA10-4AA0**
Accessories	See CSM 1277 unmanaged, page 3/145

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Overview

- Digital inputs as supplement to the integral I/O of the CPUs
- Integrated into the overall automation for the implementation of safety-related requirements
- With integrated safety functions
- Communication with fail-safe CPUs via PROFIsafe mechanisms
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional inputs
- Operable exclusively in the central system

Technical specifications

Article number	**6ES7226-6BA32-0XB0** Digital Input SM 1226, F-DI 16x 24VDC
Supply voltage	
Rated value (DC)	24 V
Input current	
from backplane bus 5 V DC, max.	155 mA; Current consumption (SM Bus, 5 V DC): 155 mA
Digital inputs	
• from load voltage L+ (without load), max.	130 mA; 130 mA + 6 mA / input used + any Vs1/Vs2 current used
Digital inputs	
Number of digital inputs	16; 16 (1oo1) or 8 (1oo2); Note: You can individually assign each pair of inputs "a.x" and "b.x" as a single (1oo2)-channel or as 2 separate (1oo1)-channels
horizontal installation	
- up to 50 °C, max.	16; 16 inputs at 55 °C horizontal
vertical installation	
- up to 40 °C, max.	16; 16 inputs at 45 °C vertical
Input voltage	
• for signal "0"	-30 V DC to +5 V DC
• for signal "1"	15 V DC to 30 V DC
Input current	
• for signal "0", max. (permissible quiescent current)	0.5 mA
Input delay (for rated value of input voltage)	
for standard inputs	
- parameterizable	Yes; 0.8 / 1.6 / 3.2 / 6.4 / 12.8 ms
Diagnostics indication LED	
• for status of the inputs	Yes

Article number	**6ES7226-6BA32-0XB0** Digital Input SM 1226, F-DI 16x 24VDC
Degree and class of protection	
IP degree of protection	IP20
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
• Performance level according to ISO 13849-1	1-channel, Category 3, PL d; 2-channel, Category 3 or 4, PL e
• SIL acc. to IEC 61508	SIL 2 (single-channel), SIL 3 (two-channel)
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	0 °C
• max.	55 °C
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	70 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	250 g

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SM 1226 fail-safe digital input

Ordering data	Article No.
SM 1226 fail-safe digital input signal module 16 inputs, 24 V DC (SIL 2/category 3/PL d) or 8 inputs 24 V DC (SIL 3/ category 3 or category 4/PL e) or a combination of both	**6ES7226-6BA32-0XB0**
Accessories	
Terminal block (spare part) With 11 screws, tin-coated; 4 units	**6ES7292-1AL30-0XA0**
Front flap set (spare part) For modules with a width of 70 mm	**6ES7291-1BB30-0XA0**

	Article No.
STEP 7 Safety Advanced V15 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	
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[1]; email address required for delivery	**6ES7833-1FA15-0YH5**
STEP 7 Safety Basic V15 Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1200 FC Requirement: STEP 7 Basic V15 and higher	
Floating license for 1 user, software and documentation on DVD; license key on USB flash drive	**6ES7833-1FB15-0YA5**
Floating license for 1 user, software, documentation and license key for download[1] Email address required for delivery	**6ES7833-1FB15-0YH5**

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

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Overview

- Digital outputs as a supplement to the integral I/O of the CPUs
- Integrated into the overall automation for the implementation of safety-related requirements
- With integrated safety functions
- Communication with fail-safe CPUs via PROFIsafe mechanisms
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional outputs
- Operable exclusively in the central system

Technical specifications

Article number	**6ES7226-6DA32-0XB0** Digital Output SM 1226, F-DQ 4x 24VDC
Input current	
from backplane bus 5 V DC, max.	125 mA
Digital outputs	
• from load voltage L+, max.	170 mA
Digital outputs	
Number of digital outputs	4
• in groups of	1
Short-circuit protection	Yes
Switching capacity of the outputs	
• with resistive load, max.	30 Hz
• on lamp load, max.	10 Hz
Output voltage	
• Rated value (DC)	24 V
Output current	
• for signal "1" rated value	2 A
• for signal "1" permissible range, max.	10 mA to 2.4 A
• for signal "0" residual current, max.	P-switch: 0.5 mA, maximum; M-switch: 0.5 mA, maximum
Cable length	
• shielded, max.	200 m
• unshielded, max.	200 m
Diagnostics indication LED	
• for status of the outputs	Yes
Standards, approvals, certificates	
CE mark	Yes
cULus	Yes
FM approval	Yes
Highest safety class achievable in safety mode	
• Performance level according to ISO 13849-1	Category 4, PL e
• SIL acc. to IEC 61508	SIL 3

Article number	**6ES7226-6DA32-0XB0** Digital Output SM 1226, F-DQ 4x 24VDC
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	0 °C
• max.	55 °C
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	70 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	270 g

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SM 1226 fail-safe digital output

Ordering data	Article No.
SM 1226 fail-safe digital output signal module 4 outputs; 24 V DC, current sourcing/sinking	**6ES7226-6DA32-0XB0**
Accessories	
Terminal block (spare part) With 11 screws, tin-coated; 4 units	**6ES7292-1AL30-0XA0**
Front flap set (spare part) For modules with a width of 70 mm	**6ES7291-1BB30-0XA0**

	Article No.
STEP 7 Safety Advanced V15 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	
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[1]; email address required for delivery	**6ES7833-1FA15-0YH5**
STEP 7 Safety Basic V15 Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1200 FC Requirement: STEP 7 Basic V15 and higher	
Floating license for 1 user, software and documentation on DVD; license key on USB flash drive	**6ES7833-1FB15-0YA5**
Floating license for 1 user, software, documentation and license key for download[1] Email address required for delivery	**6ES7833-1FB15-0YH5**

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

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Overview

- Relay outputs as a supplement to the integral I/O of the CPUs
- Integrated into the overall automation for the implementation of safety-related requirements
- With integrated safety functions
- Communication with fail-safe CPUs via PROFIsafe mechanisms
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional outputs
- Operable exclusively in the central system

Technical specifications

Article number	**6ES7226-6RA32-0XB0** Digital Output SM 1226, F-DQ 2x Relay
Input current	
from backplane bus 5 V DC, max.	120 mA
Digital outputs	
• from load voltage L+, max.	300 mA
Digital outputs	
Number of digital outputs	2
Short-circuit protection	No
Output voltage	
• Rated value (DC)	5 V DC to 30 V DC
• Rated value (AC)	5 V AC to 250 V AC
Output current	
• for signal "1" permissible range, max.	5 A maximum per circuit and 10 A maximum of all circuits per module
Relay outputs	
• Number of relay outputs	2; 2 circuits per output
Switching capacity of contacts	
- with inductive load, max.	0.1 Hz, accordance with IEC 60947-5-1, DC-13; 2 Hz, accordance with IEC 60947-5-1, AC-15
- with resistive load, max.	2 Hz
Cable length	
• shielded, max.	200 m
• unshielded, max.	200 m
Diagnostics indication LED	
• for status of the outputs	Yes

Article number	**6ES7226-6RA32-0XB0** Digital Output SM 1226, F-DQ 2x Relay
Standards, approvals, certificates	
CE mark	Yes
cULus	Yes
FM approval	Yes
Highest safety class achievable in safety mode	
• Performance level according to ISO 13849-1	Category 4, PL e
• SIL acc. to IEC 61508	SIL 3
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	0 °C
• max.	55 °C
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	70 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	300 g

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SM 1226 fail-safe relay output

Ordering data	Article No.
SM 1226 fail-safe relay output signal module 2 relay outputs	**6ES7226-6RA32-0XB0**
Accessories	
Terminal block (spare part) With 11 screws, tin-coated, coded; 4 units	**6ES7292-1AL40-0XA0**
Front flap set (spare part) For modules with a width of 70 mm	**6ES7291-1BB30-0XA0**

	Article No.
STEP 7 Safety Advanced V15 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	
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[1]; email address required for delivery	**6ES7833-1FA15-0YH5**
STEP 7 Safety Basic V15 Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1200 FC Requirement: STEP 7 Basic V15 and higher	
Floating license for 1 user, software and documentation on DVD; license key on USB flash drive	**6ES7833-1FB15-0YA5**
Floating license for 1 user, software, documentation and license key for download[1] Email address required for delivery	**6ES7833-1FB15-0YH5**

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

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Overview

- Digital inputs as supplement to the integral I/O of the CPUs
- Integrated into the overall automation for the implementation of safety-related requirements
- With integrated safety functions
- Communication with fail-safe CPUs via PROFIsafe mechanisms
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional inputs
- Operable exclusively in the central system

Note:

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

Technical specifications

Article number	**6AG1226-6BA32-5XB0**
Based on	**6ES7226-6BA32-0XB0** SIPLUS S7-1200 SM 1226 F-DI 16x24VDC
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	55 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *

Article number	**6AG1226-6BA32-5XB0**
Based on	**6ES7226-6BA32-0XB0** SIPLUS S7-1200 SM 1226 F-DI 16x24VDC
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

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SIPLUS SM 1226 fail-safe digital input

Ordering data	Article No.
SIPLUS SM 1226 fail-safe digital input signal module (Extended temperature range and environmental stress) 16 inputs, 24 V DC (SIL 2/category 3/PL d) or 8 inputs 24 V DC (SIL 3/ category 3 or category 4/PL e) or a combination of both	**6AG1226-6BA32-5XB0**

Accessories	Article No.
	See SIMATIC SM 1226 fail-safe digital input signal module, page 3/168

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Overview

- Digital outputs as a supplement to the integral I/O of the CPUs
- Integrated into the overall automation for the implementation of safety-related requirements
- With integrated safety functions
- Communication with fail-safe CPUs via PROFIsafe mechanisms
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional outputs
- Operable exclusively in the central system

Note:

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

Technical specifications

Article number	**6AG1226-6DA32-5XB0**
Based on	**6ES7226-6DA32-0XB0** SIPLUS S7-1200 SM 1226 F-DQ 4x24VDC
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	55 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes

Article number	**6AG1226-6DA32-5XB0**
Based on	**6ES7226-6DA32-0XB0** SIPLUS S7-1200 SM 1226 F-DQ 4x24VDC
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

Ordering data

	Article No.
SIPLUS SM 1226 fail-safe digital output module 4 outputs; 24 V DC, current sourcing/sinking	**6AG1226-6DA32-5XB0**

	Article No.
Accessories	See SIMATIC SM 1226 fail-safe digital output signal module, page 3/170

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SIPLUS SM 1226 fail-safe relay output

Overview

- Relay outputs as a supplement to the integral I/O of the CPUs
- Integrated into the overall automation for the implementation of safety-related requirements
- With integrated safety functions
- Communication with fail-safe CPUs via PROFIsafe mechanisms
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional outputs
- Operable exclusively in the central system

Note:

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

Technical specifications

Article number	**6AG1226-6RA32-5XB0**
Based on	**6ES7226-6RA32-0XB0** SIPLUS S7-1200 SM 1226 F-DQ 2xRelay
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	55 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes

Article number	**6AG1226-6RA32-5XB0**
Based on	**6ES7226-6RA32-0XB0** SIPLUS S7-1200 SM 1226 F-DQ 2xRelay
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

Ordering data

	Article No.
SIPLUS SM 1226 fail-safe relay output signal module 2 relay outputs	**6AG1226-6RA32-5XB0**

	Article No.
Accessories	See SIMATIC SM 1226 fail-safe relay output signal module, page 3/172

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Overview

In terms of design and functionality, the SIMATIC PM 1207 single-phase load power supply (PM = power module) with automatic range selection of the input voltage is an optimal match to the SIMATIC S7-1200 PLC. It provides the supply to CPUs with 24 V input as well as to signal modules, and to 24 V loads connected to the modules. Comprehensive certifications, such as UL, ATEX and DNV GL enable universal use.

Technical specifications

Article number	**6EP1332-1SH71**
Product	S7-1200 PM1207
Power supply, type	24 V/2.5 A
Input	
Input	1-phase AC
• Note	Automatic range selection
Supply voltage	
• 1 at AC Rated value	120 V
• 2 at AC Rated value	230 V
Input voltage	
• 1 at AC	85 ... 132 V
• 2 at AC	176 ... 264 V
Wide-range input	No
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	20 ms; at V_{in} = 93/187 V
Rated line frequency 1	50 Hz
Rated line frequency 2	60 Hz
Rated line range	47 ... 63 Hz
Input current	
• at rated input voltage 120 V	1.2 A
• at rated input voltage 230 V	0.67 A
Switch-on current limiting (+25 °C), max.	13 A
Duration of inrush current limiting at 25 °C	
• maximum	3 ms
I^2t, max.	0.5 $A^2 \cdot s$
Built-in incoming fuse	T 3,15 A/250 V (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: 16 A characteristic B or 10 A characteristic C

Article number	**6EP1332-1SH71**
Product	S7-1200 PM1207
Power supply, type	24 V/2.5 A
Output	
Output	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V
Total tolerance, static ±	3 %
Static mains compensation, approx.	0.1 %
Static load balancing, approx.	0.2 %
Residual ripple peak-peak, max.	150 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	240 mV
Product function Output voltage adjustable	No
Output voltage setting	-
Status display	Green LED for 24 V OK
On/off behavior	No overshoot of V_{out} (soft start)
Startup delay, max.	6 s; 2 s at 230 V, 6 s at 120 V
Voltage rise, typ.	10 ms
Rated current value Iout rated	2.5 A
Current range	0 ... 2.5 A
Supplied active power typical	60 W
Short-term overload current	
• on short-circuiting during the start-up typical	6 A
• at short-circuit during operation typical	6 A
Duration of overloading capability for excess current	
• on short-circuiting during the start-up	100 ms
• at short-circuit during operation	100 ms
Parallel switching for enhanced performance	Yes
Numbers of parallel switchable units for enhanced performance	2

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1-phase, 24 V DC (for S7-1200)

Technical specifications (continued)

Article number	6EP1332-1SH71
Product	S7-1200 PM1207
Power supply, type	24 V/2.5 A
Efficiency	
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	83 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	12 W
Closed-loop control	
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.3 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	3 %
Load step setting time 50 to 100%, typ.	5 ms
Load step setting time 100 to 50%, typ.	5 ms
Setting time maximum	5 ms
Protection and monitoring	
Output overvoltage protection	< 33 V
Current limitation, typ.	2.65 A
Property of the output Short-circuit proof	Yes
Short-circuit protection	Constant current characteristic
Enduring short circuit current RMS value	
• typical	2.7 A
Overload/short-circuit indicator	-
Safety	
Primary/secondary isolation	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I
Leakage current	
• maximum	3.5 mA
CE mark	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-Recognized (UL 60950-1, CSA C22.2 No. 60950-1) File E151273
Explosion protection	ATEX (EX) II 3G Ex nA II T4; cULus (ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T4, File E330455
FM approval	Class I, Div. 2, Group ABCD, T4
CB approval	Yes
Marine approval	ABS, BV, DNV GL, LRS, NK
Degree of protection (EN 60529)	IP20

Article number	6EP1332-1SH71
Product	S7-1200 PM1207
Power supply, type	24 V/2.5 A
EMC	
Emitted interference	EN 55022 Class B
Supply harmonics limitation	not applicable
Noise immunity	EN 61000-6-2
Operating data	
Ambient temperature	
• during operation	0 ... 60 °C
- Note	with natural convection
• during transport	-40 ... +85 °C
• during storage	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation
Mechanics	
Connection technology	screw-type terminals
Connections	
• Supply input	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm²
• Output	L+, M: 2 screw terminals each for 0.5 ... 2.5 mm²
• Auxiliary	-
Width of the enclosure	70 mm
Height of the enclosure	100 mm
Depth of the enclosure	75 mm
Required spacing	
• top	20 mm
• bottom	20 mm
• left	0 mm
• right	0 mm
Weight, approx.	0.3 kg
Product feature of the enclosure housing for side-by-side mounting	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15, wall mounting
MTBF at 40 °C	1 492 537 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SIMATIC S7-1200 PM 1207 Input: 120/230 V AC Output: 24 V DC/2.5 A	**6EP1332-1SH71**

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Overview

- Stabilized power supply for SIPLUS S7-1200
- In the S7-1200 design
- Input 120/230 V AC, output 24 V DC, 2.5 A (derating: 1.5 A above 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.

SIPLUS power supply PM 1207		
Article No.	**6AG1 332-1SH71-4AA0**	**6AG1 332-1SH71-7AA0**
Article No. based on	**6EP1 332-1SH71**	
Ambient temperature range	0 ... +60° C	-40 ... +70° C
Conformal coating	Coating of the printed circuit boards and the electronic components	
Technical data	The technical data of the standard product applies except for the ambient conditions.	
Ambient conditions		
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.	
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!	
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with 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 (+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